

1 Appendix A Counter-examples

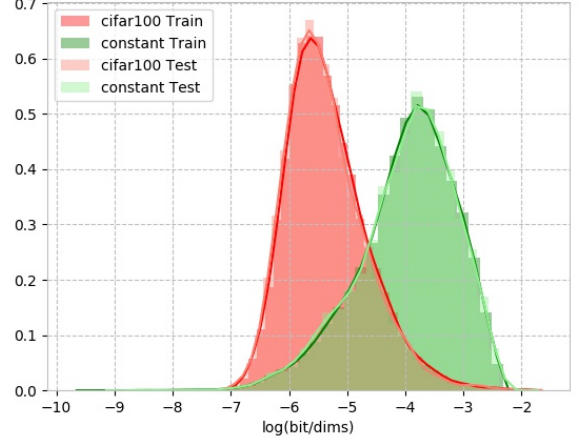
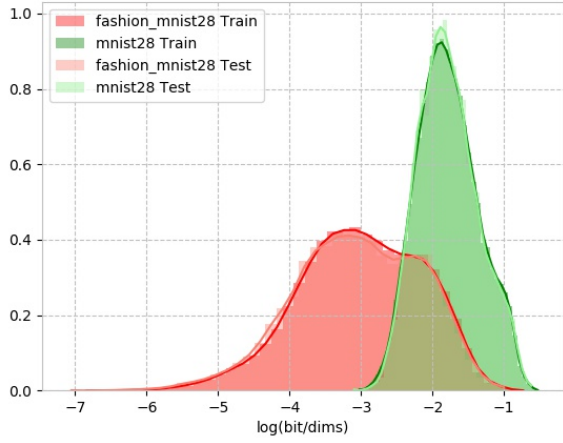


Figure 1: Counter example of $\log p_{\theta}(x)$ with AUROC 0.0609 and 0.1104

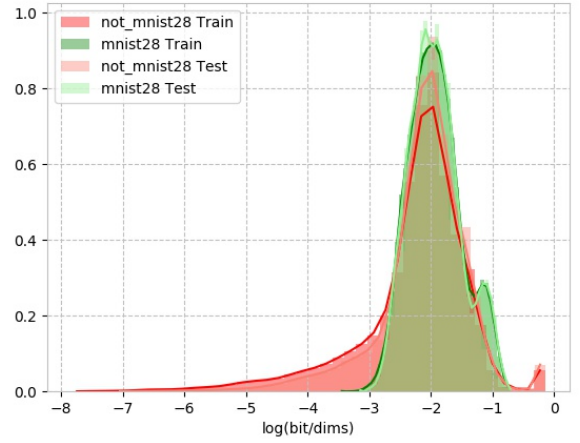
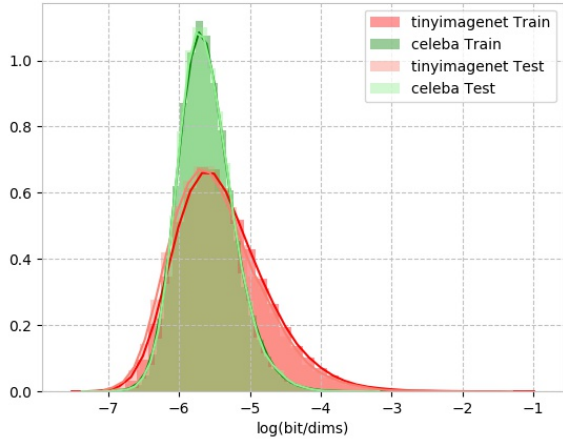


Figure 2: Counter example of $T_{perm}(x)$ with AUROC 0.3933 and 0.4692

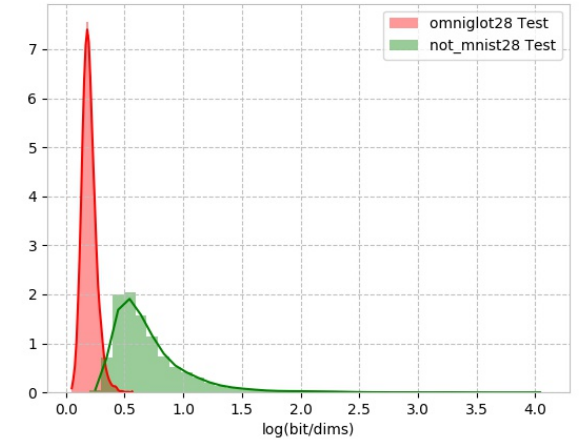
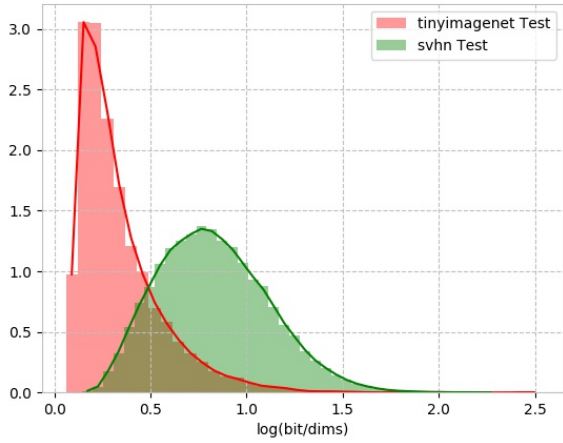


Figure 3: Counter example of $\|\nabla_x \log p_{\theta}(x)\|$ with AUROC 0.0196 and 0.0023

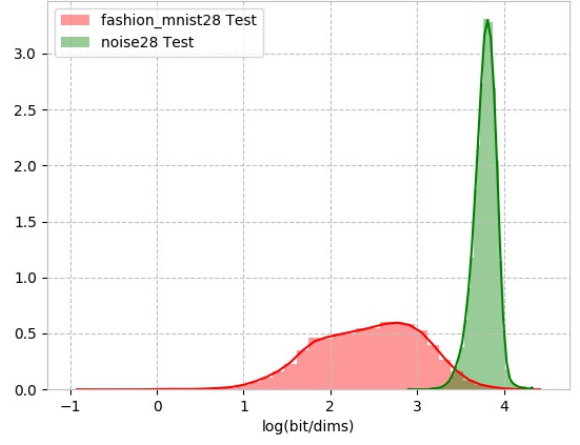
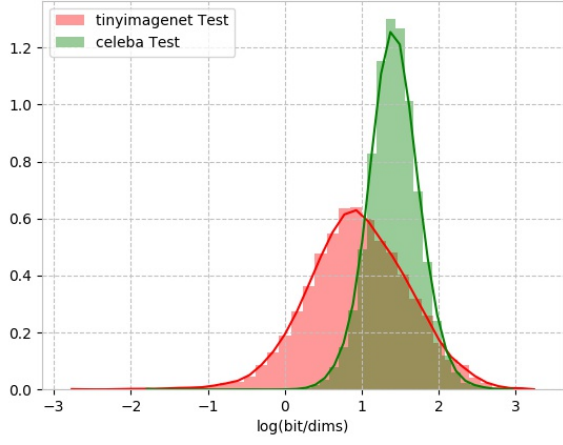


Figure 4: Counter example of $S(x)$ with AUROC 0.2636 and 0.0062

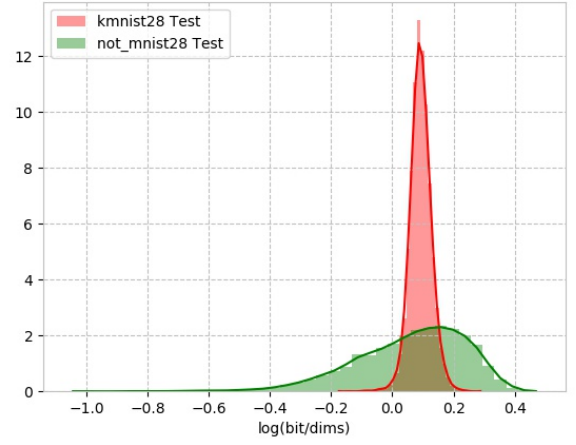
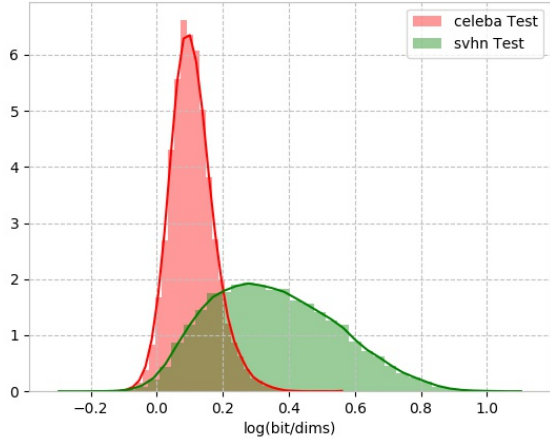


Figure 5: Counter example of $LLR(x)$ with AUROC 0.1054 and 0.5143

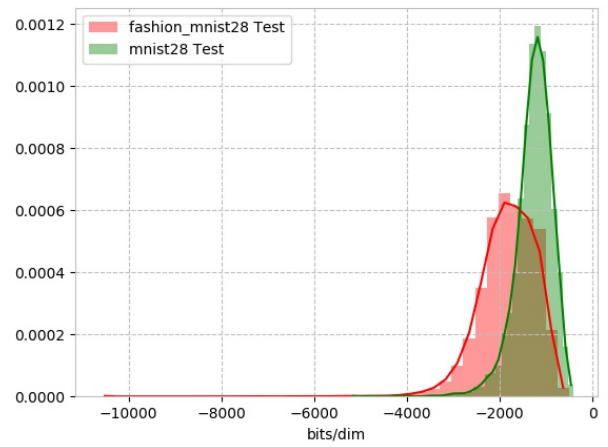
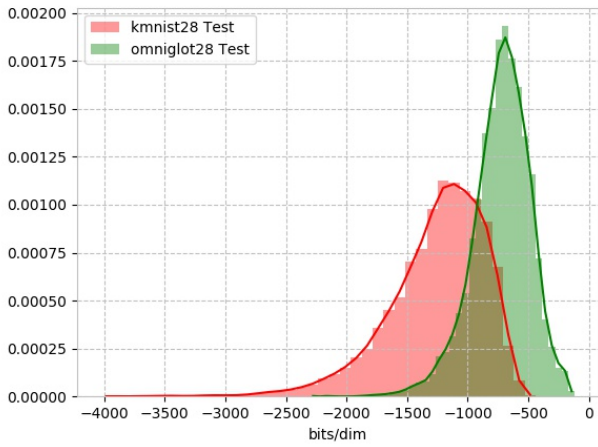


Figure 6: Counter example of $WAIC(x)$ with AUROC 0.1041 and 0.2135

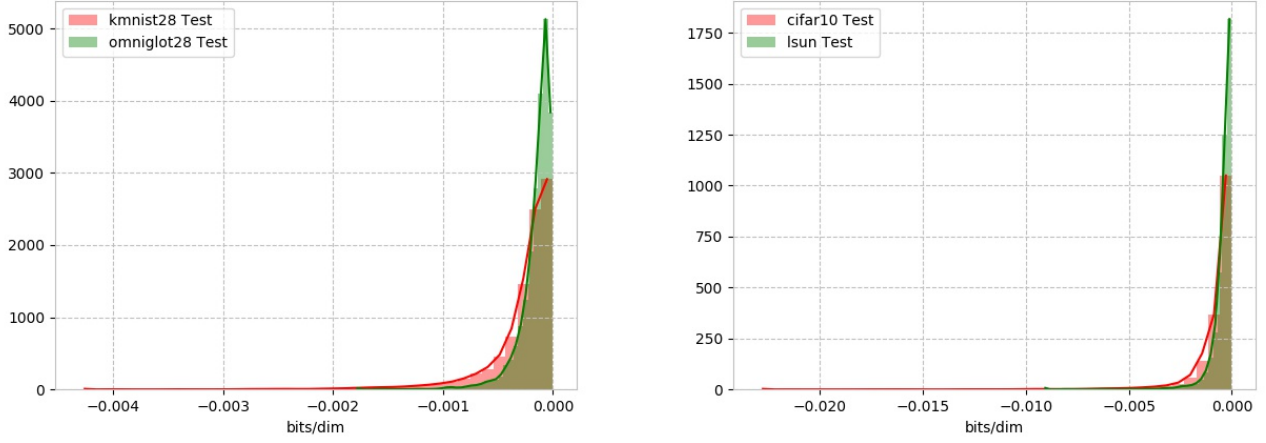


Figure 7: Counter example of $VAR_{\theta} \log p_{\theta}(x)$ with AUROC 0.5358 and 0.3756

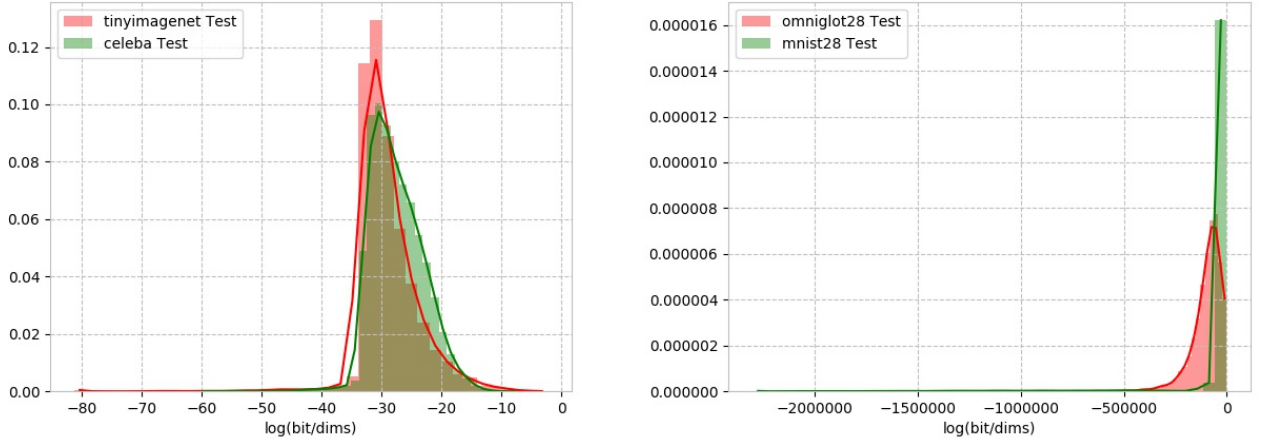


Figure 8: Counter example of $\log p_{\theta}(x|y)$ with AUROC 0.3822 and 0.1150

2 Appendix B Experiments

The description of data is shown in the data appendix.

The architecture of VAE is:

Layer	Channel	Stride	Kernel	Activation
Resnet	16	1x1	3x3	Leaky ReLU
Resnet	32	1x1	3x3	Leaky ReLU
Resnet	64	1x1	3x3	Leaky ReLU
Resnet	128	2x2	3x3	Leaky ReLU
Resnet	128	2x2	3x3	Leaky ReLU
Resnet	128	2x2	3x3	Leaky ReLU
Flatten				
Dense	256			None

Table 1: Encoder architecture of VAE

Before the decoder, we will use dense layer to map z to a tensor with shape $8hw$ and reshape $(h/4, w/4, 128)$ where h, w is the height and width of data.

Layer		Channel	Stride	Kernel	Activation
Resnet	Deconv	128	2x2	3x3	Leaky ReLU
Resnet	Deconv	128	2x2	3x3	Leaky ReLU
Resnet	Deconv	128	2x2	3x3	Leaky ReLU
Resnet	Deconv	64	1x1	3x3	Leaky ReLU
Resnet	Deconv	32	1x1	3x3	Leaky ReLU
Resnet	Deconv	16	1x1	3x3	Leaky ReLU
Conv2d		3 or 1	1x1	1x1	None

Table 2: Decoder architecture of VAE

We apply a Discretized Logistic Distribution as $p_\theta(x|z)$ and gaussian as $q_\phi(z|x)$.
The architecture of PixelCNN is:

Layer	Channel	Vertical Kernel	Horizontal Kernel	Activation	Dropout
Resnet	64	2x3	2x2	Leaky ReLU	0.2
Resnet	64	2x3	2x2	Leaky ReLU	0.2
Resnet	64	2x3	2x2	Leaky ReLU	0.2
Resnet	64	2x3	2x2	Leaky ReLU	0.2
Resnet	64	2x3	2x2	Leaky ReLU	0.2
Resnet	256	2x3	2x2	Leaky ReLU	0.2
Flatten					
Dense	256			None	

Table 3: Architecture of PixelCNN

The architecture of Wasserstein is:

Layer		Channel	Stride	Kernel	Activation
Resnet	Deconv	128	2x2	3x3	Leaky ReLU
Resnet	Deconv	128	2x2	3x3	Leaky ReLU
Resnet	Deconv	128	1x1	3x3	Leaky ReLU
Resnet	Deconv	64	1x1	3x3	Leaky ReLU
Resnet	Deconv	32	1x1	3x3	Leaky ReLU
Resnet	Deconv	16	1x1	3x3	Leaky ReLU
Conv2d		1	1x1	1x1	None

Table 4: Generator architecture of WGAN

Layer	Channel	Stride	Kernel	Activation
Resnet	16	1x1	3x3	Leaky ReLU
Resnet	32	1x1	3x3	Leaky ReLU
Resnet	64	1x1	3x3	Leaky ReLU
Resnet	128	1x1	3x3	Leaky ReLU
Resnet	128	2x2	3x3	Leaky ReLU
Resnet	128	2x2	3x3	Leaky ReLU

Table 5: Discriminator architecture of WGAN

RealNVP has 3 level and 6 blocks at each level. Channel is 128 and activation is ReLU in each block.

The hyper-parameters for VAE, PixelCNN, WGAN and Glow are shown in the scripts, shown in code appendix.

The detailed experiments are shown in appendix D.

The average runtime memory of VAE, PixelCNN, WGAN and Glow are 2.949GB, 2.851GB, 2.826GB and 2.917GB.

3 Appendix C Proofs

We will derive the theorems in our papers by the assumptions:

1. The training data and testing data of in-distribution and out-of-distribution are i.i.d. .

2. div is a divergence, satisfying that $div(p_{in}, p_{out}) \gg 0$ and $div(p_{out}, p_{in}) \gg 0$.
3. If $div(p_{in}, p_{out})$ and $div(p_{out}, p_{in})$ can be represented by sampling formula, i.e., $div(p_{in}, p_{out}) \approx \sum_i f(x_i)$, then $f(x_i) \gg 0$ for almost x_i in p_{in} .
4. $f: \mathcal{X} \rightarrow \mathcal{R}$ maps the distribution p_{in}, p_{out} into two Gaussian distribution with constant variance.
5. Assumption 3 and 4 hold for any \hat{f} approximating f .

Lemma 1 Indicators f_0 and f_1 satisfying that if $f_0(x_1) < f_0(x_2)$ then $f_1(x_1) < f_1(x_2)$ and if $f_0(x_1) > f_0(x_2)$ then $f_1(x_1) > f_1(x_2)$ for x_1, x_2 in mixture distribution, have same performance for OoD. We call $f_0 \triangleq f_1$.

Proof. Assume we get data x_0, x_1, \dots, x_n from mixture distribution. The metrics AUROC, AUPR, FPR@TPR95 and AP for indicator f are all dependent on the order of $f(x_0), f(x_1), \dots, f(x_n)$. The array $f_0(x_0), f_0(x_1), \dots, f_0(x_n)$ and $f_1(x_0), f_1(x_1), \dots, f_1(x_n)$ have the same order and then they have same performance for all metrics considered in OoD. \square

Theorem 1 $\log p_{in}(x) - \log p_{out}(x)$ is a symmetric indicator with great performance, i.e., it reaches same performance in experiment A vs B and B vs A, with threshold zero.

Proof. We select KL as div . By assumption 4, we have

$$\log p_{in}(x_1) - \log p_{out}(x_1) \gg 0 \quad \text{and} \quad \log p_{in}(x_2) - \log p_{out}(x_2) \ll 0$$

where $x_1 \sim p_{in}$ and $x_2 \sim p_{out}$. By assumption 5, above equation holds for $\log p_{\theta}(x) - \log p_{\omega}(x)$. Therefore, $\log p_{in}(x) - \log p_{out}(x)$ and $\log p_{\theta}(x) - \log p_{\omega}(x)$ can detect most of OoD, with threshold zero.

In experiment A vs B and B vs A, the indicator is $\log p_A(x) - \log p_B(x)$ and $\log p_B(x) - \log p_A(x)$. These two experiments have same mixture distribution. For any testing data x_1, x_2 in mixture distribution, if $\log p_A(x_1) - \log p_B(x_1) > \log p_A(x_2) - \log p_B(x_2)$, then $\log p_B(x_1) - \log p_A(x_1) < \log p_B(x_2) - \log p_A(x_2)$. Conversely, if $\log p_A(x_1) - \log p_B(x_1) < \log p_A(x_2) - \log p_B(x_2)$, then $\log p_B(x_1) - \log p_A(x_1) > \log p_B(x_2) - \log p_A(x_2)$. Thus, they have inverse order. Noting that the positive and negative labels in experiment A vs B and B vs A are also inverse, $\log p_{in}(x) - \log p_{out}(x)$ reaches same performance in experiment A vs B and B vs A. \square

Theorem 2 For any mixture distribution $p_{mix} = \alpha p_{in} + \beta p_{out}$ where $\alpha + \beta = 1$ and $\alpha, \beta > 0$, the performance of indicator $\log p_{in}(x) - \log p_{mix}(x)$ and indicator $\log p_{in}(x) - \log p_{out}(x)$ is equal for OoD detection.

Proof. For any x_1, x_2 satisfying $\log p_{in}(x_1) - \log p_{out}(x_1) < \log p_{in}(x_2) - \log p_{out}(x_2)$, we have $\log p_{in}(x_1) - \log p_{mix}(x_1) < \log p_{in}(x_2) - \log p_{mix}(x_2)$ by

$$\begin{aligned} \log p_{in}(x) - \log p_{mix}(x) &= -\log \frac{\alpha p_{in}(x) + \beta p_{out}(x)}{p_{in}(x)} = -\log \left(\alpha + \beta \frac{p_{out}(x)}{p_{in}(x)} \right) \\ \log \frac{p_{in}(x_1)}{p_{out}(x_1)} < \log \frac{p_{in}(x_2)}{p_{out}(x_2)} &\Rightarrow \frac{p_{in}(x_1)}{p_{out}(x_1)} < \frac{p_{in}(x_2)}{p_{out}(x_2)} \Rightarrow \frac{p_{out}(x_1)}{p_{in}(x_1)} > \frac{p_{out}(x_2)}{p_{in}(x_2)} \\ &\Rightarrow \log \left(\alpha + \beta \frac{p_{out}(x_1)}{p_{in}(x_1)} \right) > \log \left(\alpha + \beta \frac{p_{out}(x_2)}{p_{in}(x_2)} \right) \\ &\Rightarrow -(\log p_{in}(x_1) - \log p_{mix}(x_1)) > -(\log p_{in}(x_2) - \log p_{mix}(x_2)) \\ &\Rightarrow \log \frac{p_{in}(x_1)}{p_{mix}(x_1)} < \log \frac{p_{in}(x_2)}{p_{mix}(x_2)} \end{aligned}$$

By the same way, for any x_1, x_2 satisfying $\log p_{in}(x_1) - \log p_{out}(x_1) > \log p_{in}(x_2) - \log p_{out}(x_2)$, we have $\log p_{in}(x_1) - \log p_{mix}(x_1) > \log p_{in}(x_2) - \log p_{mix}(x_2)$. By lemma 1, performance of indicator $\log p_{in}(x) - \log p_{mix}(x)$ and indicator $\log p_{in}(x) - \log p_{out}(x)$ is equal for OoD detection.

Remark. In the proof, we do not use the condition that $\alpha > 0$ but only $\beta > 0$ and $p_{mix}(x) > 0$. It means that theorem 1 holds when $\alpha < 0, \beta > 0$ and $p_{mix}(x) > 0$. \square

Theorem 3 When log-likelihood can detect OoD, i.e., $\log p_{in}(x_1) > \log p_{in}(x_2)$ for almost $x_1 \sim p_{in}$ and $x_2 \sim p_{out}$, KL-based indicator can be also used to detect OoD.

Proof. Assume $\log p_{out}(x_1) < \log p_{out}(x_2)$, then $\log p_{in}(x_1) - \log p_{out}(x_1) > \log p_{in}(x_2) - \log p_{out}(x_2)$. KL-based indicator will get better performance than log-likelihood indicator.

Assume $\log p_{out}(x_1) > \log p_{out}(x_2)$, then likelihood indicator will make mistake in experiment B vs A (if current experiment is A vs B). Meanwhile KL-based indicator can detect OoD in both A vs B and B vs A by theorem 1.

It means KL-based indicator is always better than log-likelihood indicator.

For the proofing of following theorems, we need an additional mathematical simplification: by assumption 4 and 5, the indicators for OoD maps the distribution p_{in}, p_{out} into two Gaussian distribution with constant variance, therefore, the AUROC between these two Gaussian distribution is dependent on the difference of their mean, *i.e.*, $\mathbb{E}_{p_{in}(x)} f(x) - \mathbb{E}_{p_{out}(x)} f(x)$ is our simplified metric for mathematical inference.

Theorem 4 For any likelihood-ratio indicator $\log p_{in}(x) - \log g(x)$ where g is a continuous differentiable probability distribution, KL-based indicator outperforms them.

Proof. Consider the following optimization with subsidiary conditions for searching the optimal g for likelihood ratio:

$$\begin{aligned} \max_g \left\{ \mathbb{E}_{p_{in}(x)} [\log p_{in}(x) - \log g(x)] - \mathbb{E}_{p_{out}(x)} [\log p_{in}(x) - \log g(x)] \right\} \\ \text{s.t. } KL(p_{in}, g) = L \text{ and } \int g(x) dx = 1 \end{aligned}$$

where L is a constraint to the optimization domain of g . It could be solved by Lagrange multiplier method introduced by calculus of variation [1]. Let $\lambda, \psi > 0$ be Lagrange Multiplier for the two constraint. The Lagrange function is

$$\begin{aligned} J[g] &= \mathbb{E}_{p_{in}(x)} [\log p_{in}(x) - \log g(x)] - \mathbb{E}_{p_{out}(x)} [\log p_{in}(x) - \log g(x)] \\ &\quad - \lambda KL(p_{in}, g) - \psi \int g(x) dx \\ &= \int p_{in}(x) \log p_{in}(x) - p_{in}(x) \log g(x) - p_{out}(x) \log p_{in}(x) \\ &\quad + p_{out}(x) \log g(x) - \lambda p_{in}(x) \log \frac{p_{in}(x)}{g} - \psi g(x) dx = \int F(g, x) dx \end{aligned}$$

By calculus of variation, the extremal point for $J[g]$ satisfies that $\delta J = 0$, which is equal to

$$\begin{aligned} \frac{\partial F(g, x)}{\partial g} = 0 &\Rightarrow -\frac{p_{in}(x)}{g(x)} + \frac{p_{out}(x)}{g(x)} + \frac{\lambda p_{in}(x)}{g(x)} - \psi = 0 \\ &\Rightarrow g(x) = \frac{1}{\psi} ((\lambda - 1)p_{in}(x) + p_{out}(x)) \end{aligned}$$

Considering the subsidiary condition $\int g(x) dx = 1$, we have

$$\int g(x) dx = \frac{1}{\psi} \int (\lambda - 1)p_{in}(x) + p_{out}(x) dx = \frac{1}{\psi} ((\lambda - 1) + 1) = \frac{\lambda}{\psi} = 1$$

Therefore, $\lambda = \psi$ and $g^*(x) = \frac{\lambda - 1}{\lambda} p_{in}(x) + \frac{1}{\lambda} p_{out}(x)$ is the extremal point. By the remark of theorem 1, $\log p_{in}(x) - \log g^*(x)$ gets same performance as $\log p_{in}(x) - \log p_{out}(x)$ in OoD detection. For any L , we can get $g^*(x)$, which has same performance as $\log p_{in}(x) - \log p_{out}(x)$. It means that KL-based indicator is the optimal indicator among all likelihood-ratio indicators.

Theorem 5 $\log \frac{p_\theta(x)}{p_\gamma(x)}$ can be used for detecting OoD. Moreover, $\log \frac{p_\theta(x)}{p_\gamma(x)}$ represents whether a sample x in mixture distribution have been optimized in the training process of θ .

Proof. Let $p_\gamma(x) = \alpha p_\theta(x) + \beta p_\omega(x)$. $\hat{\gamma}$ is the parameters that can be obtained by optimizer. Considering the indicator $\log p_\theta(x) - \log p_\gamma(x) = -\log(\alpha + \beta \frac{p_\omega(x)}{p_\theta(x)})$, for $x_1 \sim p_{in}$ and $x_2 \sim p_{out}$, we have

$$\log \frac{p_\theta(x_1)}{p_\gamma(x_1)} - \log \frac{p_\theta(x_2)}{p_\gamma(x_2)} = \log(\alpha + \beta \frac{p_\omega(x_2)}{p_\theta(x_2)}) - \log(\alpha + \beta \frac{p_\omega(x_1)}{p_\theta(x_1)})$$

We have known that $\log \frac{p_\theta(x_1)}{p_\omega(x_1)} \gg 0$ and $\log \frac{p_\theta(x_2)}{p_\omega(x_2)} \ll 0$ by theorem 1. Then, we have $\log \frac{p_\theta(x_1)}{p_\gamma(x_1)} - \log \frac{p_\theta(x_2)}{p_\gamma(x_2)} > 0$. It means that $\log \frac{p_\theta(x)}{p_\gamma(x)}$ can be used for detecting OoD.

Next, consider the γ is optimized better than $\hat{\gamma}$, *i.e.*, $\mathbb{E}_{p_{mix}} \log p_\gamma(x) \geq \mathbb{E}_{p_{mix}} \log p_{\hat{\gamma}}(x)$.

$$\mathbb{E}_{p_{mix}} \log p_\gamma(x) = \alpha \mathbb{E}_{p_{in}} \log p_\gamma(x) + \beta \mathbb{E}_{p_{out}} \log p_\gamma(x)$$

By $\mathbb{E}_{p_{mix}} \log p_\gamma(x) \geq \mathbb{E}_{p_{mix}} \log p_{\hat{\gamma}}(x)$, there are 3 case:

1. $\mathbb{E}_{p_{in}} \log p_\gamma(x) \leq \mathbb{E}_{p_{in}} \log p_{\hat{\gamma}}(x)$ and $\mathbb{E}_{p_{out}} \log p_\gamma(x) \geq \mathbb{E}_{p_{out}} \log p_{\hat{\gamma}}(x)$.
2. $\mathbb{E}_{p_{in}} \log p_\gamma(x) \geq \mathbb{E}_{p_{in}} \log p_{\hat{\gamma}}(x)$ and $\mathbb{E}_{p_{out}} \log p_\gamma(x) \geq \mathbb{E}_{p_{out}} \log p_{\hat{\gamma}}(x)$.

3. $\mathbb{E}_{p_{in}} \log p_\gamma(x) \geq \mathbb{E}_{p_{in}} \log p_{\hat{\gamma}}(x)$ and $\mathbb{E}_{p_{out}} \log p_\gamma(x) \leq \mathbb{E}_{p_{out}} \log p_{\hat{\gamma}}(x)$.

By assumption 4, 5 and simplified metric, we know that if $\mathbb{E}_{p_{in}} \log p_\gamma(x)$ increase, the KL-based indicator $\log \frac{p_\theta(x)}{p_\gamma(x)}$ will be worse and if $\mathbb{E}_{p_{out}} \log p_\gamma(x)$ increase, the KL-based indicator $\log \frac{p_\theta(x)}{p_\gamma(x)}$ will be better.

Therefore, in case 1, the performance of $\log \frac{p_\theta(x_1)}{p_\gamma(x_1)}$ will be better than $\log \frac{p_\theta(x_1)}{p_{\hat{\gamma}}(x_1)}$. In case 2 and 3, we know $\mathbb{E}_{p_{in}} \log p_{\hat{\gamma}}(x) \leq \mathbb{E}_{p_{in}} \log p_\theta(x)$ and $\mathbb{E}_{p_{in}} \log p_\gamma(x) \leq \mathbb{E}_{p_{in}} \log p_\theta(x)$ since θ is well-trained for such loss function.

$$\begin{aligned} \beta \mathbb{E}_{p_{out}} \log p_\gamma(x) &= \mathbb{E}_{p_{mix}} \log p_\gamma(x) - \alpha \mathbb{E}_{p_{in}} \log p_\gamma(x) \\ &\geq \mathbb{E}_{p_{mix}} \log p_{\hat{\gamma}}(x) - \alpha \mathbb{E}_{p_{in}} \log p_\theta(x) \\ &= \alpha \mathbb{E}_{p_{in}} \log \frac{p_{\hat{\gamma}}(x)}{p_\theta(x)} + \beta \mathbb{E}_{p_{out}} \log p_{\hat{\gamma}}(x) \\ &\Rightarrow \mathbb{E}_{p_{out}} \log \frac{p_\gamma(x)}{p_{\hat{\gamma}}(x)} \geq \frac{\alpha}{\beta} \mathbb{E}_{p_{in}} \log \frac{p_{\hat{\gamma}}(x)}{p_\theta(x)} \end{aligned}$$

And we have

$$\mathbb{E}_{p_{in}} \log \frac{p_\gamma(x)}{p_{\hat{\gamma}}(x)} \leq \mathbb{E}_{p_{in}} \log \frac{p_\theta(x)}{p_{\hat{\gamma}}(x)}$$

Therefore, by our simplified metric, we have

$$\begin{aligned} &(\mathbb{E}_{p_{in}(x)} \log \frac{p_\theta(x)}{p_\gamma(x)} - \mathbb{E}_{p_{out}(x)} \log \frac{p_\theta(x)}{p_\gamma(x)}) - (\mathbb{E}_{p_{in}(x)} \log \frac{p_\theta(x)}{p_{\hat{\gamma}}(x)} - \mathbb{E}_{p_{out}(x)} \log \frac{p_\theta(x)}{p_{\hat{\gamma}}(x)}) \\ &= \mathbb{E}_{p_{out}} \log \frac{p_\gamma(x)}{p_{\hat{\gamma}}(x)} - \mathbb{E}_{p_{in}} \log \frac{p_\gamma(x)}{p_{\hat{\gamma}}(x)} \geq \frac{\alpha}{\beta} \mathbb{E}_{p_{in}} \log \frac{p_{\hat{\gamma}}(x)}{p_\theta(x)} - \mathbb{E}_{p_{in}} \log \frac{p_\theta(x)}{p_{\hat{\gamma}}(x)} \\ &= \frac{\alpha + \beta}{\beta} \mathbb{E}_{p_{in}} \log \frac{p_\theta(x)}{p_{\hat{\gamma}}(x)} = \frac{1}{\beta} \mathbb{E}_{p_{in}} \log \frac{p_\theta(x)}{p_{\hat{\gamma}}(x)} \geq 0 \end{aligned}$$

It means that $\frac{p_\theta(x)}{p_{\hat{\gamma}}(x)}$ is a better indicator than $\frac{p_\theta(x)}{p_\gamma(x)}$ in cast 2 and 3. In conclusion, $\frac{p_\theta(x)}{p_{\hat{\gamma}}(x)}$ will be better and thus they can be used to detect OoD if γ is trained better than $\hat{\gamma}$. Additional, by the above proof, the most important property is that θ is well-trained in p_{in} and thus $p_\gamma(x) < p_\theta(x)$ in p_{in} , i.e., $\log \frac{p_\theta(x)}{p_\gamma(x)}$ represents whether a sample x in mixture distribution have been optimized in the training process of θ .

Theorem 6 Assumption 2 is a corollary of definition of OoD problem when div is Wasserstein distance.

Proof. By the definition of OoD, exist a $L > 0$, for any $x_1 \sim p_{in}, x_2 \sim p_{out}$, their distance $\|x_1 - x_2\|$ is at least L .

$$W^1(p_{in}, p_{out}) = \min_{f \in \Gamma(p_{in}, p_{out})} \iint f(x_1, x_2) \|x_1 - x_2\| dx_1 dx_2 \geq L$$

Theorem 7 $D(x)$ is a symmetric indicator.

Proof. Let D is the optimal discriminator in $W^1(p_{in}, p_{out})$, for any D' satisfying $Lip(D') \leq 1$, we have

$$\begin{aligned} \mathbb{E}_{p_{out}} D'(x) - \mathbb{E}_{p_{in}} D'(x) &= \mathbb{E}_{p_{in}} [-D'(x)] - \mathbb{E}_{p_{out}} [-D'(x)] \\ &\leq \mathbb{E}_{p_{in}} D(x) - \mathbb{E}_{p_{out}} D(x) = \mathbb{E}_{p_{out}} [-D(x)] - \mathbb{E}_{p_{in}} [-D(x)] \end{aligned}$$

Therefore, $-D(x)$ is the optimal discriminator in $W^1(p_{out}, p_{in})$. By the same way in theorem 1, $D(x)$ is a symmetric indicator.

Theorem 8 \hat{D} that is optimal solution in $W^1(p_{in}, p_{mix})$ is same to the optimal solution D in $W^1(p_{in}, p_{out})$. Moreover, the neural networks trained by $W^1(p_{in}, p_{mix})$ and $W^1(p_{in}, p_{out})$ will share the same optimization process.

Proof. For any D satisfying $Lip(D) \leq 1$,

$$\begin{aligned} \mathbb{E}_{p_{in}} D(x) - \mathbb{E}_{p_{mix}} D(x) &= \mathbb{E}_{p_{in}} D(x) - \alpha \mathbb{E}_{p_{in}} D(x) - \beta \mathbb{E}_{p_{out}} D(x) \\ &= (1 - \alpha) \mathbb{E}_{p_{in}} D(x) - \beta \mathbb{E}_{p_{out}} D(x) = \beta \mathbb{E}_{p_{in}} D(x) - \beta \mathbb{E}_{p_{out}} D(x) \\ &\leq \beta \mathbb{E}_{p_{in}} \hat{D}(x) - \beta \mathbb{E}_{p_{out}} \hat{D}(x) = (1 - \alpha) \mathbb{E}_{p_{in}} \hat{D}(x) - \beta \mathbb{E}_{p_{out}} \hat{D}(x) \\ &= \mathbb{E}_{p_{in}} \hat{D}(x) - \alpha \mathbb{E}_{p_{in}} \hat{D}(x) - \beta \mathbb{E}_{p_{out}} \hat{D}(x) = \mathbb{E}_{p_{in}} \hat{D}(x) - \mathbb{E}_{p_{mix}} \hat{D}(x) \end{aligned}$$

Therefore, \hat{D} is also the optimal discriminator in $W^1(p_{in}, p_{mix})$. Additional, in above proof, the loss functions for D in $W^1(p_{in}, p_{mix})$ and $W^1(p_{in}, p_{out})$ are

$$\mathbb{E}_{p_{in}} D(x) - \mathbb{E}_{p_{mix}} D(x) = \beta (\mathbb{E}_{p_{in}} D(x) - \mathbb{E}_{p_{out}} D(x))$$

The two loss functions have same gradient direction for neural network optimization, thus the training optimization processes are same.

Theorem 9 *The discriminator in $W^1(p_{in}, p_{out})$ is the best indicator among all indicators that is 1-Lipschitz. Moreover, it is the best indicator who has limited gradient.*

Proof. By our simplified metric, for any indicator f ,

$$\mathbb{E}_{p_{in}} f(x) - \mathbb{E}_{p_{out}} f(x)$$

measures the performance of OoD detection. Thus

$$\max_{Lip(f) \leq 1} \mathbb{E}_{p_{in}} f(x) - \mathbb{E}_{p_{out}} f(x) = W^1(p_{in}, p_{out})$$

will search the best indicator among all indicators that is 1-Lipschitz. Especially, for a indicator f has limited gradient K , function $g(x) = f(x)/K$ satisfies that $Lip(g) \leq 1$. By theorem 1, $f \triangleq g$, and g is worse than the optimal discriminator in $W^1(p_{in}, p_{out})$.

4 Appendix D Detailed Experiments

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.2625	0.2552	0.2552	0.9988
CIFAR-10 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.8077	0.7755	0.7756	0.5685
CIFAR-10 vs Noise	0.8120	0.8979	0.8979	1.0000
CIFAR-10 vs SVHN	0.0113	0.1541	0.1541	0.9999
CIFAR-10 vs iSUN	0.7914	0.7683	0.7684	0.5545
CIFAR-100 vs CelebA	0.2912	0.2874	0.2875	0.9992
CIFAR-100 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.7933	0.7808	0.7808	0.6609
CIFAR-100 vs Noise	0.7571	0.8667	0.8667	1.0000
CIFAR-100 vs SVHN	0.0157	0.1541	0.1542	1.0000
CIFAR-100 vs iSUN	0.7751	0.7688	0.7688	0.6319
CelebA vs CIFAR-10	0.3563	0.5538	0.5538	0.9445
CelebA vs CIFAR-100	0.3943	0.5673	0.5674	0.9100
CelebA vs Constant	0.0000	0.4503	0.4503	1.0000
CelebA vs LSUN	0.7582	0.8007	0.8007	0.5615
CelebA vs Noise	0.5293	0.8071	0.8071	1.0000
CelebA vs SVHN	0.0012	0.2578	0.2578	0.9999
CelebA vs TinyImagenet	0.4525	0.6027	0.6027	0.8843
CelebA vs iSUN	0.7204	0.7773	0.7774	0.5683
Constant vs CIFAR-10	0.8342	0.8686	0.8686	0.9233
Constant vs CIFAR-100	0.9044	0.8981	0.8981	0.4665
Constant vs CelebA	0.8776	0.8748	0.8748	0.8937
Constant vs LSUN	0.8262	0.8610	0.8610	0.8622
Constant vs Noise	0.5041	0.7094	0.7094	1.0000
Constant vs SVHN	0.4682	0.3954	0.3955	0.9986
Constant vs TinyImagenet	0.9766	0.9758	0.9758	0.1035
Constant vs iSUN	0.8959	0.9220	0.9220	0.6016
Constant28 vs FashionMNIST	0.0053	0.3119	0.3119	1.0000
Constant28 vs KMNIST	0.0080	0.3148	0.3148	1.0000
Constant28 vs MNIST	0.0050	0.3118	0.3119	1.0000
Constant28 vs Noise28	0.5475	0.7395	0.7395	1.0000
Constant28 vs NotMNIST	0.0125	0.3097	0.3097	0.9976
Constant28 vs Omniglot	0.0050	0.3545	0.3545	1.0000
FashionMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs KMNIST	0.0830	0.3154	0.3155	1.0000
FashionMNIST vs MNIST	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.0608	0.3138	0.3138	0.9968
FashionMNIST vs Omniglot	0.0005	0.3495	0.3495	1.0000
KMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
KMNIST vs FashionMNIST	0.5176	0.4956	0.4957	0.9359
KMNIST vs MNIST	0.0005	0.3069	0.3069	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.2176	0.3472	0.3472	0.9714
KMNIST vs Omniglot	0.0186	0.3509	0.3509	1.0000
MNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
MNIST vs FashionMNIST	0.9179	0.8975	0.8975	0.2460
MNIST vs KMNIST	0.8494	0.8367	0.8367	0.4494
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.7736	0.7060	0.7060	0.5816
MNIST vs Omniglot	0.1968	0.3886	0.3887	0.9892
Noise vs CIFAR-10	0.0019	0.3072	0.3072	0.9983
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.4954	0.4479	0.4479	0.5261
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.0025	0.3069	0.3069	1.0000
NotMNIST vs FashionMNIST	0.2368	0.3527	0.3528	0.9888
NotMNIST vs KMNIST	0.1037	0.3321	0.3322	0.9995
NotMNIST vs MNIST	0.0000	0.3069	0.3069	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.0000	0.3495	0.3495	1.0000
Omniglot vs Constant28	0.0002	0.2668	0.2669	1.0000
Omniglot vs FashionMNIST	0.9403	0.9222	0.9222	0.2575
Omniglot vs KMNIST	0.9139	0.9018	0.9018	0.3882
Omniglot vs MNIST	0.3969	0.4195	0.4196	1.0000
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.6918	0.6052	0.6053	0.8355
SVHN vs CIFAR-10	0.9251	0.9547	0.9548	0.2770
SVHN vs CIFAR-100	0.9158	0.9438	0.9438	0.2859
SVHN vs CelebA	0.8934	0.9259	0.9259	0.5886
SVHN vs Constant	0.0000	0.5076	0.5076	1.0000
SVHN vs LSUN	0.9884	0.9951	0.9951	0.0545
SVHN vs Noise	0.7951	0.9378	0.9378	1.0000
SVHN vs TinyImagenet	0.9453	0.9702	0.9702	0.2248
SVHN vs iSUN	0.9840	0.9938	0.9938	0.0801
TinyImagenet vs CelebA	0.2307	0.2425	0.2425	0.9996
TinyImagenet vs Constant	0.0000	0.3032	0.3032	1.0000
TinyImagenet vs LSUN	0.7219	0.6950	0.6950	0.7544
TinyImagenet vs Noise	0.7274	0.8476	0.8476	1.0000
TinyImagenet vs SVHN	0.0086	0.1515	0.1516	1.0000
TinyImagenet vs iSUN	0.7151	0.6958	0.6959	0.7091
Average	0.3986	0.5509	0.5510	0.7964

Table 6: The detailed performance for indicator $\log p_{\omega}(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9969	0.9962	0.9962	0.0021
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9985	0.9990	0.9990	0.0003
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9994	0.9984	0.9984	0.0013
CIFAR-10 vs iSUN	0.9979	0.9980	0.9980	0.0019
CIFAR-100 vs CelebA	0.9984	0.9974	0.9974	0.0029
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9988	0.9980	0.9980	0.0038
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9993	0.9978	0.9978	0.0023
CIFAR-100 vs iSUN	0.9996	0.9994	0.9994	0.0013
CelebA vs CIFAR-10	0.9976	0.9970	0.9970	0.0051
CelebA vs CIFAR-100	0.9991	0.9996	0.9996	0.0023
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	1.0000	1.0000	1.0000	0.0000
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	1.0000	1.0000	0.0000
CelebA vs TinyImagenet	0.9992	0.9997	0.9997	0.0002
CelebA vs iSUN	0.9999	1.0000	1.0000	0.0001
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0001
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Omniglot	0.9999	0.9999	0.9999	0.0002
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-10	0.9976	0.9867	0.9867	0.0028
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.5333	0.4649	0.4652	0.4873
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9989	0.9996	0.9996	0.0002
SVHN vs CIFAR-100	0.9986	0.9995	0.9995	0.0005
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9985	0.9995	0.9995	0.0003
SVHN vs iSUN	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs CelebA	0.9984	0.9955	0.9955	0.0057
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9992	0.9976	0.9976	0.0019
TinyImagenet vs iSUN	0.9998	0.9998	0.9998	0.0001
Average	0.9947	0.9937	0.9937	0.0057

Table 7: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6911	0.6042	0.6042	0.9335
CIFAR-10 vs Constant	0.1272	0.3261	0.3262	0.9796
CIFAR-10 vs LSUN	0.9336	0.9182	0.9182	0.2429
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0813	0.1594	0.1594	0.9997
CIFAR-10 vs iSUN	0.9138	0.9004	0.9005	0.2882
CIFAR-100 vs CelebA	0.6420	0.5742	0.5742	0.9728
CIFAR-100 vs Constant	0.1104	0.3232	0.3232	0.9905
CIFAR-100 vs LSUN	0.9251	0.9140	0.9140	0.2849
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0891	0.1649	0.1649	1.0000
CIFAR-100 vs iSUN	0.9071	0.9015	0.9015	0.3280
CelebA vs CIFAR-10	0.7455	0.7874	0.7874	0.6181
CelebA vs CIFAR-100	0.7084	0.7474	0.7474	0.6327
CelebA vs Constant	0.1153	0.4741	0.4741	0.9499
CelebA vs LSUN	0.9762	0.9806	0.9806	0.0782
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1098	0.2713	0.2713	0.9954
CelebA vs TinyImagenet	0.7797	0.8134	0.8134	0.5426
CelebA vs iSUN	0.9707	0.9804	0.9804	0.0993
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9994	0.9994	0.9994	0.0032
Constant28 vs Omniglot	0.9996	0.9997	0.9997	0.0024
FashionMNIST vs Constant28	0.9918	0.9666	0.9667	0.0080
FashionMNIST vs KMNIST	0.4843	0.5098	0.5099	0.9587
FashionMNIST vs MNIST	0.0968	0.3177	0.3177	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8435	0.8373	0.8373	0.5505
FashionMNIST vs Omniglot	0.0609	0.3557	0.3557	1.0000
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9197	0.9053	0.9053	0.3066
KMNIST vs MNIST	0.1667	0.3338	0.3339	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9253	0.8799	0.8800	0.2867
KMNIST vs Omniglot	0.0905	0.3615	0.3615	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9995	0.9994	0.9994	0.0020
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5971	0.5853	0.5854	0.7052
Noise vs CIFAR-10	0.1883	0.3474	0.3474	0.8324
Noise vs CIFAR-100	0.2428	0.3616	0.3617	0.7782
Noise vs CelebA	0.4722	0.2944	0.2944	0.5673
Noise vs Constant	0.4959	0.4480	0.4481	0.5254
Noise vs LSUN	0.1123	0.3294	0.3294	0.9080
Noise vs SVHN	0.2078	0.1840	0.1840	0.8067
Noise vs TinyImagenet	0.2691	0.3728	0.3729	0.7564

Noise vs iSUN	0.0816	0.3457	0.3457	0.9332
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9861	0.9623	0.9624	0.0080
NotMNIST vs FashionMNIST	0.9340	0.9370	0.9370	0.3698
NotMNIST vs KMNIST	0.7911	0.8013	0.8013	0.8417
NotMNIST vs MNIST	0.4329	0.4689	0.4689	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3232	0.4532	0.4532	0.9994
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9993	0.9992	0.9992	0.0033
Omniglot vs KMNIST	0.9821	0.9795	0.9795	0.1071
Omniglot vs MNIST	0.8131	0.7697	0.7697	0.6612
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9915	0.9961	0.9961	0.0375
SVHN vs CIFAR-100	0.9878	0.9944	0.9944	0.0506
SVHN vs CelebA	0.9990	0.9993	0.9993	0.0011
SVHN vs Constant	0.6388	0.7412	0.7412	0.6615
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0010
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9931	0.9969	0.9969	0.0281
SVHN vs iSUN	0.9995	0.9998	0.9998	0.0015
TinyImagenet vs CelebA	0.5599	0.4693	0.4693	0.9853
TinyImagenet vs Constant	0.0639	0.3100	0.3100	0.9980
TinyImagenet vs LSUN	0.9095	0.8893	0.8894	0.3165
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0575	0.1550	0.1550	1.0000
TinyImagenet vs iSUN	0.8872	0.8723	0.8724	0.3638
Average	0.6941	0.7422	0.7422	0.4118

Table 8: The detailed performance for indicator $\log p_\theta(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5151	0.3559	0.3560	0.9899
CIFAR-10 vs Constant	0.8433	0.7850	0.7850	0.4125
CIFAR-10 vs LSUN	0.8791	0.8499	0.8500	0.4222
CIFAR-10 vs Noise	0.9997	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.8528	0.6387	0.6388	0.4863
CIFAR-10 vs iSUN	0.8589	0.8365	0.8366	0.4530
CIFAR-100 vs CelebA	0.4486	0.3183	0.3184	0.9978
CIFAR-100 vs Constant	0.8439	0.7861	0.7861	0.4262
CIFAR-100 vs LSUN	0.8593	0.8343	0.8344	0.5251
CIFAR-100 vs Noise	0.9995	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.8317	0.6166	0.6167	0.5686
CIFAR-100 vs iSUN	0.8378	0.8180	0.8180	0.5433
CelebA vs CIFAR-10	0.7329	0.8054	0.8054	0.6908
CelebA vs CIFAR-100	0.7391	0.8087	0.8088	0.6645
CelebA vs Constant	0.9074	0.9235	0.9235	0.2352
CelebA vs LSUN	0.9651	0.9720	0.9720	0.1113
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.8395	0.7338	0.7339	0.4360
CelebA vs TinyImagenet	0.7676	0.8307	0.8308	0.6082
CelebA vs iSUN	0.9548	0.9676	0.9676	0.1364
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9994	0.9993	0.9993	0.0032
Constant28 vs Omniglot	0.9994	0.9993	0.9993	0.0024
FashionMNIST vs Constant28	0.9987	0.9986	0.9986	0.0030
FashionMNIST vs KMNIST	0.4721	0.4832	0.4833	0.9652
FashionMNIST vs MNIST	0.7854	0.8218	0.8218	0.8282
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7542	0.6836	0.6836	0.6056
FashionMNIST vs Omniglot	0.8551	0.8760	0.8761	0.6362
KMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
KMNIST vs FashionMNIST	0.8749	0.8254	0.8255	0.3101
KMNIST vs MNIST	0.6603	0.6464	0.6465	0.8964
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9053	0.8669	0.8669	0.2784
KMNIST vs Omniglot	0.7950	0.8080	0.8080	0.7444
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0001
MNIST vs KMNIST	0.9990	0.9987	0.9987	0.0038
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6590	0.6543	0.6544	0.7275
Noise vs CIFAR-10	0.9793	0.9644	0.9644	0.0518
Noise vs CIFAR-100	0.9784	0.9608	0.9608	0.0519
Noise vs CelebA	0.9631	0.8839	0.8839	0.0887
Noise vs Constant	0.9785	0.9619	0.9619	0.0516
Noise vs LSUN	0.9799	0.9644	0.9644	0.0487
Noise vs SVHN	0.9851	0.9300	0.9301	0.0335
Noise vs TinyImagenet	0.9756	0.9566	0.9566	0.0592

Noise vs iSUN	0.9843	0.9758	0.9758	0.0385
Noise28 vs Constant28	0.9837	0.9734	0.9734	0.0427
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9928	0.9948	0.9948	0.0091
NotMNIST vs FashionMNIST	0.8521	0.8174	0.8174	0.4474
NotMNIST vs KMNIST	0.5928	0.5661	0.5662	0.9119
NotMNIST vs MNIST	0.4594	0.4779	0.4780	0.9997
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.5951	0.6381	0.6382	0.9818
Omniglot vs Constant28	1.0000	0.9999	0.9999	0.0000
Omniglot vs FashionMNIST	0.9990	0.9987	0.9987	0.0041
Omniglot vs KMNIST	0.9710	0.9593	0.9593	0.1375
Omniglot vs MNIST	0.7268	0.6305	0.6306	0.7189
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9802	0.9884	0.9884	0.0642
SVHN vs CIFAR-100	0.9713	0.9827	0.9827	0.0858
SVHN vs CelebA	0.9986	0.9989	0.9989	0.0038
SVHN vs Constant	0.7101	0.8213	0.8213	0.6026
SVHN vs LSUN	0.9994	0.9997	0.9997	0.0018
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9846	0.9916	0.9916	0.0512
SVHN vs iSUN	0.9992	0.9997	0.9997	0.0019
TinyImagenet vs CelebA	0.4018	0.2844	0.2845	0.9962
TinyImagenet vs Constant	0.8775	0.8244	0.8245	0.3070
TinyImagenet vs LSUN	0.8547	0.8147	0.8148	0.4862
TinyImagenet vs Noise	0.9998	0.9999	0.9999	0.0000
TinyImagenet vs SVHN	0.8835	0.6957	0.6958	0.3964
TinyImagenet vs iSUN	0.8313	0.8022	0.8023	0.5097
Average	0.9013	0.8848	0.8848	0.2489

Table 9: The detailed performance for indicator p_S based on model VAE

let μ, σ be the $\mathbb{E}_{p_{in}} \log p_{\theta}(x)$ and $Var_{p_{in}} \log p_{\theta}(x)$. $p_S(x) = p_{\mathcal{N}(\mu, \sigma)}(\log p_{\theta}(x))$.

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4225	0.3556	0.3556	0.9934
CIFAR-10 vs Constant	0.0003	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.8995	0.8784	0.8784	0.3507
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0215	0.1545	0.1545	0.9998
CIFAR-10 vs iSUN	0.8849	0.8700	0.8700	0.3731
CIFAR-100 vs CelebA	0.4289	0.3858	0.3858	0.9968
CIFAR-100 vs Constant	0.0003	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.8869	0.8737	0.8737	0.4182
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0251	0.1544	0.1545	0.9999
CIFAR-100 vs iSUN	0.8716	0.8671	0.8672	0.4354
CelebA vs CIFAR-10	0.5670	0.6615	0.6616	0.8297
CelebA vs CIFAR-100	0.5672	0.6558	0.6559	0.7927
CelebA vs Constant	0.0002	0.4503	0.4503	1.0000
CelebA vs LSUN	0.9488	0.9570	0.9570	0.1598
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0101	0.2585	0.2585	0.9996
CelebA vs TinyImagenet	0.6545	0.7204	0.7205	0.7136
CelebA vs iSUN	0.9446	0.9629	0.9629	0.1786
Constant vs CIFAR-10	0.9992	0.9984	0.9984	0.0026
Constant vs CIFAR-100	0.9981	0.9971	0.9971	0.0067
Constant vs CelebA	1.0000	1.0000	1.0000	0.0001
Constant vs LSUN	1.0000	1.0000	1.0000	0.0001
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9554	0.9063	0.9063	0.2252
Constant vs TinyImagenet	0.9998	0.9996	0.9996	0.0010
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.8918	0.8888	0.8888	0.3090
Constant28 vs KMNIST	0.7790	0.8115	0.8115	0.6798
Constant28 vs MNIST	0.2920	0.3933	0.3934	1.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9295	0.8944	0.8945	0.3383
Constant28 vs Omniglot	0.1768	0.3836	0.3836	1.0000
FashionMNIST vs Constant28	0.0023	0.3069	0.3069	1.0000
FashionMNIST vs KMNIST	0.1911	0.3420	0.3421	0.9994
FashionMNIST vs MNIST	0.0119	0.3071	0.3071	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.2275	0.3541	0.3541	0.9867
FashionMNIST vs Omniglot	0.0134	0.3502	0.3502	1.0000
KMNIST vs Constant28	0.8211	0.6687	0.6687	0.2306
KMNIST vs FashionMNIST	0.7985	0.7663	0.7663	0.5586
KMNIST vs MNIST	0.0612	0.3118	0.3118	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.4879	0.4894	0.4895	0.9253
KMNIST vs Omniglot	0.0578	0.3559	0.3560	1.0000
MNIST vs Constant28	0.6213	0.5940	0.5940	0.6274
MNIST vs FashionMNIST	0.9909	0.9882	0.9882	0.0341
MNIST vs KMNIST	0.9440	0.9348	0.9348	0.2004
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9297	0.8740	0.8741	0.1986
MNIST vs Omniglot	0.4091	0.4779	0.4780	0.9120
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.2877	0.3750	0.3751	1.0000
NotMNIST vs FashionMNIST	0.7955	0.7737	0.7737	0.7180
NotMNIST vs KMNIST	0.5086	0.5170	0.5171	0.9788
NotMNIST vs MNIST	0.0447	0.3229	0.3229	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.0721	0.3686	0.3687	1.0000
Omniglot vs Constant28	0.5947	0.5598	0.5598	0.9119
Omniglot vs FashionMNIST	0.9861	0.9822	0.9822	0.0730
Omniglot vs KMNIST	0.9412	0.9334	0.9334	0.2991
Omniglot vs MNIST	0.5811	0.5502	0.5502	0.9930
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9269	0.8627	0.8628	0.2819
SVHN vs CIFAR-10	0.9802	0.9908	0.9908	0.0882
SVHN vs CIFAR-100	0.9737	0.9867	0.9867	0.1144
SVHN vs CelebA	0.9914	0.9944	0.9944	0.0232
SVHN vs Constant	0.0686	0.5205	0.5205	0.9998
SVHN vs LSUN	0.9988	0.9995	0.9995	0.0040
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9853	0.9930	0.9930	0.0645
SVHN vs iSUN	0.9982	0.9994	0.9994	0.0064
TinyImagenet vs CelebA	0.3474	0.3026	0.3027	0.9982
TinyImagenet vs Constant	0.0001	0.3032	0.3032	1.0000
TinyImagenet vs LSUN	0.8566	0.8312	0.8312	0.4862
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0150	0.1519	0.1519	0.9999
TinyImagenet vs iSUN	0.8448	0.8289	0.8289	0.4841
Average	0.5491	0.6463	0.6463	0.5761

Table 10: The detailed performance for indicator $\log p_\gamma(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9925	0.9837	0.9837	0.0206
CIFAR-10 vs Constant	0.9988	0.9973	0.9973	0.0035
CIFAR-10 vs LSUN	0.9749	0.9798	0.9798	0.0851
CIFAR-10 vs Noise	0.9977	0.9989	0.9989	0.0000
CIFAR-10 vs SVHN	0.9960	0.9852	0.9852	0.0123
CIFAR-10 vs iSUN	0.9696	0.9685	0.9685	0.1017
CIFAR-100 vs CelebA	0.9942	0.9873	0.9873	0.0200
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9899	0.9864	0.9864	0.0326
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9832	0.9287	0.9287	0.0405
CIFAR-100 vs iSUN	0.9886	0.9873	0.9873	0.0398
CelebA vs CIFAR-10	0.9817	0.9803	0.9804	0.0454
CelebA vs CIFAR-100	0.9789	0.9759	0.9759	0.0510
CelebA vs Constant	0.9954	0.9915	0.9915	0.0079
CelebA vs LSUN	0.9979	0.9974	0.9974	0.0048
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9973	0.9922	0.9922	0.0062
CelebA vs TinyImagenet	0.9911	0.9925	0.9925	0.0248
CelebA vs iSUN	0.9925	0.9922	0.9922	0.0174
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9965	0.9910	0.9910	0.0050
FashionMNIST vs KMNIST	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs MNIST	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs Noise28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Omniglot	0.9997	0.9998	0.9998	0.0000
KMNIST vs Constant28	0.2449	0.3604	0.3605	0.7939
KMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs MNIST	0.9827	0.9549	0.9550	0.0324
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9998	0.9988	0.9989	0.0003
KMNIST vs Omniglot	0.9871	0.9922	0.9922	0.0242
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9967	0.9977	0.9977	0.0024
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	0.9991	0.9995	0.9995	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	0.9950	0.9687	0.9687	0.0050
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9998	0.9998	0.9998	0.0000
Omniglot vs MNIST	0.9991	0.9987	0.9987	0.0013
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9978	0.9989	0.9989	0.0056
SVHN vs CIFAR-100	0.9950	0.9973	0.9973	0.0155
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0002
SVHN vs Constant	0.9831	0.9860	0.9860	0.0335
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9968	0.9984	0.9984	0.0088
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0001
TinyImagenet vs CelebA	0.9898	0.9729	0.9729	0.0350
TinyImagenet vs Constant	0.9984	0.9974	0.9974	0.0050
TinyImagenet vs LSUN	0.9918	0.9891	0.9891	0.0313
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9887	0.9529	0.9529	0.0305
TinyImagenet vs iSUN	0.9674	0.9575	0.9575	0.1017
Average	0.9883	0.9871	0.9871	0.0179

Table 11: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9877	0.9753	0.9753	0.0408
CIFAR-10 vs Constant	0.9995	0.9991	0.9991	0.0016
CIFAR-10 vs LSUN	0.9760	0.9781	0.9781	0.0901
CIFAR-10 vs Noise	0.9999	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9949	0.9823	0.9823	0.0167
CIFAR-10 vs iSUN	0.9624	0.9593	0.9593	0.1398
CIFAR-100 vs CelebA	0.9860	0.9727	0.9727	0.0575
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9815	0.9776	0.9776	0.0684
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9873	0.9522	0.9522	0.0391
CIFAR-100 vs iSUN	0.9768	0.9767	0.9767	0.0988
CelebA vs CIFAR-10	0.9759	0.9811	0.9811	0.0909
CelebA vs CIFAR-100	0.9762	0.9825	0.9825	0.1050
CelebA vs Constant	0.9995	0.9995	0.9995	0.0013
CelebA vs LSUN	0.9977	0.9980	0.9981	0.0096
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9989	0.9973	0.9973	0.0033
CelebA vs TinyImagenet	0.9858	0.9927	0.9927	0.0729
CelebA vs iSUN	0.9897	0.9910	0.9910	0.0289
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9983	0.9967	0.9967	0.0043
FashionMNIST vs KMNIST	0.9996	0.9997	0.9997	0.0000
FashionMNIST vs MNIST	0.9997	0.9998	0.9998	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Omniglot	0.9992	0.9995	0.9995	0.0000
KMNIST vs Constant28	0.2611	0.3643	0.3643	0.7853
KMNIST vs FashionMNIST	0.9986	0.9987	0.9987	0.0040
KMNIST vs MNIST	0.9762	0.9788	0.9788	0.0875
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9997	0.9988	0.9988	0.0004
KMNIST vs Omniglot	0.9560	0.9730	0.9730	0.2745
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9635	0.9740	0.9740	0.2660
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs FashionMNIST	0.9997	0.9998	0.9998	0.0000
NotMNIST vs KMNIST	0.9994	0.9995	0.9995	0.0001
NotMNIST vs MNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9997	0.9998	0.9998	0.0000
Omniglot vs Constant28	0.9951	0.9753	0.9753	0.0050
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9984	0.9981	0.9981	0.0042
Omniglot vs MNIST	0.9864	0.9841	0.9841	0.0672
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9982	0.9991	0.9991	0.0043
SVHN vs CIFAR-100	0.9963	0.9980	0.9980	0.0109
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.9878	0.9891	0.9892	0.0262
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9977	0.9989	0.9989	0.0062
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0001
TinyImagenet vs CelebA	0.9774	0.9511	0.9511	0.1023
TinyImagenet vs Constant	0.9998	0.9998	0.9998	0.0006
TinyImagenet vs LSUN	0.9842	0.9815	0.9815	0.0722
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9899	0.9599	0.9599	0.0302
TinyImagenet vs iSUN	0.9559	0.9473	0.9473	0.1553
Average	0.9868	0.9864	0.9864	0.0302

Table 12: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5076	0.3442	0.3443	0.9666
CIFAR-10 vs Constant	0.8328	0.7869	0.7870	0.5161
CIFAR-10 vs LSUN	0.8974	0.8534	0.8534	0.3011
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.8357	0.6530	0.6531	0.6588
CIFAR-10 vs iSUN	0.8756	0.8409	0.8409	0.3489
CIFAR-100 vs CelebA	0.4341	0.3035	0.3036	0.9879
CIFAR-100 vs Constant	0.8275	0.7879	0.7879	0.5692
CIFAR-100 vs LSUN	0.8813	0.8380	0.8380	0.3579
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8105	0.6380	0.6382	0.7723
CIFAR-100 vs iSUN	0.8582	0.8234	0.8234	0.3913
CelebA vs CIFAR-10	0.7346	0.8072	0.8072	0.6687
CelebA vs CIFAR-100	0.7406	0.8086	0.8086	0.6505
CelebA vs Constant	0.9060	0.9236	0.9236	0.2461
CelebA vs LSUN	0.9665	0.9728	0.9728	0.1031
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.8369	0.7335	0.7336	0.4564
CelebA vs TinyImagenet	0.7696	0.8314	0.8314	0.5912
CelebA vs iSUN	0.9562	0.9674	0.9674	0.1285
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	0.9999	0.0000
Constant vs LSUN	0.9999	1.0000	0.9999	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	0.9999	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9990	0.9989	0.9989	0.0067
Constant28 vs Omniglot	0.9992	0.9992	0.9992	0.0036
FashionMNIST vs Constant28	0.9983	0.9982	0.9982	0.0031
FashionMNIST vs KMNIST	0.4702	0.4833	0.4834	0.9715
FashionMNIST vs MNIST	0.7881	0.8143	0.8143	0.7318
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7504	0.6859	0.6859	0.6851
FashionMNIST vs Omniglot	0.8677	0.8774	0.8774	0.4840
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.8734	0.8325	0.8325	0.3352
KMNIST vs MNIST	0.6679	0.6372	0.6373	0.7964
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9004	0.8657	0.8658	0.3265
KMNIST vs Omniglot	0.8154	0.8092	0.8092	0.5679
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9992	0.9988	0.9988	0.0029
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6616	0.6562	0.6564	0.7058
Noise vs CIFAR-10	0.9793	0.9644	0.9644	0.0516
Noise vs CIFAR-100	0.9784	0.9610	0.9610	0.0520
Noise vs CelebA	0.9631	0.8838	0.8838	0.0886
Noise vs Constant	0.9785	0.9619	0.9618	0.0516
Noise vs LSUN	0.9799	0.9644	0.9644	0.0486
Noise vs SVHN	0.9851	0.9301	0.9301	0.0334
Noise vs TinyImagenet	0.9756	0.9563	0.9563	0.0591

Noise vs iSUN	0.9843	0.9758	0.9758	0.0385
Noise28 vs Constant28	0.9836	0.9734	0.9733	0.0427
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9744	0.9832	0.9832	0.0873
NotMNIST vs FashionMNIST	0.8415	0.8423	0.8423	0.6528
NotMNIST vs KMNIST	0.6132	0.6048	0.6049	0.9890
NotMNIST vs MNIST	0.4692	0.4845	0.4846	0.9268
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.5908	0.6197	0.6198	0.8900
Omniglot vs Constant28	0.9998	0.9999	0.9998	0.0000
Omniglot vs FashionMNIST	0.9987	0.9984	0.9983	0.0051
Omniglot vs KMNIST	0.9676	0.9568	0.9567	0.1633
Omniglot vs MNIST	0.7213	0.6341	0.6342	0.7588
Omniglot vs Noise28	0.9998	0.9999	0.9997	0.0000
Omniglot vs NotMNIST	0.9998	0.9999	0.9997	0.0000
SVHN vs CIFAR-10	0.9791	0.9879	0.9879	0.0687
SVHN vs CIFAR-100	0.9704	0.9822	0.9822	0.0901
SVHN vs CelebA	0.9981	0.9985	0.9985	0.0045
SVHN vs Constant	0.7109	0.8222	0.8222	0.6053
SVHN vs LSUN	0.9993	0.9997	0.9997	0.0018
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9838	0.9913	0.9913	0.0539
SVHN vs iSUN	0.9991	0.9996	0.9996	0.0020
TinyImagenet vs CelebA	0.3933	0.2792	0.2793	0.9917
TinyImagenet vs Constant	0.8673	0.8344	0.8344	0.4160
TinyImagenet vs LSUN	0.8704	0.8188	0.8189	0.3718
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.8615	0.7083	0.7084	0.5913
TinyImagenet vs iSUN	0.8453	0.8058	0.8058	0.4132
Average	0.9013	0.8858	0.8858	0.2487

Table 13: The detailed performance for indicator $T_{perm}(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5336	0.4219	0.4219	0.9859
CIFAR-10 vs Constant	0.0966	0.3185	0.3185	1.0000
CIFAR-10 vs LSUN	0.8274	0.8005	0.8005	0.5215
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.1018	0.1600	0.1600	1.0000
CIFAR-10 vs iSUN	0.8292	0.8217	0.8217	0.5083
CIFAR-100 vs CelebA	0.5586	0.4486	0.4487	0.9909
CIFAR-100 vs Constant	0.0410	0.3097	0.3098	1.0000
CIFAR-100 vs LSUN	0.7813	0.7581	0.7581	0.6186
CIFAR-100 vs Noise	0.9996	0.9997	0.9997	0.0000
CIFAR-100 vs SVHN	0.1304	0.1677	0.1677	1.0000
CIFAR-100 vs iSUN	0.7809	0.7756	0.7757	0.5965
CelebA vs CIFAR-10	0.5456	0.6641	0.6642	0.8349
CelebA vs CIFAR-100	0.5386	0.6499	0.6499	0.8119
CelebA vs Constant	0.0521	0.4580	0.4580	1.0000
CelebA vs LSUN	0.8702	0.8979	0.8979	0.3263
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0963	0.2670	0.2670	0.9992
CelebA vs TinyImagenet	0.6280	0.7195	0.7196	0.7362
CelebA vs iSUN	0.8739	0.9155	0.9155	0.3199
Constant vs CIFAR-10	0.7938	0.7182	0.7182	0.6612
Constant vs CIFAR-100	0.7571	0.6637	0.6638	0.6891
Constant vs CelebA	0.8156	0.5836	0.5836	0.5805
Constant vs LSUN	0.5277	0.4981	0.4982	0.9125
Constant vs Noise	0.8882	0.9218	0.9218	0.7721
Constant vs SVHN	0.7014	0.3954	0.3955	0.7517
Constant vs TinyImagenet	0.8328	0.7757	0.7758	0.6056
Constant vs iSUN	0.5818	0.5707	0.5708	0.8781
Constant28 vs FashionMNIST	0.2237	0.3505	0.3505	0.9868
Constant28 vs KMNIST	0.0795	0.3175	0.3176	0.9957
Constant28 vs MNIST	0.3397	0.3855	0.3856	0.8833
Constant28 vs Noise28	0.7994	0.8413	0.8414	0.8649
Constant28 vs NotMNIST	0.0230	0.3089	0.3090	1.0000
Constant28 vs Omniglot	0.2924	0.4173	0.4173	0.9287
FashionMNIST vs Constant28	0.0018	0.3071	0.3071	1.0000
FashionMNIST vs KMNIST	0.6651	0.6926	0.6927	0.9595
FashionMNIST vs MNIST	0.8267	0.8720	0.8720	0.9110
FashionMNIST vs Noise28	0.9692	0.9725	0.9725	0.1594
FashionMNIST vs NotMNIST	0.1322	0.3252	0.3252	0.9984
FashionMNIST vs Omniglot	0.7767	0.8329	0.8330	0.9022
KMNIST vs Constant28	0.9309	0.8188	0.8189	0.0892
KMNIST vs FashionMNIST	0.2891	0.3682	0.3683	0.8865
KMNIST vs MNIST	0.4349	0.5011	0.5011	0.9913
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.0431	0.3133	0.3133	0.9795
KMNIST vs Omniglot	0.4279	0.5562	0.5562	0.9921
MNIST vs Constant28	0.3779	0.4071	0.4072	0.9950
MNIST vs FashionMNIST	0.4415	0.4390	0.4391	0.9891
MNIST vs KMNIST	0.1007	0.3223	0.3224	0.9981
MNIST vs Noise28	0.1071	0.3216	0.3216	1.0000
MNIST vs NotMNIST	0.0081	0.3078	0.3079	1.0000
MNIST vs Omniglot	0.7910	0.8130	0.8131	0.8108
Noise vs CIFAR-10	0.4963	0.4971	0.4972	0.9520
Noise vs CIFAR-100	0.4922	0.4936	0.4936	0.9539
Noise vs CelebA	0.4924	0.3302	0.3303	0.9551
Noise vs Constant	0.5000	0.5009	0.5010	0.9456
Noise vs LSUN	0.4936	0.4952	0.4954	0.9486
Noise vs SVHN	0.5034	0.2786	0.2786	0.9498
Noise vs TinyImagenet	0.4891	0.4993	0.4995	0.9567

Noise vs iSUN	0.4956	0.5225	0.5226	0.9495
Noise28 vs Constant28	0.4935	0.4957	0.4959	0.9530
Noise28 vs FashionMNIST	0.4783	0.4859	0.4860	0.9595
Noise28 vs KMNIST	0.4805	0.4872	0.4873	0.9592
Noise28 vs MNIST	0.4687	0.4785	0.4787	0.9635
Noise28 vs NotMNIST	0.4700	0.4793	0.4794	0.9588
Noise28 vs Omniglot	0.4673	0.5300	0.5301	0.9616
NotMNIST vs Constant28	0.8636	0.7373	0.7373	0.2840
NotMNIST vs FashionMNIST	0.6629	0.6416	0.6417	0.8859
NotMNIST vs KMNIST	0.6192	0.6431	0.6431	0.9799
NotMNIST vs MNIST	0.6716	0.7225	0.7225	0.9883
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.6318	0.7130	0.7131	0.9866
Omniglot vs Constant28	0.0057	0.2677	0.2678	0.9950
Omniglot vs FashionMNIST	0.0972	0.2765	0.2766	1.0000
Omniglot vs KMNIST	0.1658	0.2900	0.2900	0.9997
Omniglot vs MNIST	0.6290	0.5701	0.5702	0.9468
Omniglot vs Noise28	0.0266	0.2677	0.2678	1.0000
Omniglot vs NotMNIST	0.0023	0.2669	0.2669	1.0000
SVHN vs CIFAR-10	0.9617	0.9837	0.9837	0.1903
SVHN vs CIFAR-100	0.9583	0.9822	0.9822	0.2082
SVHN vs CelebA	0.9907	0.9935	0.9935	0.0437
SVHN vs Constant	0.1982	0.5537	0.5537	0.9739
SVHN vs LSUN	0.9889	0.9955	0.9955	0.0621
SVHN vs Noise	0.9946	0.9977	0.9977	0.0270
SVHN vs TinyImagenet	0.9674	0.9862	0.9862	0.1593
SVHN vs iSUN	0.9824	0.9934	0.9934	0.0918
TinyImagenet vs CelebA	0.4685	0.3576	0.3577	0.9951
TinyImagenet vs Constant	0.0196	0.3040	0.3041	1.0000
TinyImagenet vs LSUN	0.7565	0.7263	0.7264	0.6660
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0781	0.1552	0.1553	1.0000
TinyImagenet vs iSUN	0.7643	0.7501	0.7502	0.6338
Average	0.5390	0.5894	0.5894	0.7490

Table 14: The detailed performance for indicator $\|\nabla_x \log p_\theta(x)\|$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6870	0.6019	0.6019	0.9382
CIFAR-10 vs Constant	0.1359	0.3279	0.3279	0.9793
CIFAR-10 vs LSUN	0.9355	0.9210	0.9210	0.2363
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0808	0.1600	0.1600	0.9997
CIFAR-10 vs iSUN	0.9166	0.9041	0.9041	0.2806
CIFAR-100 vs CelebA	0.6373	0.5700	0.5700	0.9748
CIFAR-100 vs Constant	0.1308	0.3280	0.3281	0.9850
CIFAR-100 vs LSUN	0.9269	0.9165	0.9165	0.2785
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0876	0.1659	0.1659	1.0000
CIFAR-100 vs iSUN	0.9098	0.9048	0.9048	0.3203
CelebA vs CIFAR-10	0.7419	0.7855	0.7856	0.6236
CelebA vs CIFAR-100	0.7040	0.7437	0.7438	0.6371
CelebA vs Constant	0.1287	0.4771	0.4772	0.9461
CelebA vs LSUN	0.9764	0.9808	0.9808	0.0784
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1080	0.2708	0.2708	0.9964
CelebA vs TinyImagenet	0.7777	0.8123	0.8124	0.5417
CelebA vs iSUN	0.9717	0.9815	0.9815	0.0969
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0001
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9994	0.9993	0.9993	0.0056
Constant28 vs Omniglot	0.9984	0.9981	0.9981	0.0050
FashionMNIST vs Constant28	0.9926	0.9686	0.9686	0.0080
FashionMNIST vs KMNIST	0.4659	0.4947	0.4947	0.9650
FashionMNIST vs MNIST	0.0811	0.3147	0.3148	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8164	0.8117	0.8117	0.6227
FashionMNIST vs Omniglot	0.0564	0.3550	0.3551	1.0000
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9315	0.9189	0.9189	0.2780
KMNIST vs MNIST	0.1731	0.3355	0.3355	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9227	0.8724	0.8725	0.2796
KMNIST vs Omniglot	0.0867	0.3608	0.3608	0.9999
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9996	0.9995	0.9995	0.0015
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5895	0.5773	0.5774	0.7087
Noise vs CIFAR-10	0.1883	0.3474	0.3474	0.8325
Noise vs CIFAR-100	0.2428	0.3616	0.3617	0.7782
Noise vs CelebA	0.4722	0.2944	0.2944	0.5673
Noise vs Constant	0.4959	0.4480	0.4481	0.5254
Noise vs LSUN	0.1123	0.3294	0.3294	0.9080
Noise vs SVHN	0.2078	0.1840	0.1840	0.8068
Noise vs TinyImagenet	0.2691	0.3728	0.3729	0.7563

Noise vs iSUN	0.0816	0.3457	0.3457	0.9332
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9874	0.9634	0.9635	0.0080
NotMNIST vs FashionMNIST	0.9393	0.9411	0.9411	0.3451
NotMNIST vs KMNIST	0.7832	0.7910	0.7910	0.8430
NotMNIST vs MNIST	0.4225	0.4641	0.4642	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3097	0.4479	0.4480	0.9994
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9997	0.9996	0.9996	0.0012
Omniglot vs KMNIST	0.9839	0.9817	0.9817	0.0973
Omniglot vs MNIST	0.8100	0.7608	0.7608	0.6538
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9914	0.9960	0.9960	0.0379
SVHN vs CIFAR-100	0.9862	0.9934	0.9934	0.0581
SVHN vs CelebA	0.9989	0.9993	0.9993	0.0014
SVHN vs Constant	0.6472	0.7484	0.7484	0.6642
SVHN vs LSUN	0.9998	0.9999	0.9999	0.0009
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9929	0.9968	0.9968	0.0298
SVHN vs iSUN	0.9996	0.9999	0.9999	0.0012
TinyImagenet vs CelebA	0.5527	0.4619	0.4620	0.9871
TinyImagenet vs Constant	0.0964	0.3158	0.3159	0.9970
TinyImagenet vs LSUN	0.9118	0.8924	0.8924	0.3135
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0564	0.1552	0.1552	1.0000
TinyImagenet vs iSUN	0.8910	0.8775	0.8775	0.3566
Average	0.6939	0.7417	0.7417	0.4116

Table 15: The detailed performance for indicator Recon based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6972	0.6122	0.6122	0.9306
CIFAR-10 vs Constant	0.1385	0.3284	0.3285	0.9776
CIFAR-10 vs LSUN	0.9347	0.9195	0.9195	0.2394
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0835	0.1602	0.1602	0.9997
CIFAR-10 vs iSUN	0.9145	0.9010	0.9010	0.2863
CIFAR-100 vs CelebA	0.6442	0.5748	0.5748	0.9720
CIFAR-100 vs Constant	0.1301	0.3277	0.3278	0.9840
CIFAR-100 vs LSUN	0.9262	0.9153	0.9153	0.2807
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0891	0.1657	0.1657	0.9999
CIFAR-100 vs iSUN	0.9080	0.9025	0.9025	0.3259
CelebA vs CIFAR-10	0.7509	0.7928	0.7929	0.6142
CelebA vs CIFAR-100	0.7132	0.7514	0.7515	0.6290
CelebA vs Constant	0.1292	0.4773	0.4773	0.9449
CelebA vs LSUN	0.9771	0.9813	0.9813	0.0762
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1136	0.2719	0.2719	0.9952
CelebA vs TinyImagenet	0.7833	0.8170	0.8171	0.5371
CelebA vs iSUN	0.9718	0.9814	0.9814	0.0977
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9996	0.9996	0.9996	0.0027
Constant28 vs Omniglot	0.9989	0.9990	0.9990	0.0053
FashionMNIST vs Constant28	0.9928	0.9696	0.9697	0.0080
FashionMNIST vs KMNIST	0.4912	0.5153	0.5154	0.9552
FashionMNIST vs MNIST	0.0981	0.3179	0.3180	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8623	0.8621	0.8621	0.4871
FashionMNIST vs Omniglot	0.0636	0.3561	0.3561	1.0000
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9188	0.9048	0.9048	0.3094
KMNIST vs MNIST	0.1669	0.3339	0.3339	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9297	0.8851	0.8851	0.2704
KMNIST vs Omniglot	0.0924	0.3618	0.3619	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9996	0.9995	0.9995	0.0018
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6059	0.5916	0.5917	0.6958
Noise vs CIFAR-10	0.1883	0.3474	0.3474	0.8324
Noise vs CIFAR-100	0.2428	0.3616	0.3617	0.7782
Noise vs CelebA	0.4722	0.2944	0.2944	0.5673
Noise vs Constant	0.4959	0.4480	0.4481	0.5255
Noise vs LSUN	0.1123	0.3294	0.3294	0.9080
Noise vs SVHN	0.2078	0.1840	0.1840	0.8068
Noise vs TinyImagenet	0.2691	0.3728	0.3729	0.7564

Noise vs iSUN	0.0816	0.3457	0.3457	0.9332
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9872	0.9631	0.9631	0.0080
NotMNIST vs FashionMNIST	0.9320	0.9342	0.9342	0.3728
NotMNIST vs KMNIST	0.7825	0.7910	0.7910	0.8450
NotMNIST vs MNIST	0.4150	0.4588	0.4589	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3101	0.4472	0.4472	0.9995
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9995	0.9994	0.9994	0.0022
Omniglot vs KMNIST	0.9833	0.9810	0.9810	0.1013
Omniglot vs MNIST	0.8108	0.7690	0.7690	0.6658
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9917	0.9963	0.9963	0.0365
SVHN vs CIFAR-100	0.9881	0.9946	0.9946	0.0496
SVHN vs CelebA	0.9990	0.9994	0.9994	0.0010
SVHN vs Constant	0.6652	0.7570	0.7571	0.6320
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0009
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9933	0.9970	0.9970	0.0279
SVHN vs iSUN	0.9995	0.9998	0.9998	0.0015
TinyImagenet vs CelebA	0.5604	0.4687	0.4687	0.9849
TinyImagenet vs Constant	0.0965	0.3159	0.3159	0.9963
TinyImagenet vs LSUN	0.9106	0.8906	0.8906	0.3131
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0578	0.1552	0.1553	1.0000
TinyImagenet vs iSUN	0.8884	0.8739	0.8739	0.3606
Average	0.6957	0.7431	0.7431	0.4099

Table 16: The detailed performance for indicator ELBO based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6658	0.5388	0.5389	0.8713
CIFAR-10 vs Constant	0.5744	0.6016	0.6017	0.8799
CIFAR-10 vs LSUN	0.1444	0.3281	0.3281	0.9976
CIFAR-10 vs Noise	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs SVHN	0.6978	0.5843	0.5843	0.8946
CIFAR-10 vs iSUN	0.1138	0.3450	0.3450	0.9990
CIFAR-100 vs CelebA	0.5965	0.4872	0.4873	0.9299
CIFAR-100 vs Constant	0.4788	0.5732	0.5732	0.9800
CIFAR-100 vs LSUN	0.1393	0.3268	0.3269	0.9988
CIFAR-100 vs Noise	0.0000	0.3069	0.3069	1.0000
CIFAR-100 vs SVHN	0.6935	0.6053	0.6054	0.9047
CIFAR-100 vs iSUN	0.1139	0.3450	0.3450	0.9994
CelebA vs CIFAR-10	0.6351	0.7024	0.7024	0.7581
CelebA vs CIFAR-100	0.6184	0.6890	0.6890	0.7521
CelebA vs Constant	0.5346	0.6823	0.6823	0.9060
CelebA vs LSUN	0.2126	0.4996	0.4996	0.9693
CelebA vs Noise	0.0000	0.4503	0.4503	1.0000
CelebA vs SVHN	0.6985	0.6902	0.6902	0.8592
CelebA vs TinyImagenet	0.5389	0.6451	0.6451	0.8408
CelebA vs iSUN	0.1656	0.5118	0.5119	0.9833
Constant vs CIFAR-10	0.3031	0.3846	0.3846	0.9915
Constant vs CIFAR-100	0.3434	0.3982	0.3983	0.9780
Constant vs CelebA	0.3642	0.2650	0.2651	0.9959
Constant vs LSUN	0.3355	0.4074	0.4075	0.9910
Constant vs Noise	0.4114	0.4983	0.4984	1.0000
Constant vs SVHN	0.2910	0.1901	0.1902	0.9848
Constant vs TinyImagenet	0.3072	0.3891	0.3891	0.9878
Constant vs iSUN	0.3011	0.4170	0.4171	0.9964
Constant28 vs FashionMNIST	0.9667	0.9736	0.9736	0.2309
Constant28 vs KMNIST	0.9696	0.9766	0.9766	0.2025
Constant28 vs MNIST	0.9853	0.9898	0.9898	0.0012
Constant28 vs Noise28	0.8392	0.8845	0.8845	0.7475
Constant28 vs NotMNIST	0.8349	0.8653	0.8653	0.6305
Constant28 vs Omniglot	0.9859	0.9911	0.9911	0.0228
FashionMNIST vs Constant28	0.7328	0.7186	0.7186	0.8641
FashionMNIST vs KMNIST	0.7991	0.7864	0.7864	0.5835
FashionMNIST vs MNIST	0.5512	0.5846	0.5846	0.9681
FashionMNIST vs Noise28	0.0679	0.3157	0.3158	1.0000
FashionMNIST vs NotMNIST	0.9891	0.9858	0.9858	0.0400
FashionMNIST vs Omniglot	0.3232	0.4493	0.4494	0.9952
KMNIST vs Constant28	0.8611	0.7484	0.7484	0.2919
KMNIST vs FashionMNIST	0.5232	0.5512	0.5512	0.9970
KMNIST vs MNIST	0.1467	0.3301	0.3301	1.0000
KMNIST vs Noise28	0.9428	0.9673	0.9673	0.6418
KMNIST vs NotMNIST	0.9343	0.9388	0.9388	0.3463
KMNIST vs Omniglot	0.1672	0.3796	0.3796	0.9994
MNIST vs Constant28	0.1014	0.3244	0.3245	0.9210
MNIST vs FashionMNIST	0.9165	0.9074	0.9074	0.3086
MNIST vs KMNIST	0.9343	0.9209	0.9209	0.2294
MNIST vs Noise28	0.0542	0.3123	0.3124	1.0000
MNIST vs NotMNIST	0.6446	0.5281	0.5282	0.5211
MNIST vs Omniglot	0.7577	0.7503	0.7503	0.5768
Noise vs CIFAR-10	0.4941	0.4949	0.4962	0.9580
Noise vs CIFAR-100	0.4959	0.4957	0.4969	0.9489
Noise vs CelebA	0.5040	0.3350	0.3355	0.9518
Noise vs Constant	0.4960	0.4955	0.4963	0.9527
Noise vs LSUN	0.4970	0.4974	0.4986	0.9489
Noise vs SVHN	0.4988	0.2759	0.2772	0.9504
Noise vs TinyImagenet	0.4992	0.5039	0.5049	0.9511

Noise vs iSUN	0.5034	0.5315	0.5327	0.9467
Noise28 vs Constant28	0.4926	0.4937	0.4940	0.9522
Noise28 vs FashionMNIST	0.4939	0.4943	0.4948	0.9551
Noise28 vs KMNIST	0.5040	0.4995	0.5000	0.9497
Noise28 vs MNIST	0.5032	0.5017	0.5023	0.9518
Noise28 vs NotMNIST	0.5038	0.5004	0.5009	0.9503
Noise28 vs Omniglot	0.5065	0.5567	0.5572	0.9473
NotMNIST vs Constant28	0.7133	0.6836	0.6837	0.9920
NotMNIST vs FashionMNIST	0.4889	0.5443	0.5443	0.9998
NotMNIST vs KMNIST	0.7417	0.7659	0.7659	0.9407
NotMNIST vs MNIST	0.3515	0.4265	0.4265	1.0000
NotMNIST vs Noise28	0.0207	0.3219	0.3219	1.0000
NotMNIST vs Omniglot	0.3539	0.4678	0.4678	1.0000
Omniglot vs Constant28	0.5056	0.4062	0.4063	0.7024
Omniglot vs FashionMNIST	0.8839	0.8514	0.8514	0.4309
Omniglot vs KMNIST	0.9562	0.9460	0.9460	0.2217
Omniglot vs MNIST	0.7910	0.7735	0.7736	0.7763
Omniglot vs Noise28	0.9571	0.9715	0.9715	0.3180
Omniglot vs NotMNIST	0.9950	0.9920	0.9920	0.0216
SVHN vs CIFAR-10	0.8163	0.8788	0.8789	0.5368
SVHN vs CIFAR-100	0.8340	0.8854	0.8854	0.4755
SVHN vs CelebA	0.9107	0.9274	0.9274	0.4230
SVHN vs Constant	0.7490	0.8317	0.8318	0.5693
SVHN vs LSUN	0.7548	0.8424	0.8425	0.6878
SVHN vs Noise	0.0011	0.5078	0.5078	1.0000
SVHN vs TinyImagenet	0.8251	0.8807	0.8807	0.5129
SVHN vs iSUN	0.6743	0.7980	0.7981	0.7496
TinyImagenet vs CelebA	0.6545	0.5352	0.5353	0.9085
TinyImagenet vs Constant	0.4913	0.5423	0.5424	0.9695
TinyImagenet vs LSUN	0.1473	0.3248	0.3248	0.9978
TinyImagenet vs Noise	0.0000	0.3032	0.3032	1.0000
TinyImagenet vs SVHN	0.6789	0.5644	0.5644	0.9024
TinyImagenet vs iSUN	0.1155	0.3414	0.3414	0.9992
Average	0.5295	0.5906	0.5908	0.7937

Table 17: The detailed performance for indicator ELBO - Recon based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.2976	0.2582	0.2583	0.9995
CIFAR-10 vs Constant	0.9999	0.9999	0.9999	0.0000
CIFAR-10 vs LSUN	0.7390	0.6858	0.6859	0.7437
CIFAR-10 vs Noise	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs SVHN	0.9215	0.8813	0.8814	0.5122
CIFAR-10 vs iSUN	0.7634	0.7377	0.7378	0.7382
CIFAR-100 vs CelebA	0.3339	0.3056	0.3057	0.9997
CIFAR-100 vs Constant	0.9995	0.9995	0.9995	0.0000
CIFAR-100 vs LSUN	0.7636	0.7414	0.7415	0.7569
CIFAR-100 vs Noise	0.0000	0.3069	0.3069	1.0000
CIFAR-100 vs SVHN	0.9028	0.8674	0.8674	0.7086
CIFAR-100 vs iSUN	0.7860	0.7860	0.7861	0.7501
CelebA vs CIFAR-10	0.9578	0.9719	0.9719	0.1648
CelebA vs CIFAR-100	0.9172	0.9358	0.9358	0.2578
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9723	0.9785	0.9785	0.0896
CelebA vs Noise	0.0000	0.4503	0.4503	1.0000
CelebA vs SVHN	0.9995	0.9996	0.9996	0.0006
CelebA vs TinyImagenet	0.9338	0.9473	0.9473	0.2057
CelebA vs iSUN	0.9779	0.9841	0.9841	0.0710
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	0.9999	0.9995	0.9995	0.0001
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0002
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9994	0.9994	0.9994	0.0032
Constant28 vs Omniglot	0.9989	0.9990	0.9990	0.0046
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.9318	0.9480	0.9480	0.4303
FashionMNIST vs MNIST	0.9928	0.9951	0.9951	0.0014
FashionMNIST vs Noise28	0.0062	0.3071	0.3071	1.0000
FashionMNIST vs NotMNIST	0.9488	0.9464	0.9464	0.2447
FashionMNIST vs Omniglot	0.9880	0.9927	0.9927	0.0232
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.8516	0.8205	0.8206	0.4788
KMNIST vs MNIST	0.9876	0.9894	0.9894	0.0642
KMNIST vs Noise28	0.0011	0.3069	0.3069	1.0000
KMNIST vs NotMNIST	0.8622	0.8363	0.8363	0.3983
KMNIST vs Omniglot	0.9730	0.9790	0.9790	0.1454
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9995	0.9995	0.9995	0.0036
MNIST vs KMNIST	0.9908	0.9907	0.9907	0.0712
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.7714	0.8336	0.8336	0.8999
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9997	0.9997	0.9997	0.0007
NotMNIST vs FashionMNIST	0.7658	0.8420	0.8420	0.9940
NotMNIST vs KMNIST	0.7680	0.8579	0.8579	0.9991
NotMNIST vs MNIST	0.8943	0.9390	0.9390	0.9216
NotMNIST vs Noise28	0.0121	0.3077	0.3077	1.0000
NotMNIST vs Omniglot	0.8860	0.9420	0.9420	0.9751
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.8930	0.8056	0.8057	0.3769
Omniglot vs KMNIST	0.2780	0.3230	0.3230	0.9848
Omniglot vs MNIST	0.7982	0.7933	0.7933	0.7558
Omniglot vs Noise28	0.7842	0.8094	0.8094	0.9425
Omniglot vs NotMNIST	0.9990	0.9976	0.9976	0.0035
SVHN vs CIFAR-10	0.7046	0.7808	0.7808	0.5669
SVHN vs CIFAR-100	0.6617	0.7487	0.7487	0.6044
SVHN vs CelebA	0.4548	0.5041	0.5042	0.9057
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	0.8766	0.8924	0.8924	0.2605
SVHN vs Noise	0.0000	0.5076	0.5076	1.0000
SVHN vs TinyImagenet	0.7244	0.7871	0.7871	0.5088
SVHN vs iSUN	0.8997	0.9182	0.9183	0.2143
TinyImagenet vs CelebA	0.2636	0.2666	0.2666	0.9998
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	0.7261	0.7053	0.7054	0.7836
TinyImagenet vs Noise	0.0000	0.3032	0.3032	1.0000
TinyImagenet vs SVHN	0.8661	0.8119	0.8119	0.8282
TinyImagenet vs iSUN	0.7475	0.7508	0.7509	0.7818
Average	0.8214	0.8552	0.8552	0.3389

Table 18: The detailed performance for indicator $S(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6588	0.5638	0.5638	0.9359
CIFAR-10 vs Constant	0.4982	0.4498	0.4499	0.7771
CIFAR-10 vs LSUN	0.8548	0.8636	0.8636	0.6499
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.4942	0.2564	0.2565	0.8798
CIFAR-10 vs iSUN	0.8520	0.8602	0.8602	0.6068
CIFAR-100 vs CelebA	0.5815	0.4473	0.4473	0.9439
CIFAR-100 vs Constant	0.6115	0.5073	0.5073	0.5616
CIFAR-100 vs LSUN	0.9177	0.9095	0.9095	0.3688
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.2002	0.1770	0.1770	0.9889
CIFAR-100 vs iSUN	0.9103	0.9078	0.9078	0.3625
CelebA vs CIFAR-10	0.8952	0.9324	0.9325	0.4273
CelebA vs CIFAR-100	0.8658	0.8969	0.8969	0.4498
CelebA vs Constant	0.7073	0.7271	0.7271	0.5279
CelebA vs LSUN	0.9955	0.9974	0.9974	0.0185
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5737	0.4920	0.4920	0.9143
CelebA vs TinyImagenet	0.9049	0.9336	0.9337	0.3613
CelebA vs iSUN	0.9947	0.9973	0.9973	0.0214
Constant vs CIFAR-10	0.9999	0.9999	0.9999	0.0001
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	0.9999	0.9999	0.0001
Constant vs TinyImagenet	0.9999	0.9999	0.9999	0.0002
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9365	0.9391	0.9391	0.3155
Constant28 vs KMNIST	0.9874	0.9850	0.9850	0.0546
Constant28 vs MNIST	0.7456	0.7800	0.7800	0.7592
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9981	0.9979	0.9979	0.0131
Constant28 vs Omniglot	0.8671	0.8930	0.8930	0.4896
FashionMNIST vs Constant28	0.9405	0.9115	0.9116	0.2509
FashionMNIST vs KMNIST	0.3561	0.4084	0.4085	0.9907
FashionMNIST vs MNIST	0.0489	0.3104	0.3104	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6523	0.6038	0.6039	0.7816
FashionMNIST vs Omniglot	0.0587	0.3558	0.3558	1.0000
KMNIST vs Constant28	0.1889	0.3077	0.3078	1.0000
KMNIST vs FashionMNIST	0.2789	0.3248	0.3248	0.9813
KMNIST vs MNIST	0.7317	0.8705	0.8706	0.8545
KMNIST vs Noise28	0.1399	0.3402	0.3402	1.0000
KMNIST vs NotMNIST	0.5182	0.6921	0.6922	0.8815
KMNIST vs Omniglot	0.6946	0.9358	0.9359	0.8560
Noise vs CIFAR-10	0.1883	0.3474	0.3474	0.8325
Noise vs CIFAR-100	0.2428	0.3616	0.3617	0.7782
Noise vs CelebA	0.4722	0.2944	0.2944	0.5673
Noise vs Constant	0.4959	0.4480	0.4481	0.5254
Noise vs LSUN	0.1123	0.3294	0.3294	0.9080
Noise vs SVHN	0.2078	0.1840	0.1840	0.8068
Noise vs TinyImagenet	0.2691	0.3728	0.3729	0.7565
Noise vs iSUN	0.0816	0.3457	0.3457	0.9332
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000

Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9594	0.9446	0.9447	0.2506
NotMNIST vs FashionMNIST	0.8469	0.8517	0.8517	0.6072
NotMNIST vs KMNIST	0.6801	0.6965	0.6965	0.8861
NotMNIST vs MNIST	0.2608	0.3979	0.3980	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2259	0.4169	0.4170	0.9996
Omniglot vs Constant28	0.9950	0.9699	0.9700	0.0050
Omniglot vs FashionMNIST	0.9594	0.9492	0.9493	0.2035
Omniglot vs KMNIST	0.8205	0.7969	0.7969	0.6450
Omniglot vs MNIST	0.6658	0.6414	0.6414	0.8846
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9691	0.9646	0.9646	0.1679
SVHN vs CIFAR-10	0.9553	0.9826	0.9826	0.2500
SVHN vs CIFAR-100	0.9471	0.9773	0.9773	0.2772
SVHN vs CelebA	0.9744	0.9846	0.9846	0.1214
SVHN vs Constant	0.8643	0.8888	0.8888	0.2891
SVHN vs LSUN	0.9982	0.9993	0.9993	0.0032
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9588	0.9843	0.9843	0.2177
SVHN vs iSUN	0.9977	0.9992	0.9992	0.0064
TinyImagenet vs CelebA	0.4176	0.3500	0.3500	0.9983
TinyImagenet vs Constant	0.5339	0.4578	0.4578	0.5919
TinyImagenet vs LSUN	0.8829	0.8793	0.8793	0.5134
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.1584	0.1682	0.1682	0.9922
TinyImagenet vs iSUN	0.8866	0.8867	0.8867	0.4515
Average	0.6760	0.7146	0.7146	0.5007

Table 19: The detailed performance for indicator MCMC Recon based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6680	0.5764	0.5765	0.9296
CIFAR-10 vs Constant	0.4894	0.4453	0.4454	0.7822
CIFAR-10 vs LSUN	0.8637	0.8705	0.8705	0.6185
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.4703	0.2455	0.2455	0.8897
CIFAR-10 vs iSUN	0.8582	0.8640	0.8640	0.5748
CIFAR-100 vs CelebA	0.5877	0.4552	0.4552	0.9430
CIFAR-100 vs Constant	0.5894	0.4935	0.4936	0.5828
CIFAR-100 vs LSUN	0.9201	0.9112	0.9112	0.3497
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.1891	0.1744	0.1745	0.9905
CIFAR-100 vs iSUN	0.9108	0.9070	0.9070	0.3555
CelebA vs CIFAR-10	0.8956	0.9330	0.9330	0.4226
CelebA vs CIFAR-100	0.8677	0.8994	0.8994	0.4454
CelebA vs Constant	0.6730	0.7035	0.7035	0.5690
CelebA vs LSUN	0.9956	0.9974	0.9974	0.0167
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5320	0.4525	0.4526	0.9347
CelebA vs TinyImagenet	0.9056	0.9339	0.9340	0.3558
CelebA vs iSUN	0.9946	0.9972	0.9972	0.0232
Constant vs CIFAR-10	1.0000	0.9999	0.9999	0.0001
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9565	0.9589	0.9589	0.2587
Constant28 vs KMNIST	0.9911	0.9898	0.9898	0.0443
Constant28 vs MNIST	0.7980	0.8321	0.8321	0.7131
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9986	0.9986	0.9986	0.0122
Constant28 vs Omniglot	0.8997	0.9224	0.9224	0.4432
FashionMNIST vs Constant28	0.9282	0.9012	0.9012	0.3069
FashionMNIST vs KMNIST	0.3347	0.3953	0.3955	0.9929
FashionMNIST vs MNIST	0.0425	0.3096	0.3096	1.0000
FashionMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6581	0.6149	0.6149	0.7889
FashionMNIST vs Omniglot	0.0476	0.3543	0.3543	1.0000
KMNIST vs Constant28	0.1776	0.3023	0.3023	0.9943
KMNIST vs FashionMNIST	0.2832	0.3228	0.3229	0.9810
KMNIST vs MNIST	0.7287	0.8852	0.8852	0.8519
KMNIST vs Noise28	0.1267	0.3201	0.3201	1.0000
KMNIST vs NotMNIST	0.5061	0.6907	0.6908	0.8830
KMNIST vs Omniglot	0.6826	0.9385	0.9385	0.8667
Noise vs CIFAR-10	0.1883	0.3474	0.3474	0.8325
Noise vs CIFAR-100	0.2428	0.3616	0.3617	0.7782
Noise vs CelebA	0.4722	0.2944	0.2944	0.5673
Noise vs Constant	0.4959	0.4480	0.4481	0.5254
Noise vs LSUN	0.1123	0.3294	0.3294	0.9080
Noise vs SVHN	0.2078	0.1840	0.1840	0.8067
Noise vs TinyImagenet	0.2691	0.3728	0.3729	0.7564
Noise vs iSUN	0.0816	0.3457	0.3457	0.9332
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000

Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9546	0.9420	0.9421	0.2983
NotMNIST vs FashionMNIST	0.8427	0.8504	0.8505	0.6380
NotMNIST vs KMNIST	0.6964	0.7118	0.7118	0.8703
NotMNIST vs MNIST	0.2769	0.4051	0.4051	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2371	0.4214	0.4215	0.9996
Omniglot vs Constant28	0.9950	0.9692	0.9693	0.0050
Omniglot vs FashionMNIST	0.9608	0.9508	0.9508	0.1979
Omniglot vs KMNIST	0.8296	0.8074	0.8074	0.6235
Omniglot vs MNIST	0.6746	0.6459	0.6459	0.8754
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9705	0.9659	0.9659	0.1633
SVHN vs CIFAR-10	0.9671	0.9872	0.9872	0.1670
SVHN vs CIFAR-100	0.9617	0.9839	0.9839	0.1908
SVHN vs CelebA	0.9842	0.9904	0.9904	0.0539
SVHN vs Constant	0.8752	0.8957	0.8957	0.2812
SVHN vs LSUN	0.9989	0.9996	0.9996	0.0021
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9698	0.9883	0.9883	0.1497
SVHN vs iSUN	0.9984	0.9994	0.9994	0.0039
TinyImagenet vs CelebA	0.4282	0.3607	0.3607	0.9982
TinyImagenet vs Constant	0.5183	0.4501	0.4502	0.6006
TinyImagenet vs LSUN	0.8882	0.8828	0.8829	0.4868
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.1422	0.1656	0.1656	0.9942
TinyImagenet vs iSUN	0.8892	0.8872	0.8872	0.4314
Average	0.6762	0.7157	0.7157	0.4956

Table 20: The detailed performance for indicator MCMC $\log p_\theta(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6284	0.5147	0.5148	0.9496
CIFAR-10 vs Constant	0.1984	0.3442	0.3442	0.9082
CIFAR-10 vs LSUN	0.9279	0.9089	0.9089	0.2555
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.1031	0.1623	0.1623	0.9997
CIFAR-10 vs iSUN	0.9098	0.8969	0.8969	0.3038
CIFAR-100 vs CelebA	0.6025	0.5171	0.5171	0.9759
CIFAR-100 vs Constant	0.1487	0.3324	0.3324	0.9574
CIFAR-100 vs LSUN	0.9248	0.9131	0.9131	0.2848
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.1177	0.1700	0.1700	0.9999
CIFAR-100 vs iSUN	0.9065	0.9019	0.9019	0.3309
CelebA vs CIFAR-10	0.7624	0.8031	0.8031	0.5992
CelebA vs CIFAR-100	0.7247	0.7611	0.7611	0.6170
CelebA vs Constant	0.2056	0.4973	0.4974	0.9260
CelebA vs LSUN	0.9753	0.9797	0.9797	0.0798
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1656	0.2807	0.2807	0.9933
CelebA vs TinyImagenet	0.7896	0.8244	0.8245	0.5280
CelebA vs iSUN	0.9711	0.9815	0.9815	0.0993
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9971	0.9967	0.9967	0.0121
Constant28 vs Omniglot	0.9998	0.9998	0.9998	0.0011
FashionMNIST vs Constant28	0.9662	0.9435	0.9436	0.1616
FashionMNIST vs KMNIST	0.4085	0.4576	0.4577	0.9882
FashionMNIST vs MNIST	0.0793	0.3144	0.3145	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7236	0.7146	0.7147	0.8908
FashionMNIST vs Omniglot	0.0481	0.3537	0.3538	1.0000
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9219	0.9069	0.9070	0.2957
KMNIST vs MNIST	0.1726	0.3353	0.3353	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9220	0.8715	0.8716	0.2735
KMNIST vs Omniglot	0.0883	0.3610	0.3611	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9988	0.9986	0.9986	0.0049
MNIST vs KMNIST	0.9928	0.9913	0.9913	0.0295
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5803	0.5827	0.5828	0.7550
Noise vs CIFAR-10	0.1883	0.3474	0.3474	0.8328
Noise vs CIFAR-100	0.2430	0.3617	0.3617	0.7784
Noise vs CelebA	0.4708	0.2939	0.2939	0.5682
Noise vs Constant	0.4956	0.4479	0.4479	0.5260
Noise vs LSUN	0.1129	0.3296	0.3296	0.9073
Noise vs SVHN	0.2085	0.1841	0.1842	0.8063
Noise vs TinyImagenet	0.2692	0.3729	0.3729	0.7560

Noise vs iSUN	0.0824	0.3459	0.3459	0.9325
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9898	0.9651	0.9651	0.0080
NotMNIST vs FashionMNIST	0.9294	0.9289	0.9289	0.3582
NotMNIST vs KMNIST	0.7275	0.7317	0.7317	0.8937
NotMNIST vs MNIST	0.3337	0.4172	0.4172	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2421	0.4196	0.4197	0.9999
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9979	0.9971	0.9971	0.0105
Omniglot vs KMNIST	0.9783	0.9752	0.9752	0.1289
Omniglot vs MNIST	0.8069	0.7593	0.7594	0.6579
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9866	0.9937	0.9938	0.0573
SVHN vs CIFAR-100	0.9818	0.9910	0.9910	0.0770
SVHN vs CelebA	0.9981	0.9986	0.9986	0.0050
SVHN vs Constant	0.6092	0.7325	0.7325	0.7519
SVHN vs LSUN	0.9994	0.9998	0.9998	0.0018
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9893	0.9948	0.9948	0.0451
SVHN vs iSUN	0.9992	0.9997	0.9997	0.0026
TinyImagenet vs CelebA	0.5238	0.4257	0.4257	0.9883
TinyImagenet vs Constant	0.0499	0.3091	0.3091	0.9953
TinyImagenet vs LSUN	0.9026	0.8802	0.8802	0.3409
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0782	0.1566	0.1567	1.0000
TinyImagenet vs iSUN	0.8801	0.8652	0.8652	0.3863
Average	0.6899	0.7364	0.7365	0.4198

Table 21: The detailed performance for indicator $\log p_{\theta_0}(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8224	0.7396	0.7396	0.7383
CIFAR-10 vs Constant	0.5121	0.4527	0.4527	0.6182
CIFAR-10 vs LSUN	0.8066	0.8253	0.8254	0.8858
CIFAR-10 vs Noise	0.9182	0.9548	0.9548	0.9949
CIFAR-10 vs SVHN	0.2269	0.1794	0.1794	0.9306
CIFAR-10 vs iSUN	0.7889	0.8163	0.8163	0.9211
CIFAR-100 vs CelebA	0.7566	0.6590	0.6590	0.8626
CIFAR-100 vs Constant	0.4906	0.4427	0.4427	0.6030
CIFAR-100 vs LSUN	0.7577	0.7807	0.7807	0.9593
CIFAR-100 vs Noise	0.9640	0.9803	0.9803	0.0441
CIFAR-100 vs SVHN	0.1465	0.1666	0.1666	0.9809
CIFAR-100 vs iSUN	0.7538	0.7910	0.7910	0.9653
CelebA vs CIFAR-10	0.5192	0.6357	0.6358	0.8730
CelebA vs CIFAR-100	0.5195	0.6320	0.6320	0.8458
CelebA vs Constant	0.2454	0.5091	0.5091	0.8334
CelebA vs LSUN	0.8722	0.9094	0.9094	0.4299
CelebA vs Noise	0.9999	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1054	0.2720	0.2721	0.9877
CelebA vs TinyImagenet	0.5748	0.6759	0.6760	0.8516
CelebA vs iSUN	0.8641	0.9076	0.9077	0.4113
Constant vs CIFAR-10	0.7082	0.5812	0.5812	0.6064
Constant vs CIFAR-100	0.6591	0.5421	0.5422	0.6435
Constant vs CelebA	0.7228	0.4477	0.4478	0.6922
Constant vs LSUN	0.7839	0.6313	0.6313	0.3023
Constant vs Noise	0.9814	0.9537	0.9537	0.0547
Constant vs SVHN	0.6910	0.3496	0.3496	0.5837
Constant vs TinyImagenet	0.7408	0.6253	0.6253	0.6496
Constant vs iSUN	0.8055	0.6766	0.6766	0.2997
Constant28 vs FashionMNIST	0.0696	0.3209	0.3209	0.9331
Constant28 vs KMNIST	0.2198	0.3563	0.3563	0.7843
Constant28 vs MNIST	0.1946	0.3497	0.3497	0.8126
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0001
Constant28 vs NotMNIST	0.7916	0.6338	0.6338	0.2108
Constant28 vs Omniglot	0.4774	0.4871	0.4871	0.5385
FashionMNIST vs Constant28	0.9648	0.8845	0.8846	0.0408
FashionMNIST vs KMNIST	0.9883	0.9897	0.9897	0.0568
FashionMNIST vs MNIST	0.9205	0.9381	0.9381	0.5021
FashionMNIST vs Noise28	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	0.9922	0.9857	0.9857	0.0225
FashionMNIST vs Omniglot	0.8750	0.9138	0.9138	0.6503
KMNIST vs Constant28	0.7883	0.6328	0.6328	0.2502
KMNIST vs FashionMNIST	0.5071	0.4560	0.4561	0.7880
KMNIST vs MNIST	0.5375	0.5099	0.5100	0.9275
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.5143	0.4534	0.4534	0.5984
KMNIST vs Omniglot	0.7137	0.7735	0.7735	0.9207
MNIST vs Constant28	0.9953	0.9833	0.9833	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0001
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5986	0.5728	0.5729	0.6969
Noise vs CIFAR-10	0.6982	0.5589	0.5595	0.3449
Noise vs CIFAR-100	0.6641	0.5358	0.5363	0.3760
Noise vs CelebA	0.6435	0.3722	0.3727	0.4001
Noise vs Constant	0.5527	0.4740	0.4746	0.4657
Noise vs LSUN	0.6042	0.5001	0.5006	0.4423
Noise vs SVHN	0.6543	0.3252	0.3256	0.3736
Noise vs TinyImagenet	0.6500	0.5309	0.5315	0.3904

Noise vs iSUN	0.5947	0.5197	0.5203	0.4530
Noise28 vs Constant28	0.5682	0.4814	0.4818	0.4599
Noise28 vs FashionMNIST	0.0255	0.3114	0.3116	0.9863
Noise28 vs KMNIST	0.0000	0.3069	0.3071	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3071	1.0000
Noise28 vs NotMNIST	0.0006	0.3070	0.3072	0.9995
Noise28 vs Omniglot	0.0000	0.3495	0.3498	1.0000
NotMNIST vs Constant28	0.0584	0.3181	0.3181	0.9504
NotMNIST vs FashionMNIST	0.6408	0.5470	0.5471	0.8182
NotMNIST vs KMNIST	0.9757	0.9799	0.9799	0.1207
NotMNIST vs MNIST	0.9430	0.9494	0.9494	0.3123
NotMNIST vs Noise28	0.8361	0.8923	0.8923	0.9925
NotMNIST vs Omniglot	0.9497	0.9690	0.9690	0.3688
Omniglot vs Constant28	0.9963	0.9910	0.9910	0.0050
Omniglot vs FashionMNIST	0.9864	0.9550	0.9551	0.0294
Omniglot vs KMNIST	0.9280	0.8443	0.8444	0.1993
Omniglot vs MNIST	0.7108	0.6399	0.6401	0.8244
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9378	0.9700	0.9700	0.2285
SVHN vs CIFAR-100	0.9295	0.9642	0.9642	0.2406
SVHN vs CelebA	0.9876	0.9908	0.9908	0.0563
SVHN vs Constant	0.6328	0.7199	0.7199	0.5159
SVHN vs LSUN	0.9922	0.9964	0.9964	0.0287
SVHN vs Noise	0.9991	0.9997	0.9997	0.0000
SVHN vs TinyImagenet	0.9542	0.9779	0.9779	0.1680
SVHN vs iSUN	0.9894	0.9957	0.9957	0.0404
TinyImagenet vs CelebA	0.7430	0.6100	0.6101	0.7793
TinyImagenet vs Constant	0.5944	0.4890	0.4890	0.5004
TinyImagenet vs LSUN	0.8546	0.8355	0.8355	0.5097
TinyImagenet vs Noise	0.9341	0.9603	0.9603	0.7184
TinyImagenet vs SVHN	0.1052	0.1592	0.1592	0.9902
TinyImagenet vs iSUN	0.8420	0.8390	0.8390	0.5517
Average	0.6963	0.6940	0.6941	0.4994

Table 22: The detailed performance for indicator $LLR(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9634	0.9104	0.9104	0.1121
CIFAR-10 vs Constant	0.8991	0.7828	0.7829	0.1540
CIFAR-10 vs LSUN	0.8725	0.8651	0.8651	0.5085
CIFAR-10 vs Noise	0.9946	0.9971	0.9971	0.0000
CIFAR-10 vs SVHN	0.9527	0.8066	0.8067	0.0983
CIFAR-10 vs iSUN	0.8222	0.8199	0.8199	0.6271
CIFAR-100 vs CelebA	0.9558	0.8875	0.8875	0.1268
CIFAR-100 vs Constant	0.9726	0.9497	0.9497	0.0643
CIFAR-100 vs LSUN	0.9068	0.8870	0.8870	0.2943
CIFAR-100 vs Noise	0.9996	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.9027	0.6326	0.6327	0.1558
CIFAR-100 vs iSUN	0.8810	0.8805	0.8806	0.4019
CelebA vs CIFAR-10	0.9556	0.9588	0.9589	0.1134
CelebA vs CIFAR-100	0.8983	0.9025	0.9025	0.2002
CelebA vs Constant	0.9490	0.9286	0.9287	0.0786
CelebA vs LSUN	0.9843	0.9870	0.9870	0.0446
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9901	0.9760	0.9760	0.0226
CelebA vs TinyImagenet	0.9321	0.9420	0.9421	0.1608
CelebA vs iSUN	0.9837	0.9886	0.9886	0.0503
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	0.9923	0.9891	0.9891	0.0164
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9995	0.9991	0.9991	0.0010
Constant28 vs Omniglot	0.9711	0.9638	0.9638	0.0466
FashionMNIST vs Constant28	0.9959	0.9898	0.9898	0.0054
FashionMNIST vs MNIST	0.9996	0.9997	0.9997	0.0000
FashionMNIST vs Noise28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9998	0.9998	0.9998	0.0003
KMNIST vs MNIST	0.9924	0.9895	0.9895	0.0280
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9999	0.9991	0.9992	0.0003
KMNIST vs Omniglot	0.9162	0.9500	0.9500	0.6792
MNIST vs Constant28	0.9951	0.9772	0.9773	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9767	0.9840	0.9840	0.1653
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9144	0.7843	0.7843	0.0898
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000

Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9952	0.9842	0.9842	0.0092
NotMNIST vs FashionMNIST	0.9997	0.9998	0.9998	0.0000
NotMNIST vs KMNIST	0.9994	0.9996	0.9996	0.0000
NotMNIST vs MNIST	0.9996	0.9997	0.9997	0.0000
NotMNIST vs Noise28	0.9998	0.9999	0.9999	0.0000
NotMNIST vs Omniglot	0.9990	0.9995	0.9995	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9996	0.9996	0.9996	0.0000
Omniglot vs MNIST	0.9985	0.9981	0.9981	0.0021
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9675	0.9823	0.9823	0.0950
SVHN vs CIFAR-100	0.9578	0.9726	0.9726	0.1085
SVHN vs CelebA	0.9983	0.9984	0.9984	0.0056
SVHN vs Constant	0.8865	0.8822	0.8822	0.1571
SVHN vs LSUN	0.9980	0.9991	0.9991	0.0081
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9661	0.9819	0.9819	0.0950
SVHN vs iSUN	0.9975	0.9990	0.9990	0.0092
TinyImagenet vs CelebA	0.9335	0.8019	0.8019	0.1496
TinyImagenet vs Constant	0.9601	0.9081	0.9083	0.0708
TinyImagenet vs LSUN	0.9146	0.8865	0.8865	0.2443
TinyImagenet vs Noise	0.9997	0.9998	0.9998	0.0000
TinyImagenet vs SVHN	0.9565	0.8276	0.8276	0.1011
TinyImagenet vs iSUN	0.8929	0.8804	0.8804	0.3434
Average	0.9769	0.9635	0.9636	0.0649

Table 23: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is streaming, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9557	0.8946	0.8946	0.1444
CIFAR-10 vs Constant	0.9288	0.8332	0.8333	0.1158
CIFAR-10 vs LSUN	0.9375	0.9213	0.9213	0.2144
CIFAR-10 vs Noise	0.9997	0.9998	0.9998	0.0000
CIFAR-10 vs SVHN	0.9686	0.8650	0.8650	0.0753
CIFAR-10 vs iSUN	0.9018	0.8812	0.8812	0.2914
CIFAR-100 vs CelebA	0.9417	0.8592	0.8593	0.1792
CIFAR-100 vs Constant	0.9865	0.9777	0.9777	0.0369
CIFAR-100 vs LSUN	0.9395	0.9172	0.9172	0.1845
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9189	0.6817	0.6818	0.1456
CIFAR-100 vs iSUN	0.9250	0.9148	0.9148	0.2438
CelebA vs CIFAR-10	0.9556	0.9630	0.9631	0.1416
CelebA vs CIFAR-100	0.9100	0.9175	0.9175	0.2267
CelebA vs Constant	0.9752	0.9665	0.9665	0.0430
CelebA vs LSUN	0.9926	0.9934	0.9934	0.0206
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9945	0.9882	0.9882	0.0148
CelebA vs TinyImagenet	0.9383	0.9512	0.9512	0.1841
CelebA vs iSUN	0.9909	0.9933	0.9933	0.0277
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	0.9942	0.9917	0.9917	0.0120
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9996	0.9993	0.9993	0.0008
Constant28 vs Omniglot	0.9803	0.9749	0.9749	0.0321
FashionMNIST vs Constant28	0.9979	0.9956	0.9956	0.0055
FashionMNIST vs MNIST	0.9992	0.9994	0.9994	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9975	0.9975	0.9975	0.0114
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9997	0.9991	0.9991	0.0006
KMNIST vs Omniglot	0.9189	0.9534	0.9534	0.7260
MNIST vs Constant28	0.9965	0.9828	0.9829	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9421	0.9584	0.9584	0.3524
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9834	0.9640	0.9640	0.0420
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000

NotMNIST vs Constant28	0.9968	0.9870	0.9870	0.0074
NotMNIST vs FashionMNIST	0.9990	0.9992	0.9992	0.0001
NotMNIST vs KMNIST	0.9968	0.9977	0.9977	0.0008
NotMNIST vs MNIST	0.9988	0.9993	0.9993	0.0000
NotMNIST vs Omniglot	0.9971	0.9984	0.9984	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9976	0.9973	0.9973	0.0073
Omniglot vs MNIST	0.9836	0.9816	0.9816	0.0784
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9868	0.9927	0.9927	0.0379
SVHN vs CIFAR-100	0.9785	0.9849	0.9849	0.0535
SVHN vs CelebA	0.9995	0.9996	0.9996	0.0012
SVHN vs Constant	0.8957	0.8898	0.8898	0.1451
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0004
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9863	0.9926	0.9926	0.0363
SVHN vs iSUN	0.9995	0.9998	0.9998	0.0010
TinyImagenet vs CelebA	0.9144	0.7684	0.7684	0.2251
TinyImagenet vs Constant	0.9769	0.9473	0.9474	0.0459
TinyImagenet vs LSUN	0.9375	0.9092	0.9093	0.1822
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9716	0.8818	0.8819	0.0733
TinyImagenet vs iSUN	0.9141	0.8960	0.8961	0.2611
Average	0.9819	0.9706	0.9706	0.0558

Table 24: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when data is streaming with size 4096, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9453	0.9042	0.9042	0.2307
CIFAR-10 vs Constant	0.9896	0.9714	0.9714	0.0197
CIFAR-10 vs LSUN	0.9698	0.9583	0.9583	0.0984
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9292	0.7317	0.7318	0.1792
CIFAR-10 vs iSUN	0.9372	0.9162	0.9162	0.1826
CIFAR-100 vs CelebA	0.9097	0.8369	0.8369	0.3627
CIFAR-100 vs Constant	0.9334	0.8464	0.8464	0.1166
CIFAR-100 vs LSUN	0.9712	0.9613	0.9613	0.1010
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9187	0.7210	0.7211	0.2269
CIFAR-100 vs iSUN	0.9530	0.9429	0.9429	0.1598
CelebA vs CIFAR-10	0.9376	0.9476	0.9476	0.2212
CelebA vs CIFAR-100	0.9063	0.9219	0.9219	0.3131
CelebA vs Constant	0.8655	0.8409	0.8409	0.2424
CelebA vs LSUN	0.9905	0.9919	0.9919	0.0316
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9864	0.9653	0.9653	0.0399
CelebA vs TinyImagenet	0.9368	0.9493	0.9494	0.2331
CelebA vs iSUN	0.9825	0.9902	0.9902	0.0392
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9989	0.9979	0.9979	0.0021
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9913	0.9667	0.9667	0.0117
FashionMNIST vs KMNIST	0.9994	0.9995	0.9995	0.0000
FashionMNIST vs MNIST	0.9995	0.9997	0.9997	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Omniglot	0.9938	0.9966	0.9966	0.0000
KMNIST vs Constant28	0.9968	0.9866	0.9867	0.0053
KMNIST vs FashionMNIST	0.9977	0.9978	0.9978	0.0074
KMNIST vs MNIST	0.9679	0.9778	0.9778	0.1893
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9997	0.9993	0.9993	0.0003
KMNIST vs Omniglot	0.9054	0.9443	0.9443	0.7912
MNIST vs Constant28	0.9964	0.9831	0.9832	0.0049
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9585	0.9708	0.9708	0.3031
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9859	0.9610	0.9611	0.0309
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9937	0.9807	0.9808	0.0121
NotMNIST vs FashionMNIST	0.9997	0.9997	0.9997	0.0000
NotMNIST vs KMNIST	0.9996	0.9997	0.9997	0.0000
NotMNIST vs MNIST	0.9999	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9997	0.9998	0.9998	0.0000
Omniglot vs Constant28	0.9981	0.9891	0.9892	0.0049
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9976	0.9974	0.9974	0.0057
Omniglot vs MNIST	0.9845	0.9838	0.9838	0.0816
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9829	0.9887	0.9887	0.0446
SVHN vs CIFAR-100	0.9879	0.9915	0.9915	0.0304
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0004
SVHN vs Constant	0.8656	0.8730	0.8730	0.2237
SVHN vs LSUN	0.9998	0.9999	0.9999	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9843	0.9887	0.9887	0.0357
SVHN vs iSUN	0.9996	0.9998	0.9998	0.0013
TinyImagenet vs CelebA	0.8463	0.7186	0.7186	0.5224
TinyImagenet vs Constant	0.9016	0.7806	0.7807	0.1562
TinyImagenet vs LSUN	0.9625	0.9462	0.9462	0.1252
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.8691	0.5952	0.5953	0.3232
TinyImagenet vs iSUN	0.9298	0.9083	0.9083	0.2141
Average	0.9800	0.9665	0.9665	0.0644

Table 25: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is split to several blocks with size 4096. based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6910	0.6041	0.6041	0.9324
CIFAR-10 vs Constant	0.1271	0.3261	0.3261	0.9798
CIFAR-10 vs LSUN	0.9335	0.9181	0.9181	0.2431
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0814	0.1593	0.1594	0.9997
CIFAR-10 vs iSUN	0.9139	0.9006	0.9007	0.2881
CIFAR-100 vs CelebA	0.6418	0.5740	0.5741	0.9719
CIFAR-100 vs Constant	0.1105	0.3232	0.3233	0.9906
CIFAR-100 vs LSUN	0.9251	0.9140	0.9140	0.2837
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0891	0.1650	0.1650	1.0000
CIFAR-100 vs iSUN	0.9070	0.9015	0.9015	0.3278
CelebA vs CIFAR-10	0.7454	0.7872	0.7873	0.6182
CelebA vs CIFAR-100	0.7086	0.7475	0.7476	0.6331
CelebA vs Constant	0.1152	0.4740	0.4740	0.9507
CelebA vs LSUN	0.9763	0.9806	0.9806	0.0784
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1098	0.2713	0.2713	0.9954
CelebA vs TinyImagenet	0.7798	0.8135	0.8135	0.5416
CelebA vs iSUN	0.9708	0.9805	0.9805	0.0989
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9995	0.9994	0.9994	0.0035
Constant28 vs Omniglot	0.9996	0.9996	0.9996	0.0027
FashionMNIST vs Constant28	0.9918	0.9668	0.9669	0.0080
FashionMNIST vs KMNIST	0.4841	0.5096	0.5096	0.9581
FashionMNIST vs MNIST	0.0968	0.3176	0.3177	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8435	0.8378	0.8378	0.5515
FashionMNIST vs Omniglot	0.0610	0.3557	0.3557	1.0000
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9197	0.9053	0.9053	0.3046
KMNIST vs MNIST	0.1666	0.3338	0.3339	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9253	0.8800	0.8801	0.2866
KMNIST vs Omniglot	0.0903	0.3614	0.3615	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9995	0.9994	0.9994	0.0020
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5970	0.5853	0.5854	0.7035
Noise vs CIFAR-10	0.1883	0.3474	0.3474	0.8324
Noise vs CIFAR-100	0.2428	0.3616	0.3617	0.7782
Noise vs CelebA	0.4722	0.2944	0.2944	0.5673
Noise vs Constant	0.4959	0.4480	0.4481	0.5255
Noise vs LSUN	0.1123	0.3294	0.3294	0.9080
Noise vs SVHN	0.2078	0.1840	0.1840	0.8068
Noise vs TinyImagenet	0.2691	0.3728	0.3729	0.7563

Noise vs iSUN	0.0816	0.3457	0.3457	0.9332
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9860	0.9623	0.9624	0.0080
NotMNIST vs FashionMNIST	0.9341	0.9372	0.9372	0.3699
NotMNIST vs KMNIST	0.7908	0.8008	0.8008	0.8408
NotMNIST vs MNIST	0.4330	0.4689	0.4690	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3231	0.4531	0.4531	0.9994
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9993	0.9991	0.9991	0.0035
Omniglot vs KMNIST	0.9821	0.9796	0.9796	0.1087
Omniglot vs MNIST	0.8130	0.7694	0.7694	0.6623
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9915	0.9961	0.9961	0.0377
SVHN vs CIFAR-100	0.9878	0.9944	0.9944	0.0514
SVHN vs CelebA	0.9990	0.9993	0.9993	0.0011
SVHN vs Constant	0.6389	0.7411	0.7412	0.6623
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0010
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9932	0.9969	0.9969	0.0280
SVHN vs iSUN	0.9995	0.9998	0.9998	0.0013
TinyImagenet vs CelebA	0.5600	0.4694	0.4694	0.9848
TinyImagenet vs Constant	0.0639	0.3100	0.3100	0.9976
TinyImagenet vs LSUN	0.9094	0.8893	0.8893	0.3170
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0576	0.1550	0.1551	1.0000
TinyImagenet vs iSUN	0.8872	0.8722	0.8722	0.3632
Average	0.6941	0.7422	0.7422	0.4117

Table 26: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x)$ when only 20% data in out-of-distribution can be used for training, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.2609	0.2472	0.2473	0.9984
CIFAR-10 vs Constant	0.0001	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.7363	0.7072	0.7073	0.8006
CIFAR-10 vs Noise	0.8121	0.8980	0.8980	1.0000
CIFAR-10 vs SVHN	0.0104	0.1541	0.1541	0.9998
CIFAR-10 vs iSUN	0.7459	0.7454	0.7455	0.7659
CIFAR-100 vs CelebA	0.3013	0.2917	0.2917	0.9989
CIFAR-100 vs Constant	0.0001	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.7065	0.7146	0.7146	0.9601
CIFAR-100 vs Noise	0.7572	0.8668	0.8668	1.0000
CIFAR-100 vs SVHN	0.0158	0.1542	0.1542	0.9999
CIFAR-100 vs iSUN	0.7043	0.7384	0.7385	0.9507
CelebA vs CIFAR-10	0.3230	0.5422	0.5422	0.9663
CelebA vs CIFAR-100	0.3707	0.5601	0.5602	0.9277
CelebA vs Constant	0.0000	0.4503	0.4503	1.0000
CelebA vs LSUN	0.6864	0.7673	0.7674	0.7738
CelebA vs Noise	0.5288	0.8068	0.8068	1.0000
CelebA vs SVHN	0.0020	0.2579	0.2579	0.9999
CelebA vs TinyImagenet	0.4297	0.5928	0.5929	0.9007
CelebA vs iSUN	0.6343	0.7594	0.7594	0.8213
Constant vs CIFAR-10	0.4520	0.5885	0.5886	1.0000
Constant vs CIFAR-100	0.7867	0.7951	0.7952	0.9268
Constant vs CelebA	0.6618	0.6744	0.6744	0.9991
Constant vs LSUN	0.2004	0.3998	0.3999	1.0000
Constant vs Noise	0.5045	0.7098	0.7098	1.0000
Constant vs SVHN	0.2472	0.2188	0.2189	1.0000
Constant vs TinyImagenet	0.8736	0.8903	0.8903	0.6282
Constant vs iSUN	0.2208	0.4455	0.4455	1.0000
Constant28 vs FashionMNIST	0.0056	0.3119	0.3119	1.0000
Constant28 vs KMNIST	0.0080	0.3137	0.3137	1.0000
Constant28 vs MNIST	0.0050	0.3118	0.3119	1.0000
Constant28 vs Noise28	0.5476	0.7395	0.7395	1.0000
Constant28 vs NotMNIST	0.0080	0.3089	0.3089	1.0000
Constant28 vs Omniglot	0.0050	0.3545	0.3545	1.0000
FashionMNIST vs Constant28	0.5431	0.4681	0.4682	0.6298
FashionMNIST vs KMNIST	0.0832	0.3154	0.3155	1.0000
FashionMNIST vs MNIST	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.0986	0.3189	0.3189	0.9968
FashionMNIST vs Omniglot	0.0015	0.3495	0.3495	1.0000
KMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
KMNIST vs FashionMNIST	0.5580	0.5311	0.5312	0.9274
KMNIST vs MNIST	0.0008	0.3069	0.3069	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.2963	0.3769	0.3769	0.9607
KMNIST vs Omniglot	0.0249	0.3515	0.3516	1.0000
MNIST vs Constant28	0.0109	0.3073	0.3073	1.0000
MNIST vs FashionMNIST	0.9176	0.8987	0.8987	0.2539
MNIST vs KMNIST	0.8212	0.8121	0.8121	0.5439
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.7523	0.6875	0.6876	0.6235
MNIST vs Omniglot	0.2425	0.4061	0.4061	0.9908
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.3641	0.4442	0.4443	1.0000
NotMNIST vs FashionMNIST	0.1232	0.3234	0.3234	0.9999
NotMNIST vs KMNIST	0.0501	0.3143	0.3143	1.0000
NotMNIST vs MNIST	0.0000	0.3069	0.3069	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.0000	0.3495	0.3495	1.0000
Omniglot vs Constant28	0.0299	0.2703	0.2703	1.0000
Omniglot vs FashionMNIST	0.9495	0.9358	0.9358	0.2425
Omniglot vs KMNIST	0.9119	0.8996	0.8996	0.3972
Omniglot vs MNIST	0.4287	0.4498	0.4499	1.0000
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.8155	0.7368	0.7369	0.6596
SVHN vs CIFAR-10	0.9311	0.9611	0.9611	0.2872
SVHN vs CIFAR-100	0.9193	0.9470	0.9471	0.2990
SVHN vs CelebA	0.9057	0.9348	0.9348	0.5552
SVHN vs Constant	0.0000	0.5076	0.5076	1.0000
SVHN vs LSUN	0.9216	0.9633	0.9633	0.3653
SVHN vs Noise	0.7928	0.9370	0.9370	1.0000
SVHN vs TinyImagenet	0.9499	0.9740	0.9741	0.2225
SVHN vs iSUN	0.9435	0.9788	0.9788	0.2903
TinyImagenet vs CelebA	0.2392	0.2404	0.2405	0.9995
TinyImagenet vs Constant	0.0001	0.3032	0.3032	1.0000
TinyImagenet vs LSUN	0.6939	0.6776	0.6776	0.9283
TinyImagenet vs Noise	0.7286	0.8485	0.8485	1.0000
TinyImagenet vs SVHN	0.0099	0.1517	0.1518	0.9999
TinyImagenet vs iSUN	0.6868	0.7040	0.7040	0.9238
Average	0.3728	0.5318	0.5319	0.8426

Table 27: The detailed performance for indicator $\log p_\omega(x)$ when only 20% data in out-of-distribution can be used for training, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9973	0.9953	0.9953	0.0073
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9400	0.9108	0.9108	0.1686
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9942	0.9804	0.9804	0.0230
CIFAR-10 vs iSUN	0.9159	0.8851	0.8851	0.2281
CIFAR-100 vs CelebA	0.9972	0.9942	0.9942	0.0109
CIFAR-100 vs Constant	0.9979	0.9985	0.9985	0.0000
CIFAR-100 vs LSUN	0.9383	0.9170	0.9170	0.1969
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9924	0.9751	0.9751	0.0283
CIFAR-100 vs iSUN	0.9196	0.8988	0.8988	0.2499
CelebA vs CIFAR-10	0.9962	0.9977	0.9977	0.0163
CelebA vs CIFAR-100	0.9630	0.9660	0.9660	0.1056
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9863	0.9864	0.9864	0.0374
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9996	0.9994	0.9994	0.0018
CelebA vs TinyImagenet	0.9966	0.9973	0.9973	0.0117
CelebA vs iSUN	0.9842	0.9870	0.9870	0.0462
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.4985	0.4458	0.4459	0.6446
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9997	0.9991	0.9991	0.0004
KMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9999	0.9998	0.9998	0.0002
KMNIST vs Omniglot	0.9992	0.9993	0.9993	0.0035
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0001
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9490	0.9573	0.9573	0.3386
NotMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0002
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	1.0000	0.9999	0.9999	0.0004
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9990	0.9996	0.9996	0.0029
SVHN vs CIFAR-100	0.9988	0.9994	0.9994	0.0039
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	0.9995	0.9997	0.9997	0.0018
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9987	0.9991	0.9991	0.0024
SVHN vs iSUN	0.9994	0.9998	0.9998	0.0025
TinyImagenet vs CelebA	0.9954	0.9886	0.9886	0.0190
TinyImagenet vs Constant	0.9998	0.9998	0.9998	0.0000
TinyImagenet vs LSUN	0.9301	0.8999	0.8999	0.2153
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9826	0.9417	0.9417	0.0665
TinyImagenet vs iSUN	0.9064	0.8774	0.8775	0.2776
Average	0.9878	0.9847	0.9847	0.0295

Table 28: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x)$ when only 20% data in out-of-distribution can be used for training, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9958	0.9930	0.9930	0.0135
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9449	0.9164	0.9165	0.1583
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9944	0.9811	0.9811	0.0216
CIFAR-10 vs iSUN	0.9208	0.8890	0.8890	0.2215
CIFAR-100 vs CelebA	0.9949	0.9899	0.9899	0.0199
CIFAR-100 vs Constant	0.9985	0.9989	0.9989	0.0000
CIFAR-100 vs LSUN	0.9409	0.9198	0.9198	0.1954
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9924	0.9750	0.9750	0.0291
CIFAR-100 vs iSUN	0.9220	0.8997	0.8997	0.2438
CelebA vs CIFAR-10	0.9948	0.9973	0.9973	0.0219
CelebA vs CIFAR-100	0.9685	0.9776	0.9776	0.1248
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9886	0.9883	0.9883	0.0324
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9996	0.9994	0.9994	0.0017
CelebA vs TinyImagenet	0.9956	0.9975	0.9975	0.0148
CelebA vs iSUN	0.9851	0.9872	0.9872	0.0432
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.5027	0.4478	0.4478	0.6380
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9998	0.9995	0.9995	0.0003
KMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9999	0.9998	0.9998	0.0003
KMNIST vs Omniglot	0.9983	0.9985	0.9985	0.0076
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9974	0.9981	0.9981	0.0021
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9586	0.9653	0.9653	0.2848
NotMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9997	0.9997	0.9997	0.0001
Omniglot vs MNIST	0.9983	0.9979	0.9979	0.0051
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9988	0.9995	0.9995	0.0033
SVHN vs CIFAR-100	0.9987	0.9994	0.9994	0.0040
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	0.9996	0.9998	0.9998	0.0013
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9987	0.9991	0.9991	0.0024
SVHN vs iSUN	0.9995	0.9998	0.9998	0.0016
TinyImagenet vs CelebA	0.9916	0.9814	0.9814	0.0365
TinyImagenet vs Constant	0.9999	0.9999	0.9999	0.0000
TinyImagenet vs LSUN	0.9329	0.9026	0.9026	0.2101
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9867	0.9538	0.9538	0.0497
TinyImagenet vs iSUN	0.9091	0.8789	0.8789	0.2686
Average	0.9881	0.9851	0.9851	0.0289

Table 29: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x) + 0.1p_S(x)$ when only 20% data in out-of-distribution can be used for training, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.3772	0.3266	0.3266	0.9945
CIFAR-10 vs Constant	0.0269	0.3102	0.3103	0.9980
CIFAR-10 vs LSUN	0.8325	0.8068	0.8068	0.5461
CIFAR-10 vs Noise	0.9999	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0360	0.1558	0.1558	0.9991
CIFAR-10 vs iSUN	0.8144	0.8045	0.8045	0.5498
CIFAR-100 vs CelebA	0.3726	0.3341	0.3342	0.9979
CIFAR-100 vs Constant	0.0230	0.3086	0.3087	0.9989
CIFAR-100 vs LSUN	0.8033	0.7964	0.7965	0.7172
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0455	0.1569	0.1569	0.9995
CIFAR-100 vs iSUN	0.7866	0.7955	0.7956	0.6933
CelebA vs CIFAR-10	0.6193	0.7058	0.7059	0.7974
CelebA vs CIFAR-100	0.6165	0.6889	0.6889	0.7590
CelebA vs Constant	0.0285	0.4550	0.4550	0.9931
CelebA vs LSUN	0.9264	0.9411	0.9411	0.2423
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0178	0.2594	0.2594	0.9993
CelebA vs TinyImagenet	0.6769	0.7417	0.7418	0.7176
CelebA vs iSUN	0.9176	0.9427	0.9427	0.2691
Constant vs CIFAR-10	0.9642	0.9638	0.9639	0.1432
Constant vs CIFAR-100	0.9924	0.9820	0.9821	0.0159
Constant vs CelebA	0.9833	0.9659	0.9659	0.0639
Constant vs LSUN	0.9971	0.9979	0.9979	0.0017
Constant vs Noise	0.9891	0.9943	0.9943	0.0000
Constant vs SVHN	0.6433	0.4649	0.4649	0.9172
Constant vs TinyImagenet	0.9783	0.9757	0.9757	0.0952
Constant vs iSUN	0.9864	0.9922	0.9922	0.0083
Constant28 vs FashionMNIST	0.9037	0.8314	0.8314	0.2371
Constant28 vs KMNIST	0.3194	0.3899	0.3900	0.9819
Constant28 vs MNIST	0.2138	0.3480	0.3480	0.9946
Constant28 vs Noise28	0.5463	0.7383	0.7383	1.0000
Constant28 vs NotMNIST	0.7114	0.6350	0.6351	0.8535
Constant28 vs Omniglot	0.0151	0.3507	0.3508	0.9999
FashionMNIST vs Constant28	0.1073	0.3232	0.3233	1.0000
FashionMNIST vs KMNIST	0.2064	0.3462	0.3463	0.9993
FashionMNIST vs MNIST	0.0112	0.3071	0.3071	1.0000
FashionMNIST vs Noise28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	0.3045	0.3883	0.3883	0.9787
FashionMNIST vs Omniglot	0.0151	0.3503	0.3503	1.0000
KMNIST vs Constant28	0.5496	0.5985	0.5986	0.9953
KMNIST vs FashionMNIST	0.7920	0.7640	0.7640	0.5819
KMNIST vs MNIST	0.0707	0.3132	0.3132	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.6187	0.5910	0.5911	0.8953
KMNIST vs Omniglot	0.0628	0.3567	0.3567	1.0000
MNIST vs Constant28	0.9892	0.9595	0.9596	0.0082
MNIST vs FashionMNIST	0.9875	0.9843	0.9843	0.0516
MNIST vs KMNIST	0.9272	0.9170	0.9171	0.2523
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9536	0.9011	0.9012	0.1368
MNIST vs Omniglot	0.4269	0.4878	0.4879	0.9004
Noise vs CIFAR-10	0.0001	0.3069	0.3069	0.9999
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0068	0.3081	0.3081	0.9945
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.4533	0.4307	0.4307	0.5620
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.3511	0.4308	0.4308	1.0000
NotMNIST vs FashionMNIST	0.6993	0.6683	0.6684	0.8526
NotMNIST vs KMNIST	0.3428	0.4148	0.4149	0.9946
NotMNIST vs MNIST	0.0451	0.3226	0.3226	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.0521	0.3653	0.3654	1.0000
Omniglot vs Constant28	0.9637	0.9482	0.9482	0.2555
Omniglot vs FashionMNIST	0.9842	0.9802	0.9802	0.0847
Omniglot vs KMNIST	0.9362	0.9279	0.9279	0.3184
Omniglot vs MNIST	0.5891	0.5492	0.5493	0.9861
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9524	0.8899	0.8900	0.1825
SVHN vs CIFAR-10	0.9662	0.9841	0.9841	0.1596
SVHN vs CIFAR-100	0.9536	0.9691	0.9691	0.1803
SVHN vs CelebA	0.9848	0.9904	0.9904	0.0508
SVHN vs Constant	0.1854	0.5558	0.5558	1.0000
SVHN vs LSUN	0.9944	0.9979	0.9979	0.0190
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9701	0.9848	0.9848	0.1325
SVHN vs iSUN	0.9939	0.9979	0.9979	0.0214
TinyImagenet vs CelebA	0.3239	0.2779	0.2780	0.9983
TinyImagenet vs Constant	0.0020	0.3033	0.3034	1.0000
TinyImagenet vs LSUN	0.7788	0.7557	0.7557	0.7212
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0303	0.1533	0.1533	0.9994
TinyImagenet vs iSUN	0.7687	0.7654	0.7655	0.6943
Average	0.5382	0.6326	0.6326	0.6151

Table 30: The detailed performance for indicator $\log p_\gamma(x)$ when only 20% data in mixture distribution can be used for training, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9518	0.8982	0.8982	0.1982
CIFAR-10 vs Constant	0.6776	0.5551	0.5552	0.5255
CIFAR-10 vs LSUN	0.9758	0.9689	0.9689	0.0910
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.8773	0.6147	0.6148	0.3205
CIFAR-10 vs iSUN	0.9618	0.9501	0.9501	0.1295
CIFAR-100 vs CelebA	0.9321	0.8664	0.8664	0.2729
CIFAR-100 vs Constant	0.6097	0.5343	0.5344	0.6795
CIFAR-100 vs LSUN	0.9750	0.9689	0.9689	0.0992
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8372	0.5674	0.5675	0.4549
CIFAR-100 vs iSUN	0.9611	0.9547	0.9548	0.1452
CelebA vs CIFAR-10	0.8226	0.8357	0.8358	0.4101
CelebA vs CIFAR-100	0.7796	0.7945	0.7946	0.4633
CelebA vs Constant	0.6080	0.6562	0.6562	0.5500
CelebA vs LSUN	0.9902	0.9915	0.9915	0.0299
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9855	0.9661	0.9661	0.0422
CelebA vs TinyImagenet	0.8369	0.8446	0.8446	0.3686
CelebA vs iSUN	0.9849	0.9872	0.9872	0.0435
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9993	0.9983	0.9983	0.0011
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9998	0.9989	0.9990	0.0004
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	0.9937	0.9723	0.9724	0.0076
KMNIST vs FashionMNIST	0.9992	0.9972	0.9972	0.0017
KMNIST vs MNIST	0.9992	0.9992	0.9992	0.0019
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9978	0.9944	0.9944	0.0047
KMNIST vs Omniglot	0.9889	0.9907	0.9907	0.0477
MNIST vs Constant28	0.9987	0.9985	0.9985	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9941	0.9956	0.9956	0.0244
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9976	0.9861	0.9861	0.0025
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9500	0.8548	0.8549	0.0643
Noise28 vs FashionMNIST	0.9999	0.9991	0.9991	0.0001
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9989	0.9989	0.9989	0.0066
NotMNIST vs FashionMNIST	0.9990	0.9974	0.9974	0.0014
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	0.9966	0.9928	0.9928	0.0050
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9999	0.9999	0.9999	0.0001
Omniglot vs MNIST	0.9998	0.9997	0.9997	0.0012
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9786	0.9868	0.9868	0.0574
SVHN vs CIFAR-100	0.9748	0.9825	0.9825	0.0663
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.9258	0.9370	0.9370	0.1387
SVHN vs LSUN	0.9998	0.9999	0.9999	0.0006
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9824	0.9873	0.9873	0.0445
SVHN vs iSUN	0.9989	0.9995	0.9995	0.0030
TinyImagenet vs CelebA	0.8917	0.7886	0.7886	0.3809
TinyImagenet vs Constant	0.6791	0.6063	0.6063	0.5640
TinyImagenet vs LSUN	0.9693	0.9620	0.9620	0.1256
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.7572	0.4640	0.4642	0.6147
TinyImagenet vs iSUN	0.9462	0.9348	0.9348	0.1918
Average	0.9650	0.9497	0.9498	0.0781

Table 31: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when only 20% data in mixture distribution can be used for training, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9381	0.8810	0.8810	0.2659
CIFAR-10 vs Constant	0.7654	0.6361	0.6362	0.4509
CIFAR-10 vs LSUN	0.9759	0.9687	0.9687	0.0938
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9066	0.6781	0.6782	0.2452
CIFAR-10 vs iSUN	0.9606	0.9493	0.9493	0.1388
CIFAR-100 vs CelebA	0.9111	0.8417	0.8417	0.3785
CIFAR-100 vs Constant	0.7088	0.6239	0.6240	0.6327
CIFAR-100 vs LSUN	0.9726	0.9665	0.9665	0.1103
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8717	0.6258	0.6260	0.3734
CIFAR-100 vs iSUN	0.9578	0.9516	0.9516	0.1611
CelebA vs CIFAR-10	0.8326	0.8501	0.8501	0.4341
CelebA vs CIFAR-100	0.8008	0.8162	0.8162	0.4630
CelebA vs Constant	0.7460	0.7507	0.7507	0.4327
CelebA vs LSUN	0.9917	0.9929	0.9929	0.0266
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9896	0.9767	0.9767	0.0358
CelebA vs TinyImagenet	0.8549	0.8627	0.8628	0.3739
CelebA vs iSUN	0.9864	0.9882	0.9882	0.0418
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9993	0.9984	0.9984	0.0015
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9998	0.9991	0.9991	0.0003
FashionMNIST vs Omniglot	0.9999	1.0000	1.0000	0.0001
KMNIST vs Constant28	0.9946	0.9752	0.9753	0.0068
KMNIST vs FashionMNIST	0.9994	0.9989	0.9989	0.0014
KMNIST vs MNIST	0.9956	0.9961	0.9961	0.0159
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9993	0.9983	0.9983	0.0026
KMNIST vs Omniglot	0.9689	0.9744	0.9744	0.1492
MNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9502	0.9660	0.9660	0.3819
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9832	0.9700	0.9701	0.0412
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9991	0.9991	0.9991	0.0022
NotMNIST vs FashionMNIST	0.9991	0.9978	0.9978	0.0011
NotMNIST vs KMNIST	0.9997	0.9997	0.9997	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9999	1.0000	1.0000	0.0000
Omniglot vs Constant28	0.9989	0.9984	0.9984	0.0050
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9991	0.9990	0.9990	0.0023
Omniglot vs MNIST	0.9930	0.9923	0.9923	0.0328
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9860	0.9913	0.9913	0.0372
SVHN vs CIFAR-100	0.9823	0.9871	0.9871	0.0423
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0000
SVHN vs Constant	0.9464	0.9583	0.9583	0.1152
SVHN vs LSUN	0.9998	0.9999	0.9999	0.0004
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9875	0.9910	0.9910	0.0288
SVHN vs iSUN	0.9994	0.9997	0.9997	0.0013
TinyImagenet vs CelebA	0.8645	0.7606	0.7607	0.5112
TinyImagenet vs Constant	0.7718	0.7285	0.7285	0.5003
TinyImagenet vs LSUN	0.9675	0.9600	0.9600	0.1340
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.8318	0.5623	0.5624	0.4803
TinyImagenet vs iSUN	0.9440	0.9329	0.9329	0.1994
Average	0.9710	0.9575	0.9576	0.0799

Table 32: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when only 20% data in mixture distribution can be used for training, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6738	0.5783	0.5784	0.9350
CIFAR-10 vs Constant	0.0929	0.3193	0.3194	0.9850
CIFAR-10 vs LSUN	0.9375	0.9229	0.9229	0.2268
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0867	0.1597	0.1597	0.9997
CIFAR-10 vs iSUN	0.9202	0.9094	0.9094	0.2699
CIFAR-100 vs CelebA	0.6429	0.5770	0.5770	0.9719
CIFAR-100 vs Constant	0.0916	0.3204	0.3204	0.9766
CIFAR-100 vs LSUN	0.9308	0.9212	0.9212	0.2665
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0953	0.1646	0.1646	0.9998
CIFAR-100 vs iSUN	0.9130	0.9083	0.9083	0.3137
CelebA vs CIFAR-10	0.7553	0.7952	0.7953	0.6001
CelebA vs CIFAR-100	0.7170	0.7532	0.7532	0.6200
CelebA vs Constant	0.1352	0.4787	0.4787	0.9545
CelebA vs LSUN	0.9783	0.9823	0.9823	0.0725
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1148	0.2719	0.2719	0.9956
CelebA vs TinyImagenet	0.7891	0.8213	0.8213	0.5241
CelebA vs iSUN	0.9738	0.9828	0.9828	0.0919
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9978	0.9975	0.9975	0.0111
Constant28 vs Omniglot	0.9995	0.9996	0.9996	0.0031
FashionMNIST vs Constant28	0.9924	0.9698	0.9698	0.0080
FashionMNIST vs KMNIST	0.5027	0.5231	0.5231	0.9496
FashionMNIST vs MNIST	0.0974	0.3178	0.3178	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8718	0.8745	0.8745	0.4771
FashionMNIST vs Omniglot	0.0661	0.3565	0.3565	1.0000
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9183	0.9045	0.9045	0.3136
KMNIST vs MNIST	0.1661	0.3337	0.3337	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9235	0.8811	0.8811	0.3099
KMNIST vs Omniglot	0.0921	0.3618	0.3618	0.9999
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9998	0.9997	0.9997	0.0007
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6643	0.6313	0.6314	0.6124
Noise vs CIFAR-10	0.1879	0.3473	0.3473	0.8329
Noise vs CIFAR-100	0.2423	0.3615	0.3615	0.7792
Noise vs CelebA	0.4697	0.2935	0.2935	0.5693
Noise vs Constant	0.4958	0.4480	0.4480	0.5255
Noise vs LSUN	0.1116	0.3293	0.3293	0.9082
Noise vs SVHN	0.2077	0.1840	0.1840	0.8068
Noise vs TinyImagenet	0.2683	0.3726	0.3726	0.7575

Noise vs iSUN	0.0813	0.3456	0.3456	0.9338
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9863	0.9625	0.9625	0.0080
NotMNIST vs FashionMNIST	0.9426	0.9477	0.9477	0.3463
NotMNIST vs KMNIST	0.8063	0.8210	0.8210	0.8387
NotMNIST vs MNIST	0.4639	0.4881	0.4881	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3437	0.4636	0.4636	0.9996
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9996	0.9995	0.9995	0.0015
Omniglot vs KMNIST	0.9880	0.9864	0.9864	0.0669
Omniglot vs MNIST	0.8336	0.7988	0.7988	0.6233
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9913	0.9959	0.9959	0.0368
SVHN vs CIFAR-100	0.9881	0.9946	0.9946	0.0487
SVHN vs CelebA	0.9991	0.9994	0.9994	0.0010
SVHN vs Constant	0.5311	0.6901	0.6901	0.8045
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0010
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9933	0.9969	0.9969	0.0271
SVHN vs iSUN	0.9996	0.9998	0.9998	0.0012
TinyImagenet vs CelebA	0.5668	0.4832	0.4832	0.9843
TinyImagenet vs Constant	0.0267	0.3056	0.3056	0.9967
TinyImagenet vs LSUN	0.9148	0.8954	0.8954	0.3005
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0565	0.1540	0.1540	1.0000
TinyImagenet vs iSUN	0.8917	0.8763	0.8764	0.3504
Average	0.6952	0.7442	0.7442	0.4089

Table 33: The detailed performance for indicator $W AIC'(x)$ which replace the likelihood in $\mathbb{E}_\theta \log p_\theta(x)$ with BPD, based on 5 models VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5919	0.4681	0.4681	0.9525
CIFAR-10 vs Constant	0.9914	0.9801	0.9802	0.0196
CIFAR-10 vs LSUN	0.7244	0.7858	0.7858	0.9803
CIFAR-10 vs Noise	0.9382	0.9663	0.9663	0.8727
CIFAR-10 vs SVHN	0.6186	0.3088	0.3088	0.8011
CIFAR-10 vs iSUN	0.6913	0.7640	0.7641	0.9895
CIFAR-100 vs CelebA	0.5483	0.4461	0.4461	0.9791
CIFAR-100 vs Constant	0.9663	0.9567	0.9568	0.1357
CIFAR-100 vs LSUN	0.6010	0.6987	0.6987	0.9948
CIFAR-100 vs Noise	0.8259	0.9050	0.9050	1.0000
CIFAR-100 vs SVHN	0.5955	0.3050	0.3050	0.9470
CIFAR-100 vs iSUN	0.5763	0.6851	0.6852	0.9984
CelebA vs CIFAR-10	0.8369	0.9000	0.9000	0.6757
CelebA vs CIFAR-100	0.8325	0.8898	0.8898	0.6574
CelebA vs Constant	0.9960	0.9933	0.9934	0.0082
CelebA vs LSUN	0.9175	0.9642	0.9642	0.6912
CelebA vs Noise	0.9932	0.9976	0.9976	0.0000
CelebA vs SVHN	0.8006	0.6351	0.6351	0.4576
CelebA vs TinyImagenet	0.8156	0.8850	0.8851	0.7500
CelebA vs iSUN	0.9139	0.9656	0.9656	0.6771
Constant vs CIFAR-10	0.9990	0.9962	0.9962	0.0012
Constant vs CIFAR-100	0.9981	0.9907	0.9908	0.0023
Constant vs CelebA	0.9999	0.9996	0.9996	0.0001
Constant vs LSUN	0.9998	0.9994	0.9994	0.0002
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9982	0.9816	0.9816	0.0021
Constant vs TinyImagenet	0.9986	0.9942	0.9942	0.0017
Constant vs iSUN	0.9999	0.9995	0.9995	0.0001
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	0.9984	0.9981	0.9981	0.0069
Constant28 vs Noise28	0.9984	0.9981	0.9981	0.0069
Constant28 vs NotMNIST	0.9990	0.9989	0.9989	0.0058
Constant28 vs Omniglot	0.9983	0.9983	0.9983	0.0059
FashionMNIST vs Constant28	0.9950	0.9739	0.9740	0.0050
FashionMNIST vs KMNIST	0.7216	0.6817	0.6818	0.6218
FashionMNIST vs MNIST	0.2135	0.3490	0.3490	0.9947
FashionMNIST vs Noise28	0.9986	0.9992	0.9992	0.0000
FashionMNIST vs NotMNIST	0.9889	0.9880	0.9880	0.0494
FashionMNIST vs Omniglot	0.2278	0.3962	0.3963	0.9576
KMNIST vs Constant28	0.9922	0.9655	0.9656	0.0080
KMNIST vs FashionMNIST	0.9108	0.9012	0.9012	0.3504
KMNIST vs MNIST	0.2178	0.3479	0.3479	0.9890
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9756	0.9511	0.9511	0.0711
KMNIST vs Omniglot	0.1041	0.3644	0.3644	0.9996
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9998	0.9998	0.9998	0.0005
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.7059	0.6603	0.6604	0.5514
Noise vs CIFAR-10	0.1906	0.3480	0.3480	0.8303
Noise vs CIFAR-100	0.2454	0.3623	0.3624	0.7761
Noise vs CelebA	0.4732	0.2948	0.2948	0.5667
Noise vs Constant	0.5009	0.4502	0.4502	0.5202
Noise vs LSUN	0.1149	0.3300	0.3300	0.9046
Noise vs SVHN	0.2137	0.1851	0.1851	0.8012
Noise vs TinyImagenet	0.2716	0.3735	0.3736	0.7526

Noise vs iSUN	0.0840	0.3462	0.3462	0.9311
Noise28 vs Constant28	0.4559	0.4317	0.4317	0.5599
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9911	0.9649	0.9650	0.0080
NotMNIST vs FashionMNIST	0.8972	0.9068	0.9068	0.4886
NotMNIST vs KMNIST	0.8359	0.8395	0.8395	0.6370
NotMNIST vs MNIST	0.5969	0.5567	0.5567	0.9069
NotMNIST vs Noise28	0.9976	0.9988	0.9988	0.0000
NotMNIST vs Omniglot	0.5484	0.5738	0.5739	0.9139
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9988	0.9988	0.9988	0.0007
Omniglot vs KMNIST	0.9883	0.9876	0.9876	0.0590
Omniglot vs MNIST	0.8092	0.7866	0.7866	0.8040
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.8243	0.9364	0.9364	0.8857
SVHN vs CIFAR-100	0.8320	0.9380	0.9380	0.8415
SVHN vs CelebA	0.8518	0.9130	0.9130	0.8664
SVHN vs Constant	0.9796	0.9872	0.9872	0.0766
SVHN vs LSUN	0.9231	0.9733	0.9733	0.5394
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.8269	0.9385	0.9385	0.8722
SVHN vs iSUN	0.9224	0.9752	0.9752	0.5212
TinyImagenet vs CelebA	0.5688	0.4291	0.4291	0.9478
TinyImagenet vs Constant	0.9874	0.9787	0.9788	0.0290
TinyImagenet vs LSUN	0.7000	0.7576	0.7577	0.9718
TinyImagenet vs Noise	0.8895	0.9398	0.9398	1.0000
TinyImagenet vs SVHN	0.6305	0.3139	0.3139	0.8501
TinyImagenet vs iSUN	0.6697	0.7380	0.7380	0.9863
Average	0.7459	0.7729	0.7729	0.4791

Table 34: The detailed performance for indicator $WAIC(x)$ based on 5 models VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6737	0.5781	0.5781	0.9352
CIFAR-10 vs Constant	0.0770	0.3161	0.3162	0.9960
CIFAR-10 vs LSUN	0.9374	0.9228	0.9228	0.2266
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0867	0.1597	0.1597	0.9997
CIFAR-10 vs iSUN	0.9202	0.9094	0.9094	0.2698
CIFAR-100 vs CelebA	0.6428	0.5772	0.5772	0.9721
CIFAR-100 vs Constant	0.0733	0.3166	0.3167	0.9889
CIFAR-100 vs LSUN	0.9308	0.9212	0.9212	0.2663
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0969	0.1649	0.1649	0.9998
CIFAR-100 vs iSUN	0.9131	0.9085	0.9085	0.3128
CelebA vs CIFAR-10	0.7550	0.7949	0.7949	0.6003
CelebA vs CIFAR-100	0.7166	0.7529	0.7529	0.6203
CelebA vs Constant	0.1061	0.4715	0.4715	0.9743
CelebA vs LSUN	0.9783	0.9823	0.9823	0.0725
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1145	0.2718	0.2719	0.9957
CelebA vs TinyImagenet	0.7889	0.8210	0.8211	0.5244
CelebA vs iSUN	0.9738	0.9828	0.9828	0.0920
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9969	0.9964	0.9964	0.0123
Constant28 vs Omniglot	0.9996	0.9997	0.9997	0.0027
FashionMNIST vs Constant28	0.9917	0.9691	0.9692	0.0080
FashionMNIST vs KMNIST	0.5015	0.5223	0.5224	0.9507
FashionMNIST vs MNIST	0.0972	0.3177	0.3178	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8673	0.8704	0.8704	0.4900
FashionMNIST vs Omniglot	0.0658	0.3565	0.3565	1.0000
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9183	0.9045	0.9045	0.3133
KMNIST vs MNIST	0.1660	0.3336	0.3337	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9228	0.8805	0.8805	0.3128
KMNIST vs Omniglot	0.0921	0.3618	0.3618	0.9999
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9998	0.9997	0.9997	0.0007
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6641	0.6312	0.6313	0.6125
Noise vs CIFAR-10	0.1879	0.3473	0.3473	0.8329
Noise vs CIFAR-100	0.2423	0.3615	0.3615	0.7792
Noise vs CelebA	0.4697	0.2935	0.2935	0.5693
Noise vs Constant	0.4958	0.4480	0.4480	0.5255
Noise vs LSUN	0.1116	0.3293	0.3293	0.9082
Noise vs SVHN	0.2077	0.1840	0.1840	0.8068
Noise vs TinyImagenet	0.2683	0.3726	0.3726	0.7575

Noise vs iSUN	0.0813	0.3456	0.3456	0.9338
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9856	0.9620	0.9621	0.0080
NotMNIST vs FashionMNIST	0.9426	0.9477	0.9477	0.3461
NotMNIST vs KMNIST	0.8060	0.8208	0.8208	0.8393
NotMNIST vs MNIST	0.4633	0.4878	0.4878	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3430	0.4633	0.4633	0.9996
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9996	0.9995	0.9995	0.0016
Omniglot vs KMNIST	0.9879	0.9864	0.9864	0.0677
Omniglot vs MNIST	0.8336	0.7987	0.7988	0.6226
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9912	0.9959	0.9959	0.0373
SVHN vs CIFAR-100	0.9879	0.9943	0.9943	0.0495
SVHN vs CelebA	0.9991	0.9994	0.9994	0.0010
SVHN vs Constant	0.5025	0.6763	0.6764	0.8299
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0010
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9933	0.9968	0.9968	0.0274
SVHN vs iSUN	0.9996	0.9998	0.9998	0.0012
TinyImagenet vs CelebA	0.5665	0.4822	0.4822	0.9844
TinyImagenet vs Constant	0.0194	0.3046	0.3046	0.9992
TinyImagenet vs LSUN	0.9147	0.8952	0.8952	0.3007
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0568	0.1542	0.1542	1.0000
TinyImagenet vs iSUN	0.8916	0.8763	0.8763	0.3506
Average	0.6940	0.7438	0.7438	0.4099

Table 35: The detailed performance for indicator $\mathbb{E}_\theta \log p_\theta(x)$ based on 5 models VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5140	0.3535	0.3536	0.9617
CIFAR-10 vs Constant	0.9957	0.9958	0.9958	0.0136
CIFAR-10 vs LSUN	0.3756	0.4252	0.4253	0.9874
CIFAR-10 vs Noise	0.6799	0.7754	0.7754	1.0000
CIFAR-10 vs SVHN	0.7997	0.6220	0.6221	0.7696
CIFAR-10 vs iSUN	0.3329	0.4274	0.4275	0.9931
CIFAR-100 vs CelebA	0.5074	0.3601	0.3603	0.9806
CIFAR-100 vs Constant	0.9727	0.9789	0.9789	0.1267
CIFAR-100 vs LSUN	0.3349	0.4047	0.4048	0.9952
CIFAR-100 vs Noise	0.5666	0.7018	0.7018	1.0000
CIFAR-100 vs SVHN	0.7384	0.5898	0.5898	0.9463
CIFAR-100 vs iSUN	0.3012	0.4136	0.4137	0.9989
CelebA vs CIFAR-10	0.7032	0.7929	0.7929	0.7696
CelebA vs CIFAR-100	0.7073	0.7956	0.7956	0.7376
CelebA vs Constant	0.9990	0.9994	0.9994	0.0028
CelebA vs LSUN	0.4670	0.6370	0.6371	0.9510
CelebA vs Noise	0.9470	0.9788	0.9788	0.3894
CelebA vs SVHN	0.9107	0.8760	0.8760	0.3608
CelebA vs TinyImagenet	0.6356	0.7508	0.7509	0.8409
CelebA vs iSUN	0.4456	0.6475	0.6475	0.9495
Constant vs CIFAR-10	0.9990	0.9961	0.9961	0.0012
Constant vs CIFAR-100	0.9981	0.9907	0.9907	0.0023
Constant vs CelebA	0.9999	0.9996	0.9996	0.0001
Constant vs LSUN	0.9998	0.9994	0.9994	0.0002
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9982	0.9815	0.9815	0.0022
Constant vs TinyImagenet	0.9986	0.9941	0.9942	0.0017
Constant vs iSUN	0.9999	0.9995	0.9995	0.0001
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	0.9983	0.9980	0.9980	0.0070
Constant28 vs Noise28	0.9978	0.9972	0.9972	0.0085
Constant28 vs NotMNIST	0.9990	0.9989	0.9989	0.0058
Constant28 vs Omniglot	0.9983	0.9982	0.9982	0.0061
FashionMNIST vs Constant28	0.9980	0.9967	0.9967	0.0048
FashionMNIST vs KMNIST	0.8845	0.8694	0.8695	0.4414
FashionMNIST vs MNIST	0.7222	0.7213	0.7213	0.8730
FashionMNIST vs Noise28	0.9555	0.9555	0.9555	0.2081
FashionMNIST vs NotMNIST	0.9923	0.9917	0.9917	0.0303
FashionMNIST vs Omniglot	0.7254	0.7407	0.7407	0.7777
KMNIST vs Constant28	0.9958	0.9904	0.9904	0.0056
KMNIST vs FashionMNIST	0.7986	0.7674	0.7675	0.6169
KMNIST vs MNIST	0.5358	0.5293	0.5294	0.9358
KMNIST vs Noise28	0.9948	0.9947	0.9947	0.0199
KMNIST vs NotMNIST	0.9925	0.9917	0.9917	0.0327
KMNIST vs Omniglot	0.3618	0.4709	0.4710	0.9947
MNIST vs Constant28	0.9956	0.9874	0.9875	0.0050
MNIST vs FashionMNIST	0.9993	0.9992	0.9992	0.0031
MNIST vs KMNIST	0.9969	0.9962	0.9962	0.0128
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.7513	0.7325	0.7325	0.5694
Noise vs CIFAR-10	0.9995	0.9992	0.9992	0.0017
Noise vs CIFAR-100	0.9997	0.9996	0.9996	0.0012
Noise vs CelebA	0.9999	0.9999	0.9999	0.0001
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	0.9994	0.9993	0.9993	0.0022
Noise vs SVHN	1.0000	0.9999	0.9999	0.0002
Noise vs TinyImagenet	0.9998	0.9998	0.9998	0.0006

Noise vs iSUN	0.9994	0.9991	0.9991	0.0021
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9861	0.9631	0.9631	0.0297
NotMNIST vs FashionMNIST	0.6001	0.5838	0.5839	0.8339
NotMNIST vs KMNIST	0.7956	0.7848	0.7848	0.6659
NotMNIST vs MNIST	0.6970	0.6748	0.6748	0.7916
NotMNIST vs Noise28	0.1248	0.3280	0.3281	1.0000
NotMNIST vs Omniglot	0.7192	0.7517	0.7518	0.8024
Omniglot vs Constant28	0.9954	0.9827	0.9827	0.0050
Omniglot vs FashionMNIST	0.9969	0.9963	0.9963	0.0090
Omniglot vs KMNIST	0.9751	0.9682	0.9682	0.1145
Omniglot vs MNIST	0.6178	0.5505	0.5506	0.9041
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9999	0.9999	0.9999	0.0002
SVHN vs CIFAR-10	0.7092	0.8610	0.8610	0.9119
SVHN vs CIFAR-100	0.7246	0.8669	0.8670	0.8703
SVHN vs CelebA	0.7472	0.8031	0.8032	0.9075
SVHN vs Constant	0.9829	0.9927	0.9927	0.0737
SVHN vs LSUN	0.8684	0.9431	0.9431	0.6197
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.7066	0.8614	0.8614	0.8994
SVHN vs iSUN	0.8661	0.9468	0.9468	0.5994
TinyImagenet vs CelebA	0.5502	0.3807	0.3808	0.9513
TinyImagenet vs Constant	0.9913	0.9925	0.9925	0.0226
TinyImagenet vs LSUN	0.4325	0.4554	0.4555	0.9766
TinyImagenet vs Noise	0.5584	0.6853	0.6853	1.0000
TinyImagenet vs SVHN	0.8005	0.6408	0.6409	0.8243
TinyImagenet vs iSUN	0.3933	0.4558	0.4559	0.9891
Average	0.8311	0.8444	0.8444	0.3821

Table 36: The detailed performance for indicator $Var_{\theta} \log p_{\theta}(x)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.2548	0.2263	0.2264	0.9823
CIFAR-10 vs Constant	0.5183	0.4917	0.4918	0.9877
CIFAR-10 vs LSUN	0.6392	0.5522	0.5523	0.9166
CIFAR-10 vs Noise	0.4713	0.5357	0.5357	1.0000
CIFAR-10 vs SVHN	0.5614	0.3516	0.3517	0.9653
CIFAR-10 vs iSUN	0.6231	0.5808	0.5809	0.9295
CIFAR-100 vs CelebA	0.3305	0.2490	0.2491	0.9956
CIFAR-100 vs Constant	0.4355	0.4519	0.4520	0.9983
CIFAR-100 vs LSUN	0.6025	0.5635	0.5636	0.9759
CIFAR-100 vs Noise	0.8285	0.8970	0.8970	1.0000
CIFAR-100 vs SVHN	0.4067	0.2274	0.2275	0.9921
CIFAR-100 vs iSUN	0.5762	0.5919	0.5920	0.9906
CelebA vs CIFAR-10	0.7914	0.9134	0.9135	0.8852
CelebA vs CIFAR-100	0.7780	0.8725	0.8733	0.9049
CelebA vs Constant	0.7876	0.7704	0.7711	0.9557
CelebA vs LSUN	0.7956	0.9208	0.9214	0.8548
CelebA vs Noise	0.7504	0.9934	0.9934	1.0000
CelebA vs SVHN	0.8098	0.8316	0.8317	0.9173
CelebA vs TinyImagenet	0.7567	0.8386	0.8394	0.8797
CelebA vs iSUN	0.8323	0.9581	0.9581	0.8716
Constant vs CIFAR-10	0.4945	0.5334	0.5336	0.7171
Constant vs CIFAR-100	0.5090	0.5218	0.5219	0.6846
Constant vs CelebA	0.2595	0.2695	0.2696	0.9396
Constant vs LSUN	0.7491	0.6646	0.6648	0.2923
Constant vs Noise	0.8619	0.8034	0.8034	0.1675
Constant vs SVHN	0.4537	0.3746	0.3746	0.8979
Constant vs TinyImagenet	0.3541	0.4589	0.4590	0.8620
Constant vs iSUN	0.7349	0.6935	0.6936	0.3178
Constant28 vs FashionMNIST	0.1265	0.3524	0.3525	0.9654
Constant28 vs KMNIST	0.2184	0.3694	0.3694	0.9077
Constant28 vs MNIST	0.0456	0.3207	0.3207	0.9879
Constant28 vs Noise28	0.6363	0.5924	0.5924	0.7439
Constant28 vs NotMNIST	0.8080	0.6974	0.6975	0.2889
Constant28 vs Omniglot	0.0316	0.3587	0.3587	1.0000
FashionMNIST vs Constant28	0.4111	0.6608	0.6609	0.7198
FashionMNIST vs KMNIST	0.6435	0.6178	0.6179	0.9090
FashionMNIST vs MNIST	0.4309	0.5552	0.5554	0.9492
FashionMNIST vs Noise28	0.6322	0.6433	0.6433	0.7079
FashionMNIST vs NotMNIST	0.5617	0.5991	0.5992	0.9013
FashionMNIST vs Omniglot	0.6056	0.6470	0.6471	0.9616
KMNIST vs Constant28	0.2842	0.5373	0.5373	1.0000
KMNIST vs FashionMNIST	0.1839	0.3506	0.3506	0.9996
KMNIST vs MNIST	0.3377	0.3967	0.3967	0.9837
KMNIST vs Noise28	0.3086	0.5663	0.5663	1.0000
KMNIST vs NotMNIST	0.5566	0.6848	0.6848	0.9370
KMNIST vs Omniglot	0.4898	0.5371	0.5372	0.9996
MNIST vs Constant28	0.9204	0.9356	0.9356	0.9970
MNIST vs FashionMNIST	0.8511	0.8836	0.8836	0.8849
MNIST vs KMNIST	0.9500	0.9448	0.9449	0.2371
MNIST vs Noise28	0.9391	0.9673	0.9673	0.8755
MNIST vs NotMNIST	0.9913	0.9921	0.9921	0.0232
MNIST vs Omniglot	0.8354	0.8176	0.8177	0.7051
Noise vs CIFAR-10	0.7429	0.5944	0.5944	0.3236
Noise vs CIFAR-100	0.7027	0.5629	0.5629	0.3622
Noise vs CelebA	0.3463	0.2544	0.2544	0.7203
Noise vs Constant	0.6981	0.5588	0.5589	0.3274
Noise vs LSUN	0.6717	0.5411	0.5412	0.3907
Noise vs SVHN	0.7703	0.4097	0.4098	0.2700
Noise vs TinyImagenet	0.5945	0.4990	0.4990	0.4866

Noise vs iSUN	0.6859	0.5752	0.5753	0.3771
Noise28 vs Constant28	0.6351	0.6542	0.6543	0.9970
Noise28 vs FashionMNIST	0.0336	0.3133	0.3133	0.9731
Noise28 vs KMNIST	0.2664	0.3683	0.3683	0.7565
Noise28 vs MNIST	0.0324	0.3132	0.3132	0.9688
Noise28 vs NotMNIST	0.9019	0.7659	0.7659	0.1092
Noise28 vs Omniglot	0.0002	0.3495	0.3496	0.9999
NotMNIST vs Constant28	0.1099	0.1923	0.1923	1.0000
NotMNIST vs FashionMNIST	0.4525	0.3661	0.3662	0.9475
NotMNIST vs KMNIST	0.2636	0.2530	0.2531	0.9835
NotMNIST vs MNIST	0.1581	0.2238	0.2239	0.9849
NotMNIST vs Noise28	0.4618	0.3710	0.3711	0.9564
NotMNIST vs Omniglot	0.1006	0.2266	0.2267	0.9954
Omniglot vs Constant28	0.0370	0.2897	0.2898	1.0000
Omniglot vs FashionMNIST	0.1631	0.3253	0.3254	0.9475
Omniglot vs KMNIST	0.7592	0.5931	0.5931	0.3770
Omniglot vs MNIST	0.1150	0.3067	0.3067	0.9582
Omniglot vs Noise28	0.1790	0.3282	0.3282	0.9762
Omniglot vs NotMNIST	0.3260	0.3615	0.3615	0.7062
SVHN vs CIFAR-10	0.6259	0.7477	0.7482	0.9577
SVHN vs CIFAR-100	0.6411	0.7509	0.7514	0.9169
SVHN vs CelebA	0.4400	0.4883	0.4890	0.9886
SVHN vs Constant	0.7060	0.8384	0.8384	0.9936
SVHN vs LSUN	0.8401	0.8687	0.8691	0.8933
SVHN vs Noise	0.9041	0.9722	0.9722	0.9999
SVHN vs TinyImagenet	0.5655	0.7186	0.7191	0.9786
SVHN vs iSUN	0.8134	0.8579	0.8583	0.9014
TinyImagenet vs CelebA	0.3822	0.2851	0.2851	0.9768
TinyImagenet vs Constant	0.5880	0.5099	0.5100	0.7120
TinyImagenet vs LSUN	0.5703	0.5473	0.5474	0.8231
TinyImagenet vs Noise	0.6535	0.7796	0.7796	0.9993
TinyImagenet vs SVHN	0.6037	0.3096	0.3096	0.8508
TinyImagenet vs iSUN	0.5709	0.5970	0.5971	0.8508
Average	0.5313	0.5656	0.5657	0.8185

Table 37: The detailed performance for indicator $\log p_\theta(x|y)$ based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6885	0.5960	0.5960	0.9369
CIFAR-10 vs Constant	0.3672	0.3931	0.3932	0.8013
CIFAR-10 vs LSUN	0.9412	0.9278	0.9278	0.2209
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0815	0.1593	0.1593	0.9997
CIFAR-10 vs iSUN	0.9214	0.9091	0.9091	0.2677
CIFAR-100 vs CelebA	0.6575	0.5921	0.5921	0.9693
CIFAR-100 vs Constant	0.2266	0.3522	0.3523	0.9393
CIFAR-100 vs LSUN	0.9334	0.9238	0.9238	0.2547
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0874	0.1656	0.1657	0.9999
CIFAR-100 vs iSUN	0.9147	0.9095	0.9095	0.3066
CelebA vs CIFAR-10	0.7587	0.8002	0.8002	0.6011
CelebA vs CIFAR-100	0.7173	0.7535	0.7536	0.6216
CelebA vs Constant	0.4070	0.5619	0.5620	0.7120
CelebA vs LSUN	0.9779	0.9823	0.9824	0.0728
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1090	0.2709	0.2710	0.9962
CelebA vs TinyImagenet	0.7890	0.8220	0.8221	0.5303
CelebA vs iSUN	0.9735	0.9829	0.9829	0.0951
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0002
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9993	0.9993	0.9993	0.0044
Constant28 vs KMNIST	0.9998	0.9998	0.9998	0.0008
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9956	0.9924	0.9924	0.0121
Constant28 vs Omniglot	0.9988	0.9988	0.9988	0.0051
FashionMNIST vs Constant28	0.9555	0.9355	0.9356	0.1845
FashionMNIST vs KMNIST	0.5101	0.5241	0.5241	0.9331
FashionMNIST vs MNIST	0.1006	0.3184	0.3184	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9458	0.9444	0.9444	0.2370
FashionMNIST vs Omniglot	0.0732	0.3579	0.3579	0.9996
KMNIST vs Constant28	0.9920	0.9621	0.9622	0.0080
KMNIST vs FashionMNIST	0.9195	0.9051	0.9051	0.3040
KMNIST vs MNIST	0.1672	0.3339	0.3340	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9150	0.8839	0.8839	0.3406
KMNIST vs Omniglot	0.0904	0.3615	0.3615	1.0000
MNIST vs Constant28	0.9951	0.9739	0.9739	0.0049
MNIST vs FashionMNIST	0.9999	0.9999	0.9999	0.0003
MNIST vs KMNIST	0.9996	0.9995	0.9995	0.0015
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9999	0.9999	0.9999	0.0000
MNIST vs Omniglot	0.5973	0.5876	0.5877	0.7087
Noise vs CIFAR-10	0.1882	0.3474	0.3474	0.8326
Noise vs CIFAR-100	0.2427	0.3616	0.3616	0.7783
Noise vs CelebA	0.4712	0.2940	0.2941	0.5682
Noise vs Constant	0.4960	0.4481	0.4481	0.5247
Noise vs LSUN	0.1118	0.3293	0.3294	0.9082
Noise vs SVHN	0.2076	0.1840	0.1840	0.8070
Noise vs TinyImagenet	0.2689	0.3728	0.3728	0.7567

Noise vs iSUN	0.0814	0.3456	0.3457	0.9337
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9895	0.9639	0.9639	0.0080
NotMNIST vs FashionMNIST	0.9236	0.9244	0.9244	0.3873
NotMNIST vs KMNIST	0.7238	0.7342	0.7343	0.9037
NotMNIST vs MNIST	0.3223	0.4161	0.4162	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2188	0.4126	0.4127	0.9999
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9995	0.9993	0.9993	0.0025
Omniglot vs KMNIST	0.9889	0.9874	0.9874	0.0654
Omniglot vs MNIST	0.8398	0.7965	0.7965	0.5774
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9912	0.9961	0.9961	0.0355
SVHN vs CIFAR-100	0.9875	0.9941	0.9941	0.0500
SVHN vs CelebA	0.9988	0.9992	0.9992	0.0020
SVHN vs Constant	0.8298	0.8894	0.8894	0.6735
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0010
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9922	0.9960	0.9960	0.0318
SVHN vs iSUN	0.9996	0.9998	0.9998	0.0008
TinyImagenet vs CelebA	0.5766	0.4827	0.4828	0.9836
TinyImagenet vs Constant	0.1322	0.3243	0.3244	0.9708
TinyImagenet vs LSUN	0.9128	0.8946	0.8946	0.3129
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0470	0.1546	0.1547	1.0000
TinyImagenet vs iSUN	0.8887	0.8733	0.8734	0.3578
Average	0.7031	0.7465	0.7465	0.4034

Table 38: The detailed performance for indicator $\log p_{\theta}(x)$ with BN when 10% data in batch are mixture distribution, with batch size 64, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6537	0.5299	0.5300	0.9306
CIFAR-10 vs Constant	0.7932	0.6484	0.6484	0.3132
CIFAR-10 vs LSUN	0.9488	0.9383	0.9383	0.1963
CIFAR-10 vs Noise	0.9852	0.9902	0.9902	0.0152
CIFAR-10 vs SVHN	0.0895	0.1600	0.1601	0.9997
CIFAR-10 vs iSUN	0.9271	0.9152	0.9152	0.2448
CIFAR-100 vs CelebA	0.6698	0.5905	0.5905	0.9563
CIFAR-100 vs Constant	0.6816	0.5633	0.5634	0.4993
CIFAR-100 vs LSUN	0.9391	0.9303	0.9303	0.2373
CIFAR-100 vs Noise	0.9933	0.9958	0.9958	0.0000
CIFAR-100 vs SVHN	0.1081	0.1720	0.1720	0.9993
CIFAR-100 vs iSUN	0.9195	0.9140	0.9140	0.2858
CelebA vs CIFAR-10	0.7777	0.8198	0.8198	0.5892
CelebA vs CIFAR-100	0.7320	0.7670	0.7670	0.6070
CelebA vs Constant	0.8798	0.8475	0.8475	0.1917
CelebA vs LSUN	0.9800	0.9845	0.9845	0.0694
CelebA vs Noise	0.9983	0.9994	0.9994	0.0000
CelebA vs SVHN	0.4014	0.3551	0.3552	0.9166
CelebA vs TinyImagenet	0.7996	0.8323	0.8324	0.5208
CelebA vs iSUN	0.9750	0.9839	0.9839	0.0895
Constant vs CIFAR-10	0.9998	0.9997	0.9997	0.0007
Constant vs CIFAR-100	0.9998	0.9998	0.9998	0.0008
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	0.9999	0.9999	0.0000
Constant vs TinyImagenet	0.9999	0.9999	0.9999	0.0002
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9923	0.9911	0.9911	0.0267
Constant28 vs KMNIST	0.9950	0.9942	0.9942	0.0249
Constant28 vs MNIST	0.9976	0.9972	0.9972	0.0134
Constant28 vs Noise28	0.9843	0.9900	0.9900	0.0089
Constant28 vs NotMNIST	0.9913	0.9858	0.9858	0.0165
Constant28 vs Omniglot	0.9899	0.9894	0.9894	0.0398
FashionMNIST vs Constant28	0.9943	0.9729	0.9730	0.0080
FashionMNIST vs KMNIST	0.5554	0.5524	0.5525	0.8916
FashionMNIST vs MNIST	0.1687	0.3356	0.3357	0.9985
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9325	0.9353	0.9353	0.3468
FashionMNIST vs Omniglot	0.1891	0.3855	0.3855	0.9948
KMNIST vs Constant28	0.9909	0.9695	0.9696	0.0093
KMNIST vs FashionMNIST	0.9213	0.9124	0.9124	0.3081
KMNIST vs MNIST	0.1867	0.3392	0.3392	0.9970
KMNIST vs Noise28	0.9995	0.9997	0.9997	0.0000
KMNIST vs NotMNIST	0.9750	0.9752	0.9752	0.1265
KMNIST vs Omniglot	0.2775	0.4118	0.4119	0.9649
MNIST vs Constant28	0.9951	0.9741	0.9742	0.0049
MNIST vs FashionMNIST	0.9929	0.9921	0.9921	0.0287
MNIST vs KMNIST	0.9994	0.9992	0.9992	0.0029
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5594	0.5685	0.5686	0.7830
Noise vs CIFAR-10	0.1882	0.3474	0.3474	0.8326
Noise vs CIFAR-100	0.2427	0.3616	0.3616	0.7783
Noise vs CelebA	0.4712	0.2940	0.2941	0.5681
Noise vs Constant	0.4960	0.4481	0.4481	0.5247
Noise vs LSUN	0.1118	0.3293	0.3294	0.9082
Noise vs SVHN	0.2076	0.1840	0.1840	0.8070
Noise vs TinyImagenet	0.2689	0.3728	0.3728	0.7567

Noise vs iSUN	0.0814	0.3456	0.3457	0.9337
Noise28 vs Constant28	0.4524	0.4303	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9886	0.9625	0.9626	0.0084
NotMNIST vs FashionMNIST	0.9024	0.8983	0.8983	0.4335
NotMNIST vs KMNIST	0.7472	0.7676	0.7677	0.8737
NotMNIST vs MNIST	0.6489	0.6442	0.6443	0.9226
NotMNIST vs Noise28	0.9743	0.9844	0.9844	0.0128
NotMNIST vs Omniglot	0.6253	0.6579	0.6579	0.9311
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9995	0.9993	0.9993	0.0021
Omniglot vs KMNIST	0.9901	0.9888	0.9888	0.0524
Omniglot vs MNIST	0.8461	0.8044	0.8044	0.5544
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9777	0.9910	0.9910	0.0969
SVHN vs CIFAR-100	0.9658	0.9865	0.9865	0.1662
SVHN vs CelebA	0.9537	0.9718	0.9718	0.3045
SVHN vs Constant	0.8057	0.9065	0.9065	0.6738
SVHN vs LSUN	0.9986	0.9995	0.9995	0.0041
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9779	0.9912	0.9912	0.0975
SVHN vs iSUN	0.9987	0.9995	0.9995	0.0043
TinyImagenet vs CelebA	0.5813	0.4719	0.4720	0.9794
TinyImagenet vs Constant	0.7080	0.5746	0.5747	0.4640
TinyImagenet vs LSUN	0.9158	0.8980	0.8980	0.3017
TinyImagenet vs Noise	0.9964	0.9980	0.9980	0.0000
TinyImagenet vs SVHN	0.0610	0.1567	0.1567	0.9998
TinyImagenet vs iSUN	0.8928	0.8771	0.8771	0.3435
Average	0.7393	0.7652	0.7652	0.3822

Table 39: The detailed performance for indicator $\log p_\theta(x)$ with BN when 90% data in batch are mixture distribution, with batch size 64, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5750	0.4440	0.4441	0.9479
CIFAR-10 vs Constant	0.0812	0.3182	0.3182	0.9756
CIFAR-10 vs LSUN	0.3807	0.4386	0.4387	0.9958
CIFAR-10 vs Noise	0.5988	0.6720	0.6720	0.9893
CIFAR-10 vs SVHN	0.3173	0.1956	0.1956	0.9497
CIFAR-10 vs iSUN	0.3827	0.4705	0.4706	0.9948
CIFAR-100 vs CelebA	0.5034	0.3728	0.3729	0.9689
CIFAR-100 vs Constant	0.0867	0.3195	0.3195	0.9705
CIFAR-100 vs LSUN	0.3398	0.4202	0.4203	0.9983
CIFAR-100 vs Noise	0.5474	0.6395	0.6395	0.9974
CIFAR-100 vs SVHN	0.2516	0.1820	0.1820	0.9715
CIFAR-100 vs iSUN	0.3084	0.4269	0.4270	0.9974
CelebA vs CIFAR-10	0.5080	0.6571	0.6572	0.9492
CelebA vs CIFAR-100	0.4925	0.6435	0.6436	0.9436
CelebA vs Constant	0.0620	0.4617	0.4617	0.9759
CelebA vs LSUN	0.3541	0.5890	0.5891	0.9919
CelebA vs Noise	0.3148	0.5998	0.5999	0.9983
CelebA vs SVHN	0.1524	0.2776	0.2776	0.9970
CelebA vs TinyImagenet	0.5229	0.6768	0.6769	0.9575
CelebA vs iSUN	0.4158	0.6544	0.6545	0.9860
Constant vs CIFAR-10	0.8966	0.8695	0.8696	0.3832
Constant vs CIFAR-100	0.9058	0.8887	0.8887	0.3578
Constant vs CelebA	0.9278	0.8591	0.8592	0.3223
Constant vs LSUN	0.8768	0.8435	0.8436	0.4151
Constant vs Noise	0.8978	0.9190	0.9190	0.6040
Constant vs SVHN	0.9529	0.8255	0.8256	0.1390
Constant vs TinyImagenet	0.8478	0.8096	0.8097	0.5052
Constant vs iSUN	0.8564	0.8425	0.8425	0.4654
Constant28 vs FashionMNIST	0.9303	0.8474	0.8474	0.1318
Constant28 vs KMNIST	0.8503	0.7065	0.7065	0.1989
Constant28 vs MNIST	0.8863	0.7507	0.7507	0.1516
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9122	0.7973	0.7973	0.1419
Constant28 vs Omniglot	0.8710	0.7657	0.7658	0.1662
FashionMNIST vs Constant28	0.0106	0.3081	0.3081	0.9975
FashionMNIST vs KMNIST	0.2812	0.3793	0.3793	0.9843
FashionMNIST vs MNIST	0.3360	0.4198	0.4199	0.9939
FashionMNIST vs Noise28	0.3120	0.3750	0.3751	0.8161
FashionMNIST vs NotMNIST	0.1587	0.3318	0.3319	0.9919
FashionMNIST vs Omniglot	0.3342	0.4761	0.4761	0.9877
KMNIST vs Constant28	0.5274	0.4909	0.4910	0.9405
KMNIST vs FashionMNIST	0.3688	0.4009	0.4010	0.9514
KMNIST vs MNIST	0.4348	0.4395	0.4395	0.9467
KMNIST vs Noise28	0.8244	0.8655	0.8655	0.8189
KMNIST vs NotMNIST	0.0474	0.3121	0.3121	0.9992
KMNIST vs Omniglot	0.4038	0.4855	0.4855	0.9653
MNIST vs Constant28	0.7072	0.5820	0.5821	0.4734
MNIST vs FashionMNIST	0.6479	0.5417	0.5417	0.6726
MNIST vs KMNIST	0.4180	0.4138	0.4138	0.7040
MNIST vs Noise28	0.9159	0.8295	0.8296	0.1656
MNIST vs NotMNIST	0.2937	0.3761	0.3761	0.7307
MNIST vs Omniglot	0.6744	0.7082	0.7083	0.8301
Noise vs CIFAR-10	0.5057	0.4808	0.4820	0.9114
Noise vs CIFAR-100	0.5047	0.4810	0.4821	0.9124
Noise vs CelebA	0.5029	0.3266	0.3270	0.9325
Noise vs Constant	0.5095	0.4888	0.4897	0.9143
Noise vs LSUN	0.4992	0.4776	0.4787	0.9162
Noise vs SVHN	0.5028	0.2633	0.2644	0.9112
Noise vs TinyImagenet	0.5027	0.4877	0.4887	0.9195

Noise vs iSUN	0.5080	0.5160	0.5171	0.9179
Noise28 vs Constant28	0.5540	0.4858	0.4861	0.7467
Noise28 vs FashionMNIST	0.5798	0.4885	0.4889	0.6091
Noise28 vs KMNIST	0.5835	0.4897	0.4902	0.5869
Noise28 vs MNIST	0.6097	0.5034	0.5039	0.5277
Noise28 vs NotMNIST	0.5434	0.4752	0.4756	0.7290
Noise28 vs Omniglot	0.6357	0.5663	0.5668	0.4805
NotMNIST vs Constant28	0.0685	0.3144	0.3145	0.9870
NotMNIST vs FashionMNIST	0.7352	0.6429	0.6430	0.6854
NotMNIST vs KMNIST	0.3471	0.4057	0.4058	0.9814
NotMNIST vs MNIST	0.2853	0.3792	0.3793	0.9924
NotMNIST vs Noise28	0.6673	0.6108	0.6109	0.8116
NotMNIST vs Omniglot	0.2842	0.4312	0.4313	0.9886
Omniglot vs Constant28	0.3772	0.3561	0.3562	0.6495
Omniglot vs FashionMNIST	0.1760	0.3002	0.3002	0.8494
Omniglot vs KMNIST	0.0809	0.2773	0.2773	0.9801
Omniglot vs MNIST	0.2370	0.3092	0.3092	0.9894
Omniglot vs Noise28	0.2759	0.3244	0.3245	0.7673
Omniglot vs NotMNIST	0.0224	0.2703	0.2703	0.9843
SVHN vs CIFAR-10	0.4445	0.7235	0.7235	0.9865
SVHN vs CIFAR-100	0.4309	0.7049	0.7050	0.9859
SVHN vs CelebA	0.3978	0.5356	0.5356	0.9965
SVHN vs Constant	0.4735	0.6769	0.6770	0.9042
SVHN vs LSUN	0.1982	0.5693	0.5694	0.9982
SVHN vs Noise	0.0037	0.5079	0.5079	0.9999
SVHN vs TinyImagenet	0.4360	0.7156	0.7156	0.9889
SVHN vs iSUN	0.2021	0.5942	0.5942	0.9959
TinyImagenet vs CelebA	0.4771	0.3365	0.3366	0.9226
TinyImagenet vs Constant	0.0298	0.3064	0.3065	0.9932
TinyImagenet vs LSUN	0.2929	0.3819	0.3820	0.9950
TinyImagenet vs Noise	0.2794	0.4279	0.4280	1.0000
TinyImagenet vs SVHN	0.1230	0.1597	0.1597	0.9964
TinyImagenet vs iSUN	0.3007	0.4135	0.4135	0.9948
Average	0.4640	0.5231	0.5233	0.8038

Table 40: The detailed performance for indicator difference between $\log p_\theta(x)$ with BN when 10% data in batch are mixture distribution, and $\log p_\theta(x)$ with BN when 90% data in batch are mixture distribution, with batch size 64, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9941	0.9880	0.9880	0.0260
CIFAR-10 vs Constant	0.9794	0.9643	0.9643	0.0511
CIFAR-10 vs LSUN	0.9980	0.9973	0.9973	0.0078
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.4518	0.2625	0.2626	0.9326
CIFAR-10 vs iSUN	0.9938	0.9925	0.9925	0.0236
CIFAR-100 vs CelebA	0.9757	0.9609	0.9609	0.1055
CIFAR-100 vs Constant	0.9695	0.9501	0.9501	0.0747
CIFAR-100 vs LSUN	0.9954	0.9943	0.9943	0.0186
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.6083	0.4331	0.4332	0.8706
CIFAR-100 vs iSUN	0.9868	0.9847	0.9847	0.0495
CelebA vs CIFAR-10	0.9963	0.9965	0.9965	0.0114
CelebA vs CIFAR-100	0.9914	0.9933	0.9933	0.0276
CelebA vs Constant	0.9978	0.9981	0.9981	0.0069
CelebA vs LSUN	0.9998	0.9999	0.9999	0.0005
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9992	0.9989	0.9989	0.0038
CelebA vs TinyImagenet	0.9870	0.9887	0.9887	0.0399
CelebA vs iSUN	1.0000	1.0000	1.0000	0.0001
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0001
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9993	0.9978	0.9978	0.0016
FashionMNIST vs KMNIST	0.9944	0.9945	0.9945	0.0273
FashionMNIST vs MNIST	0.9995	0.9994	0.9994	0.0025
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9994	0.9993	0.9993	0.0022
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	0.9996	0.9994	0.9994	0.0013
KMNIST vs FashionMNIST	0.9937	0.9927	0.9927	0.0248
KMNIST vs MNIST	0.8798	0.8128	0.8129	0.2789
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Omniglot	0.9959	0.9961	0.9961	0.0197
MNIST vs Constant28	0.9974	0.9920	0.9920	0.0030
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9995	0.9995	0.9995	0.0003
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9866	0.9881	0.9881	0.0393
Noise vs CIFAR-10	0.1882	0.3474	0.3474	0.8326
Noise vs CIFAR-100	0.2427	0.3616	0.3616	0.7783
Noise vs CelebA	0.4712	0.2940	0.2941	0.5681
Noise vs Constant	0.4960	0.4481	0.4481	0.5247
Noise vs LSUN	0.1118	0.3293	0.3294	0.9082
Noise vs SVHN	0.2076	0.1840	0.1840	0.8070
Noise vs TinyImagenet	0.2689	0.3728	0.3728	0.7567

Noise vs iSUN	0.0814	0.3456	0.3457	0.9337
Noise28 vs Constant28	0.4524	0.4303	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9968	0.9875	0.9875	0.0036
NotMNIST vs FashionMNIST	0.9930	0.9930	0.9930	0.0357
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	0.9963	0.9877	0.9877	0.0050
Omniglot vs FashionMNIST	0.9975	0.9978	0.9978	0.0002
Omniglot vs KMNIST	0.9844	0.9868	0.9868	0.0441
Omniglot vs MNIST	0.8619	0.8260	0.8260	0.5618
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9998	0.9997	0.9997	0.0000
SVHN vs CIFAR-10	0.9984	0.9995	0.9995	0.0008
SVHN vs CIFAR-100	0.9990	0.9997	0.9997	0.0000
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.9973	0.9991	0.9991	0.0000
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9991	0.9997	0.9997	0.0002
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0000
TinyImagenet vs CelebA	0.7702	0.6839	0.6839	0.8650
TinyImagenet vs Constant	0.9543	0.9141	0.9141	0.1003
TinyImagenet vs LSUN	0.9858	0.9808	0.9808	0.0530
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.5362	0.3679	0.3680	0.9264
TinyImagenet vs iSUN	0.9742	0.9679	0.9679	0.0867
Average	0.8515	0.8658	0.8658	0.1849

Table 41: The detailed performance for indicator $\log p_\theta(x)$ with BN based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6843	0.5896	0.5896	0.9360
CIFAR-10 vs Constant	0.1273	0.3257	0.3257	0.9868
CIFAR-10 vs LSUN	0.9449	0.9310	0.9310	0.2083
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0861	0.1588	0.1588	0.9992
CIFAR-10 vs iSUN	0.9213	0.9048	0.9048	0.2559
CIFAR-100 vs CelebA	0.6591	0.5963	0.5963	0.9686
CIFAR-100 vs Constant	0.1085	0.3240	0.3241	0.9981
CIFAR-100 vs LSUN	0.9318	0.9223	0.9223	0.2604
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0941	0.1665	0.1665	0.9998
CIFAR-100 vs iSUN	0.9136	0.9087	0.9088	0.3085
CelebA vs CIFAR-10	0.7526	0.7935	0.7936	0.6060
CelebA vs CIFAR-100	0.7129	0.7500	0.7500	0.6274
CelebA vs Constant	0.1486	0.4821	0.4821	0.9549
CelebA vs LSUN	0.9773	0.9818	0.9818	0.0747
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1016	0.2699	0.2700	0.9964
CelebA vs TinyImagenet	0.7854	0.8184	0.8184	0.5334
CelebA vs iSUN	0.9725	0.9821	0.9821	0.0958
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0001
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9858	0.9438	0.9439	0.0157
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9431	0.9242	0.9243	0.2558
FashionMNIST vs KMNIST	0.4932	0.5125	0.5125	0.9434
FashionMNIST vs MNIST	0.0971	0.3177	0.3177	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8772	0.8785	0.8786	0.4492
FashionMNIST vs Omniglot	0.0687	0.3571	0.3571	0.9998
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9299	0.9175	0.9175	0.2804
KMNIST vs MNIST	0.1604	0.3322	0.3322	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9196	0.8780	0.8780	0.3262
KMNIST vs Omniglot	0.0829	0.3601	0.3601	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0003
MNIST vs KMNIST	0.9996	0.9995	0.9995	0.0023
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5895	0.5805	0.5806	0.7095
Noise vs CIFAR-10	0.1882	0.3474	0.3474	0.8325
Noise vs CIFAR-100	0.2427	0.3616	0.3616	0.7786
Noise vs CelebA	0.4711	0.2940	0.2940	0.5681
Noise vs Constant	0.4960	0.4481	0.4481	0.5248
Noise vs LSUN	0.1118	0.3293	0.3293	0.9082
Noise vs SVHN	0.2076	0.1840	0.1840	0.8069
Noise vs TinyImagenet	0.2689	0.3728	0.3728	0.7567

Noise vs iSUN	0.0813	0.3456	0.3457	0.9336
Noise28 vs Constant28	0.4525	0.4304	0.4304	0.5630
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9875	0.9629	0.9630	0.0080
NotMNIST vs FashionMNIST	0.9250	0.9263	0.9263	0.3819
NotMNIST vs KMNIST	0.7214	0.7316	0.7317	0.9056
NotMNIST vs MNIST	0.3254	0.4172	0.4173	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2209	0.4133	0.4133	1.0000
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9994	0.9993	0.9993	0.0025
Omniglot vs KMNIST	0.9884	0.9868	0.9868	0.0660
Omniglot vs MNIST	0.8385	0.7944	0.7944	0.5761
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9917	0.9963	0.9963	0.0349
SVHN vs CIFAR-100	0.9880	0.9946	0.9946	0.0479
SVHN vs CelebA	0.9988	0.9992	0.9992	0.0019
SVHN vs Constant	0.7971	0.8521	0.8521	0.4666
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0009
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9921	0.9959	0.9960	0.0308
SVHN vs iSUN	0.9996	0.9998	0.9998	0.0010
TinyImagenet vs CelebA	0.5800	0.4898	0.4899	0.9837
TinyImagenet vs Constant	0.0819	0.3143	0.3144	0.9906
TinyImagenet vs LSUN	0.9144	0.8970	0.8970	0.3103
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0472	0.1544	0.1544	1.0000
TinyImagenet vs iSUN	0.8901	0.8747	0.8748	0.3550
Average	0.6941	0.7424	0.7424	0.4092

Table 42: The detailed performance for indicator $\log p_{\theta}(x)$ trained with BN but testing without BN based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4248	0.3042	0.3043	0.9897
CIFAR-10 vs Constant	0.9275	0.8884	0.8885	0.2414
CIFAR-10 vs LSUN	0.6180	0.6485	0.6485	0.9336
CIFAR-10 vs Noise	0.4012	0.5030	0.5030	0.9993
CIFAR-10 vs SVHN	0.6832	0.3780	0.3781	0.7613
CIFAR-10 vs iSUN	0.6142	0.6645	0.6646	0.9408
CIFAR-100 vs CelebA	0.4959	0.3513	0.3515	0.9807
CIFAR-100 vs Constant	0.9253	0.8878	0.8879	0.2492
CIFAR-100 vs LSUN	0.6582	0.6901	0.6902	0.9304
CIFAR-100 vs Noise	0.4526	0.5583	0.5583	0.9997
CIFAR-100 vs SVHN	0.7488	0.4620	0.4621	0.7165
CIFAR-100 vs iSUN	0.6847	0.7251	0.7252	0.9073
CelebA vs CIFAR-10	0.4920	0.6594	0.6594	0.9275
CelebA vs CIFAR-100	0.5100	0.6689	0.6689	0.9141
CelebA vs Constant	0.9478	0.9516	0.9516	0.1575
CelebA vs LSUN	0.6456	0.7846	0.7846	0.9204
CelebA vs Noise	0.6852	0.8339	0.8339	0.9713
CelebA vs SVHN	0.8476	0.7910	0.7911	0.5389
CelebA vs TinyImagenet	0.4738	0.6539	0.6539	0.9376
CelebA vs iSUN	0.5837	0.7649	0.7649	0.9471
Constant vs CIFAR-10	0.4911	0.4960	0.4961	0.9459
Constant vs CIFAR-100	0.4507	0.4704	0.4705	0.9610
Constant vs CelebA	0.4052	0.2834	0.2835	0.9580
Constant vs LSUN	0.5590	0.5431	0.5432	0.9118
Constant vs Noise	0.2809	0.3864	0.3865	0.9999
Constant vs SVHN	0.7635	0.4858	0.4859	0.6417
Constant vs TinyImagenet	0.5931	0.5711	0.5712	0.8780
Constant vs iSUN	0.5655	0.5784	0.5785	0.9129
Constant28 vs FashionMNIST	0.8922	0.8422	0.8422	0.2534
Constant28 vs KMNIST	0.9066	0.8690	0.8690	0.2369
Constant28 vs MNIST	0.9215	0.8714	0.8715	0.1811
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.8936	0.8215	0.8216	0.1953
Constant28 vs Omniglot	0.9295	0.9089	0.9089	0.1797
FashionMNIST vs Constant28	0.9899	0.9806	0.9806	0.0286
FashionMNIST vs KMNIST	0.7206	0.7065	0.7066	0.8807
FashionMNIST vs MNIST	0.6640	0.6893	0.6893	0.9382
FashionMNIST vs Noise28	0.7507	0.6343	0.6343	0.5320
FashionMNIST vs NotMNIST	0.8438	0.8517	0.8518	0.6797
FashionMNIST vs Omniglot	0.6665	0.7210	0.7211	0.9374
KMNIST vs Constant28	0.4726	0.4723	0.4724	0.8849
KMNIST vs FashionMNIST	0.6316	0.5765	0.5766	0.8024
KMNIST vs MNIST	0.5702	0.5400	0.5401	0.8939
KMNIST vs Noise28	0.1756	0.3424	0.3424	1.0000
KMNIST vs NotMNIST	0.9526	0.9409	0.9409	0.1750
KMNIST vs Omniglot	0.5961	0.6224	0.6226	0.8964
MNIST vs Constant28	0.5190	0.4589	0.4589	0.7349
MNIST vs FashionMNIST	0.3817	0.3996	0.3996	0.8483
MNIST vs KMNIST	0.7336	0.6150	0.6152	0.4677
MNIST vs Noise28	0.2210	0.3499	0.3500	0.9387
MNIST vs NotMNIST	0.9504	0.8794	0.8795	0.0808
MNIST vs Omniglot	0.3637	0.4779	0.4780	0.9834
Noise vs CIFAR-10	0.5601	0.5379	0.5370	0.8908
Noise vs CIFAR-100	0.5502	0.5292	0.5294	0.8898
Noise vs CelebA	0.5253	0.3505	0.3480	0.9289
Noise vs Constant	0.5401	0.5254	0.5241	0.9106
Noise vs LSUN	0.5492	0.5310	0.5306	0.8970
Noise vs SVHN	0.5517	0.3087	0.3071	0.8892
Noise vs TinyImagenet	0.5423	0.5333	0.5326	0.9026

Noise vs iSUN	0.5397	0.5542	0.5534	0.9113
Noise28 vs Constant28	0.6822	0.6181	0.6181	0.6498
Noise28 vs FashionMNIST	0.8179	0.7478	0.7487	0.4323
Noise28 vs KMNIST	0.8399	0.7718	0.7730	0.3843
Noise28 vs MNIST	0.8752	0.8195	0.8202	0.3240
Noise28 vs NotMNIST	0.7169	0.6487	0.6498	0.6177
Noise28 vs Omniglot	0.8929	0.8630	0.8636	0.2641
NotMNIST vs Constant28	0.9341	0.9052	0.9053	0.3262
NotMNIST vs FashionMNIST	0.2700	0.3628	0.3629	0.9398
NotMNIST vs KMNIST	0.6528	0.6314	0.6315	0.8877
NotMNIST vs MNIST	0.7147	0.7116	0.7117	0.8527
NotMNIST vs Noise28	0.3327	0.3880	0.3881	0.9614
NotMNIST vs Omniglot	0.7158	0.7438	0.7439	0.8532
Omniglot vs Constant28	0.9331	0.8398	0.8399	0.1649
Omniglot vs FashionMNIST	0.9565	0.9041	0.9042	0.1310
Omniglot vs KMNIST	0.9287	0.8759	0.8760	0.2341
Omniglot vs MNIST	0.7627	0.6938	0.6939	0.7307
Omniglot vs Noise28	0.8977	0.7785	0.7786	0.2416
Omniglot vs NotMNIST	0.9893	0.9746	0.9746	0.0295
SVHN vs CIFAR-10	0.5524	0.7795	0.7795	0.9780
SVHN vs CIFAR-100	0.5676	0.7849	0.7849	0.9631
SVHN vs CelebA	0.6022	0.6992	0.6992	0.9690
SVHN vs Constant	0.5523	0.7538	0.7539	0.8424
SVHN vs LSUN	0.8016	0.9131	0.9131	0.7809
SVHN vs Noise	0.9963	0.9985	0.9985	0.0132
SVHN vs TinyImagenet	0.5625	0.7894	0.7894	0.9689
SVHN vs iSUN	0.7976	0.9169	0.9169	0.7666
TinyImagenet vs CelebA	0.5439	0.3698	0.3700	0.9683
TinyImagenet vs Constant	0.9721	0.9589	0.9589	0.1026
TinyImagenet vs LSUN	0.6974	0.7046	0.7046	0.8873
TinyImagenet vs Noise	0.7205	0.7846	0.7846	0.9824
TinyImagenet vs SVHN	0.8768	0.7374	0.7374	0.5282
TinyImagenet vs iSUN	0.6901	0.7157	0.7157	0.8867
Average	0.6726	0.6697	0.6697	0.6935

Table 43: The detailed performance for indicator $T_{b,10\%,90\%}(x)$ with batch size 64, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7810	0.6715	0.6716	0.7991
CIFAR-10 vs Constant	0.1506	0.3328	0.3328	0.9455
CIFAR-10 vs LSUN	0.9853	0.9789	0.9789	0.0515
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0376	0.1564	0.1564	1.0000
CIFAR-10 vs iSUN	0.9691	0.9581	0.9581	0.0949
CIFAR-100 vs CelebA	0.7887	0.7182	0.7183	0.8307
CIFAR-100 vs Constant	0.0614	0.3149	0.3150	0.9943
CIFAR-100 vs LSUN	0.9854	0.9811	0.9811	0.0549
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0573	0.1623	0.1623	1.0000
CIFAR-100 vs iSUN	0.9705	0.9643	0.9643	0.0959
CelebA vs CIFAR-10	0.5270	0.6394	0.6395	0.8435
CelebA vs CIFAR-100	0.4958	0.6137	0.6137	0.8342
CelebA vs Constant	0.0377	0.4572	0.4572	0.9876
CelebA vs LSUN	0.9805	0.9816	0.9816	0.0557
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0165	0.2589	0.2589	0.9998
CelebA vs TinyImagenet	0.6094	0.6862	0.6863	0.7325
CelebA vs iSUN	0.9655	0.9702	0.9702	0.0852
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9998	0.9998	0.9998	0.0000
Constant28 vs Omniglot	0.9994	0.9994	0.9994	0.0019
FashionMNIST vs Constant28	0.7265	0.7459	0.7460	0.9394
FashionMNIST vs KMNIST	0.3733	0.4340	0.4341	0.9925
FashionMNIST vs MNIST	0.0650	0.3122	0.3122	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.5823	0.6378	0.6379	0.9735
FashionMNIST vs Omniglot	0.0320	0.3517	0.3517	1.0000
KMNIST vs Constant28	0.9918	0.9611	0.9612	0.0080
KMNIST vs FashionMNIST	0.9307	0.9180	0.9180	0.2742
KMNIST vs MNIST	0.2005	0.3433	0.3434	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8401	0.7862	0.7863	0.5464
KMNIST vs Omniglot	0.0905	0.3614	0.3614	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9994	0.9994	0.9994	0.0026
MNIST vs KMNIST	0.9945	0.9937	0.9937	0.0240
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6282	0.6387	0.6388	0.7368
Noise vs CIFAR-10	0.3613	0.4040	0.4041	0.9575
Noise vs CIFAR-100	0.3817	0.4104	0.4105	0.9341
Noise vs CelebA	0.4707	0.3036	0.3037	0.9112
Noise vs Constant	0.4871	0.4436	0.4438	0.5517
Noise vs LSUN	0.4646	0.4896	0.4897	0.9420
Noise vs SVHN	0.2752	0.1862	0.1863	0.9669
Noise vs TinyImagenet	0.3852	0.4256	0.4257	0.9559

Noise vs iSUN	0.4364	0.4976	0.4977	0.9656
Noise28 vs Constant28	0.5212	0.4579	0.4579	0.5381
Noise28 vs FashionMNIST	0.3536	0.3908	0.3909	0.9541
Noise28 vs KMNIST	0.2860	0.3693	0.3693	0.9895
Noise28 vs MNIST	0.5443	0.5109	0.5109	0.9599
Noise28 vs NotMNIST	0.0216	0.3097	0.3098	0.9963
Noise28 vs Omniglot	0.5009	0.5430	0.5431	0.9499
NotMNIST vs Constant28	0.9747	0.9379	0.9389	0.0634
NotMNIST vs FashionMNIST	0.9561	0.9606	0.9606	0.2652
NotMNIST vs KMNIST	0.8629	0.8826	0.8826	0.7056
NotMNIST vs MNIST	0.6147	0.6282	0.6282	0.9989
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3883	0.5005	0.5006	0.9990
Omniglot vs Constant28	0.9948	0.9682	0.9682	0.0080
Omniglot vs FashionMNIST	0.9999	0.9999	0.9999	0.0002
Omniglot vs KMNIST	0.9946	0.9937	0.9937	0.0262
Omniglot vs MNIST	0.9321	0.9128	0.9128	0.2661
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9989	0.9986	0.9986	0.0127
SVHN vs CIFAR-10	0.9956	0.9982	0.9982	0.0189
SVHN vs CIFAR-100	0.9931	0.9971	0.9971	0.0306
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0001
SVHN vs Constant	0.7543	0.8140	0.8140	0.4996
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9976	0.9990	0.9990	0.0089
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0006
TinyImagenet vs CelebA	0.6472	0.5562	0.5562	0.9477
TinyImagenet vs Constant	0.0443	0.3091	0.3091	0.9922
TinyImagenet vs LSUN	0.9805	0.9718	0.9718	0.0638
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0286	0.1537	0.1538	1.0000
TinyImagenet vs iSUN	0.9590	0.9432	0.9432	0.1129
Average	0.7226	0.7562	0.7562	0.4185

Table 44: The detailed performance for indicator $\log p_\theta(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6428	0.4551	0.4552	0.9334
CIFAR-10 vs Constant	0.8713	0.8198	0.8199	0.3615
CIFAR-10 vs LSUN	0.9752	0.9642	0.9642	0.0821
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9329	0.8338	0.8339	0.2733
CIFAR-10 vs iSUN	0.9538	0.9373	0.9373	0.1324
CIFAR-100 vs CelebA	0.6284	0.4554	0.4555	0.9649
CIFAR-100 vs Constant	0.9119	0.8982	0.8982	0.3726
CIFAR-100 vs LSUN	0.9716	0.9601	0.9601	0.0944
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8986	0.7974	0.7974	0.4959
CIFAR-100 vs iSUN	0.9496	0.9322	0.9322	0.1489
CelebA vs CIFAR-10	0.6411	0.7460	0.7461	0.8108
CelebA vs CIFAR-100	0.6858	0.7744	0.7744	0.7456
CelebA vs Constant	0.9658	0.9717	0.9717	0.0964
CelebA vs LSUN	0.9741	0.9781	0.9781	0.0751
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9728	0.9503	0.9503	0.0905
CelebA vs TinyImagenet	0.6909	0.7807	0.7807	0.7432
CelebA vs iSUN	0.9590	0.9681	0.9681	0.1098
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9998	0.9998	0.9998	0.0000
Constant28 vs Omniglot	0.9989	0.9982	0.9983	0.0019
FashionMNIST vs Constant28	0.5178	0.5431	0.5431	0.9450
FashionMNIST vs KMNIST	0.4766	0.4893	0.4894	0.9844
FashionMNIST vs MNIST	0.8553	0.8838	0.8838	0.7289
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.4007	0.4436	0.4437	0.9804
FashionMNIST vs Omniglot	0.9182	0.9398	0.9398	0.4378
KMNIST vs Constant28	0.9998	0.9998	0.9998	0.0000
KMNIST vs FashionMNIST	0.8879	0.8426	0.8427	0.2836
KMNIST vs MNIST	0.6345	0.6108	0.6108	0.8649
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.7791	0.7124	0.7125	0.5536
KMNIST vs Omniglot	0.8044	0.8148	0.8148	0.7053
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9987	0.9983	0.9983	0.0053
MNIST vs KMNIST	0.9860	0.9816	0.9816	0.0618
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6188	0.6337	0.6339	0.8300
Noise vs CIFAR-10	0.3900	0.4294	0.4294	0.9479
Noise vs CIFAR-100	0.4192	0.4420	0.4420	0.9152
Noise vs CelebA	0.4837	0.3205	0.3205	0.9088
Noise vs Constant	0.9153	0.8459	0.8460	0.1590
Noise vs LSUN	0.4645	0.4883	0.4883	0.9417
Noise vs SVHN	0.3381	0.2047	0.2047	0.9542
Noise vs TinyImagenet	0.3981	0.4425	0.4425	0.9533

Noise vs iSUN	0.4375	0.5009	0.5009	0.9654
Noise28 vs Constant28	0.9133	0.8635	0.8635	0.1806
Noise28 vs FashionMNIST	0.5410	0.5222	0.5224	0.9191
Noise28 vs KMNIST	0.4084	0.4440	0.4442	0.9794
Noise28 vs MNIST	0.5839	0.5666	0.5669	0.9385
Noise28 vs NotMNIST	0.8715	0.8148	0.8148	0.3405
Noise28 vs Omniglot	0.5123	0.5617	0.5620	0.9497
NotMNIST vs Constant28	0.9712	0.9638	0.9638	0.0760
NotMNIST vs FashionMNIST	0.8950	0.8676	0.8677	0.3300
NotMNIST vs KMNIST	0.6564	0.6051	0.6052	0.8067
NotMNIST vs MNIST	0.3946	0.4408	0.4409	0.9997
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.5265	0.5841	0.5843	0.9876
Omniglot vs Constant28	0.9996	0.9994	0.9994	0.0030
Omniglot vs FashionMNIST	0.9999	0.9999	0.9999	0.0003
Omniglot vs KMNIST	0.9923	0.9900	0.9900	0.0383
Omniglot vs MNIST	0.8906	0.8057	0.8059	0.3113
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9983	0.9978	0.9978	0.0129
SVHN vs CIFAR-10	0.9907	0.9945	0.9945	0.0259
SVHN vs CIFAR-100	0.9849	0.9907	0.9907	0.0418
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.7622	0.8479	0.8479	0.4752
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9952	0.9973	0.9973	0.0137
SVHN vs iSUN	0.9997	0.9998	0.9998	0.0010
TinyImagenet vs CelebA	0.4753	0.3273	0.3274	0.9841
TinyImagenet vs Constant	0.9498	0.9247	0.9247	0.1449
TinyImagenet vs LSUN	0.9691	0.9512	0.9513	0.0897
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9478	0.8727	0.8727	0.2151
TinyImagenet vs iSUN	0.9431	0.9143	0.9144	0.1481
Average	0.8426	0.8330	0.8330	0.3334

Table 45: The detailed performance for indicator $p_S(x)$ based on model PixelCNN

let μ, σ be the $\mathbb{E}_{p_{in}} \log p_{\theta}(x)$ and $Var_{p_{in}} \log p_{\theta}(x)$. $p_S(x) = p_{\mathcal{N}(\mu, \sigma)}(\log p_{\theta}(x))$.

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6446	0.4476	0.4477	0.8958
CIFAR-10 vs Constant	0.8665	0.8205	0.8206	0.3910
CIFAR-10 vs LSUN	0.9779	0.9655	0.9655	0.0696
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9251	0.8337	0.8337	0.3208
CIFAR-10 vs iSUN	0.9565	0.9377	0.9377	0.1170
CIFAR-100 vs CelebA	0.6289	0.4394	0.4395	0.9214
CIFAR-100 vs Constant	0.8981	0.8937	0.8937	0.4752
CIFAR-100 vs LSUN	0.9760	0.9622	0.9622	0.0751
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8827	0.7965	0.7965	0.6242
CIFAR-100 vs iSUN	0.9542	0.9336	0.9336	0.1211
CelebA vs CIFAR-10	0.6409	0.7448	0.7449	0.8110
CelebA vs CIFAR-100	0.6857	0.7749	0.7750	0.7441
CelebA vs Constant	0.9647	0.9714	0.9714	0.1037
CelebA vs LSUN	0.9753	0.9782	0.9782	0.0697
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9708	0.9502	0.9502	0.1029
CelebA vs TinyImagenet	0.6919	0.7798	0.7799	0.7329
CelebA vs iSUN	0.9603	0.9684	0.9684	0.1025
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0001
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9982	0.9991	0.9982	0.0000
Constant28 vs KMNIST	0.9982	0.9991	0.9982	0.0000
Constant28 vs MNIST	0.9982	0.9991	0.9982	0.0000
Constant28 vs Noise28	0.9982	0.9991	0.9982	0.0000
Constant28 vs NotMNIST	0.9978	0.9987	0.9978	0.0003
Constant28 vs Omniglot	0.9972	0.9973	0.9966	0.0021
FashionMNIST vs Constant28	0.5292	0.5549	0.5549	0.9639
FashionMNIST vs KMNIST	0.4721	0.4867	0.4868	0.9695
FashionMNIST vs MNIST	0.8633	0.8825	0.8825	0.6027
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.4048	0.4456	0.4457	0.9872
FashionMNIST vs Omniglot	0.9326	0.9446	0.9446	0.3110
KMNIST vs Constant28	0.9997	0.9997	0.9997	0.0039
KMNIST vs FashionMNIST	0.8858	0.8461	0.8461	0.3137
KMNIST vs MNIST	0.6384	0.6009	0.6011	0.7952
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.7731	0.7177	0.7177	0.6177
KMNIST vs Omniglot	0.8215	0.8172	0.8172	0.5522
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9988	0.9984	0.9984	0.0036
MNIST vs KMNIST	0.9892	0.9835	0.9835	0.0386
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6304	0.6423	0.6424	0.7774
Noise vs CIFAR-10	0.3896	0.4290	0.4292	0.9486
Noise vs CIFAR-100	0.4187	0.4417	0.4418	0.9158
Noise vs CelebA	0.4834	0.3202	0.3203	0.9091
Noise vs Constant	0.9101	0.8435	0.8416	0.1617
Noise vs LSUN	0.4644	0.4883	0.4884	0.9418
Noise vs SVHN	0.3374	0.2045	0.2046	0.9556
Noise vs TinyImagenet	0.3978	0.4422	0.4424	0.9534

Noise vs iSUN	0.4374	0.5008	0.5009	0.9655
Noise28 vs Constant28	0.9128	0.8630	0.8629	0.1806
Noise28 vs FashionMNIST	0.5404	0.5223	0.5224	0.9224
Noise28 vs KMNIST	0.4081	0.4441	0.4442	0.9811
Noise28 vs MNIST	0.5838	0.5666	0.5667	0.9402
Noise28 vs NotMNIST	0.8700	0.8135	0.8135	0.3532
Noise28 vs Omniglot	0.5123	0.5617	0.5618	0.9508
NotMNIST vs Constant28	0.9518	0.9598	0.9598	0.2632
NotMNIST vs FashionMNIST	0.8783	0.8862	0.8862	0.5809
NotMNIST vs KMNIST	0.6814	0.6711	0.6712	0.9732
NotMNIST vs MNIST	0.4545	0.4877	0.4878	0.9972
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.5173	0.5703	0.5703	0.9592
Omniglot vs Constant28	0.9996	0.9994	0.9994	0.0030
Omniglot vs FashionMNIST	0.9999	0.9998	0.9998	0.0006
Omniglot vs KMNIST	0.9907	0.9882	0.9882	0.0506
Omniglot vs MNIST	0.8858	0.8031	0.8031	0.3484
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9980	0.9974	0.9974	0.0135
SVHN vs CIFAR-10	0.9895	0.9943	0.9943	0.0351
SVHN vs CIFAR-100	0.9836	0.9907	0.9907	0.0548
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.7631	0.8500	0.8501	0.4970
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9945	0.9972	0.9972	0.0199
SVHN vs iSUN	0.9996	0.9998	0.9998	0.0011
TinyImagenet vs CelebA	0.4680	0.3161	0.3162	0.9672
TinyImagenet vs Constant	0.9397	0.9194	0.9194	0.1985
TinyImagenet vs LSUN	0.9723	0.9524	0.9525	0.0736
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9304	0.8616	0.8616	0.3308
TinyImagenet vs iSUN	0.9467	0.9156	0.9157	0.1260
Average	0.8428	0.8338	0.8338	0.3390

Table 46: The detailed performance for indicator $T_{perm}(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4271	0.3502	0.3503	0.9970
CIFAR-10 vs Constant	0.9995	0.9996	0.9996	0.0000
CIFAR-10 vs LSUN	0.9434	0.9507	0.9507	0.2787
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.8188	0.7274	0.7274	0.8662
CIFAR-10 vs iSUN	0.9455	0.9564	0.9564	0.2676
CIFAR-100 vs CelebA	0.5022	0.4625	0.4625	0.9990
CIFAR-100 vs Constant	0.9998	0.9999	0.9999	0.0000
CIFAR-100 vs LSUN	0.9565	0.9642	0.9642	0.1996
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8399	0.7650	0.7650	0.8270
CIFAR-100 vs iSUN	0.9578	0.9682	0.9682	0.1832
CelebA vs CIFAR-10	0.8456	0.8852	0.8853	0.4614
CelebA vs CIFAR-100	0.7613	0.7883	0.7884	0.5299
CelebA vs Constant	0.9999	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9935	0.9961	0.9961	0.0269
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9905	0.9879	0.9879	0.0392
CelebA vs TinyImagenet	0.8159	0.8347	0.8348	0.4244
CelebA vs iSUN	0.9949	0.9970	0.9970	0.0193
Constant vs CIFAR-10	0.9995	0.9990	0.9990	0.0011
Constant vs CIFAR-100	0.9998	0.9997	0.9997	0.0009
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9999	0.9997	0.9997	0.0004
Constant vs TinyImagenet	0.9999	0.9998	0.9998	0.0005
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9998	0.9998	0.9998	0.0000
Constant28 vs Omniglot	0.9993	0.9992	0.9992	0.0021
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.8333	0.8687	0.8687	0.7896
FashionMNIST vs MNIST	0.9886	0.9921	0.9921	0.0130
FashionMNIST vs Noise28	0.0033	0.3072	0.3073	1.0000
FashionMNIST vs NotMNIST	0.7662	0.7417	0.7418	0.6021
FashionMNIST vs Omniglot	0.9784	0.9861	0.9861	0.0990
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.8216	0.8026	0.8026	0.5646
KMNIST vs MNIST	0.9899	0.9915	0.9915	0.0464
KMNIST vs Noise28	0.0073	0.3071	0.3072	1.0000
KMNIST vs NotMNIST	0.6726	0.6300	0.6302	0.6307
KMNIST vs Omniglot	0.9711	0.9773	0.9773	0.1501
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.8002	0.7291	0.7292	0.6205
MNIST vs KMNIST	0.3440	0.3914	0.3914	0.9945
MNIST vs Noise28	0.4646	0.4436	0.4437	0.9475
MNIST vs NotMNIST	0.9606	0.9209	0.9210	0.1269
MNIST vs Omniglot	0.7286	0.7675	0.7676	0.9109
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.7825	0.8574	0.8575	0.9935
NotMNIST vs KMNIST	0.7965	0.8730	0.8730	0.9983
NotMNIST vs MNIST	0.9327	0.9596	0.9596	0.7525
NotMNIST vs Noise28	0.3422	0.5719	0.5719	1.0000
NotMNIST vs Omniglot	0.9092	0.9524	0.9524	0.9005
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.8327	0.7689	0.7689	0.5748
Omniglot vs KMNIST	0.2490	0.3121	0.3121	0.9968
Omniglot vs MNIST	0.8888	0.8983	0.8983	0.6447
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.6919	0.5679	0.5680	0.5937
SVHN vs CIFAR-10	0.8864	0.9405	0.9405	0.3966
SVHN vs CIFAR-100	0.8525	0.9153	0.9154	0.4453
SVHN vs CelebA	0.9956	0.9966	0.9966	0.0172
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0002
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9457	0.9715	0.9715	0.1954
SVHN vs iSUN	0.9999	0.9999	0.9999	0.0007
TinyImagenet vs CelebA	0.3674	0.3604	0.3604	0.9995
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	0.9671	0.9681	0.9681	0.1706
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.7424	0.6616	0.6616	0.9630
TinyImagenet vs iSUN	0.9633	0.9676	0.9676	0.1867
Average	0.8833	0.8916	0.8916	0.2766

Table 47: The detailed performance for indicator $S(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7560	0.6668	0.6669	0.8772
CIFAR-10 vs Constant	0.0648	0.3155	0.3155	0.9889
CIFAR-10 vs LSUN	0.9736	0.9658	0.9658	0.0998
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0411	0.1572	0.1572	1.0000
CIFAR-10 vs iSUN	0.9577	0.9473	0.9473	0.1365
CIFAR-100 vs CelebA	0.7437	0.6706	0.6707	0.9069
CIFAR-100 vs Constant	0.0693	0.3179	0.3180	0.9996
CIFAR-100 vs LSUN	0.9719	0.9656	0.9656	0.1098
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0666	0.1678	0.1678	1.0000
CIFAR-100 vs iSUN	0.9557	0.9490	0.9490	0.1523
CelebA vs CIFAR-10	0.5484	0.6529	0.6529	0.8280
CelebA vs CIFAR-100	0.5168	0.6249	0.6249	0.8156
CelebA vs Constant	0.0285	0.4552	0.4552	0.9957
CelebA vs LSUN	0.9757	0.9778	0.9778	0.0711
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0225	0.2594	0.2594	0.9998
CelebA vs TinyImagenet	0.6280	0.6995	0.6996	0.7157
CelebA vs iSUN	0.9622	0.9693	0.9693	0.1005
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0001
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0002
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9927	0.9926	0.9926	0.0387
Constant28 vs KMNIST	0.9553	0.9580	0.9580	0.2496
Constant28 vs MNIST	0.7781	0.8227	0.8230	0.8543
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9973	0.9971	0.9971	0.0150
Constant28 vs Omniglot	0.6884	0.7840	0.7843	0.8941
FashionMNIST vs Constant28	0.6852	0.7095	0.7096	0.9846
FashionMNIST vs KMNIST	0.3588	0.4261	0.4262	0.9945
FashionMNIST vs MNIST	0.0578	0.3112	0.3112	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.5348	0.6067	0.6067	0.9797
FashionMNIST vs Omniglot	0.0308	0.3516	0.3516	1.0000
KMNIST vs Constant28	0.9912	0.9605	0.9606	0.0119
KMNIST vs FashionMNIST	0.9297	0.9158	0.9158	0.2778
KMNIST vs MNIST	0.1851	0.3389	0.3389	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8510	0.7966	0.7967	0.5114
KMNIST vs Omniglot	0.0890	0.3611	0.3612	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9994	0.9993	0.9993	0.0028
MNIST vs KMNIST	0.9958	0.9953	0.9953	0.0186
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6785	0.6881	0.6882	0.6755
Noise vs CIFAR-10	0.2872	0.3752	0.3753	0.9729
Noise vs CIFAR-100	0.3134	0.3832	0.3833	0.9553
Noise vs CelebA	0.4106	0.2782	0.2783	0.9196
Noise vs Constant	0.4806	0.4405	0.4406	0.5716
Noise vs LSUN	0.5456	0.5159	0.5160	0.8329
Noise vs SVHN	0.2804	0.1877	0.1878	0.9758
Noise vs TinyImagenet	0.3155	0.3981	0.3982	0.9697

Noise vs iSUN	0.4880	0.5083	0.5084	0.8885
Noise28 vs Constant28	0.4536	0.4289	0.4290	0.6151
Noise28 vs FashionMNIST	0.0180	0.3090	0.3091	0.9984
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0007	0.3069	0.3070	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3496	1.0000
NotMNIST vs Constant28	0.9594	0.9220	0.9208	0.1103
NotMNIST vs FashionMNIST	0.9435	0.9474	0.9474	0.3183
NotMNIST vs KMNIST	0.8385	0.8573	0.8573	0.7606
NotMNIST vs MNIST	0.5074	0.5434	0.5434	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3443	0.4784	0.4784	0.9998
Omniglot vs Constant28	0.9944	0.9676	0.9677	0.0080
Omniglot vs FashionMNIST	0.9996	0.9995	0.9995	0.0023
Omniglot vs KMNIST	0.9922	0.9911	0.9911	0.0431
Omniglot vs MNIST	0.8979	0.8675	0.8675	0.3849
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9972	0.9963	0.9963	0.0143
SVHN vs CIFAR-10	0.9930	0.9969	0.9969	0.0305
SVHN vs CIFAR-100	0.9899	0.9957	0.9957	0.0476
SVHN vs CelebA	0.9998	0.9998	0.9998	0.0001
SVHN vs Constant	0.8155	0.8511	0.8512	0.3917
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0004
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9962	0.9984	0.9984	0.0162
SVHN vs iSUN	0.9997	0.9999	0.9999	0.0008
TinyImagenet vs CelebA	0.5967	0.5090	0.5091	0.9762
TinyImagenet vs Constant	0.0130	0.3040	0.3041	0.9998
TinyImagenet vs LSUN	0.9554	0.9411	0.9411	0.1566
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0342	0.1544	0.1544	1.0000
TinyImagenet vs iSUN	0.9337	0.9169	0.9169	0.2045
Average	0.6899	0.7400	0.7401	0.4508

Table 48: The detailed performance for indicator $\log p_{\theta_0}(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7021	0.6189	0.6190	0.9570
CIFAR-10 vs Constant	0.6422	0.5286	0.5287	0.6184
CIFAR-10 vs LSUN	0.9611	0.9683	0.9683	0.2375
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.2209	0.1797	0.1798	0.9570
CIFAR-10 vs iSUN	0.9425	0.9514	0.9514	0.3427
CIFAR-100 vs CelebA	0.9271	0.8609	0.8609	0.3166
CIFAR-100 vs Constant	0.4502	0.4250	0.4250	0.6677
CIFAR-100 vs LSUN	0.9974	0.9962	0.9962	0.0086
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0956	0.1628	0.1628	0.9994
CIFAR-100 vs iSUN	0.9924	0.9899	0.9899	0.0231
CelebA vs CIFAR-10	0.2805	0.5227	0.5227	0.9656
CelebA vs CIFAR-100	0.2672	0.5168	0.5168	0.9514
CelebA vs Constant	0.4485	0.5772	0.5773	0.6093
CelebA vs LSUN	0.9905	0.9898	0.9898	0.0242
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0056	0.2583	0.2583	0.9995
CelebA vs TinyImagenet	0.3210	0.5431	0.5432	0.9726
CelebA vs iSUN	0.9696	0.9635	0.9636	0.0642
Constant vs CIFAR-10	0.9999	0.9999	0.9999	0.0006
Constant vs CIFAR-100	0.9999	0.9999	0.9999	0.0003
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9997	0.9993	0.9993	0.0012
Constant vs TinyImagenet	0.9999	0.9997	0.9997	0.0002
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9995	0.9995	0.9995	0.0002
Constant28 vs Omniglot	0.9999	0.9999	0.9999	0.0005
FashionMNIST vs Constant28	0.6329	0.5160	0.5160	0.3993
FashionMNIST vs KMNIST	0.7924	0.7906	0.7906	0.7272
FashionMNIST vs MNIST	0.6989	0.7198	0.7198	0.8742
FashionMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8306	0.7459	0.7459	0.4325
FashionMNIST vs Omniglot	0.3943	0.5228	0.5229	0.9958
KMNIST vs Constant28	0.3136	0.3824	0.3824	0.7190
KMNIST vs FashionMNIST	0.6036	0.5074	0.5075	0.6831
KMNIST vs MNIST	0.7015	0.6405	0.6406	0.7679
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.1558	0.3337	0.3338	0.9755
KMNIST vs Omniglot	0.3559	0.4744	0.4745	0.9963
MNIST vs Constant28	0.8106	0.6547	0.6547	0.2245
MNIST vs FashionMNIST	0.7982	0.6722	0.6722	0.4434
MNIST vs KMNIST	0.6223	0.5686	0.5687	0.8501
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9907	0.9636	0.9636	0.0174
MNIST vs Omniglot	0.0989	0.3641	0.3642	0.9996
Noise vs CIFAR-10	0.5780	0.5556	0.5557	0.9116
Noise vs CIFAR-100	0.5773	0.5483	0.5484	0.9032
Noise vs CelebA	0.5368	0.3461	0.3462	0.9253
Noise vs Constant	0.5042	0.4512	0.4513	0.5344
Noise vs LSUN	0.4049	0.4229	0.4230	0.9634
Noise vs SVHN	0.4949	0.2556	0.2556	0.8861
Noise vs TinyImagenet	0.5689	0.5629	0.5630	0.9376

Noise vs iSUN	0.4431	0.4759	0.4760	0.9533
Noise28 vs Constant28	0.5091	0.4531	0.4531	0.5307
Noise28 vs FashionMNIST	0.9262	0.8754	0.8755	0.2080
Noise28 vs KMNIST	0.9996	0.9996	0.9996	0.0015
Noise28 vs MNIST	0.9998	0.9997	0.9997	0.0008
Noise28 vs NotMNIST	0.8192	0.6879	0.6880	0.3441
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.7057	0.5649	0.5650	0.3425
NotMNIST vs FashionMNIST	0.9747	0.9750	0.9750	0.1228
NotMNIST vs KMNIST	0.9341	0.9486	0.9486	0.4278
NotMNIST vs MNIST	0.9858	0.9895	0.9895	0.0402
NotMNIST vs Noise28	0.9998	0.9999	0.9999	0.0000
NotMNIST vs Omniglot	0.8992	0.9390	0.9390	0.7248
Omniglot vs Constant28	0.5842	0.4434	0.4434	0.4271
Omniglot vs FashionMNIST	0.9644	0.8677	0.8677	0.0438
Omniglot vs KMNIST	0.9870	0.9766	0.9766	0.0443
Omniglot vs MNIST	0.9970	0.9952	0.9952	0.0112
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9990	0.9960	0.9960	0.0015
SVHN vs CIFAR-10	0.9918	0.9950	0.9950	0.0267
SVHN vs CIFAR-100	0.9804	0.9854	0.9855	0.0563
SVHN vs CelebA	1.0000	0.9999	0.9999	0.0001
SVHN vs Constant	0.3856	0.6103	0.6103	0.7000
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0002
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9946	0.9951	0.9951	0.0153
SVHN vs iSUN	0.9997	0.9999	0.9999	0.0009
TinyImagenet vs CelebA	0.9402	0.8973	0.8973	0.2730
TinyImagenet vs Constant	0.5255	0.4546	0.4546	0.5565
TinyImagenet vs LSUN	0.9988	0.9983	0.9983	0.0025
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0450	0.1547	0.1547	0.9915
TinyImagenet vs iSUN	0.9934	0.9880	0.9880	0.0147
Average	0.7746	0.7752	0.7752	0.3559

Table 49: The detailed performance for indicator $LLR(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6899	0.5545	0.5545	0.9323
CIFAR-10 vs Constant	0.8150	0.6999	0.7000	0.5020
CIFAR-10 vs LSUN	0.9781	0.9795	0.9795	0.0905
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.6586	0.5652	0.5653	0.9418
CIFAR-10 vs iSUN	0.9622	0.9642	0.9642	0.1727
CIFAR-100 vs CelebA	0.8678	0.7859	0.7859	0.5829
CIFAR-100 vs Constant	0.6097	0.5054	0.5055	0.5734
CIFAR-100 vs LSUN	0.9952	0.9939	0.9939	0.0157
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.4116	0.2543	0.2544	0.9977
CIFAR-100 vs iSUN	0.9873	0.9851	0.9851	0.0448
CelebA vs CIFAR-10	0.4991	0.6212	0.6212	0.8650
CelebA vs CIFAR-100	0.5307	0.6345	0.6345	0.8306
CelebA vs Constant	0.8436	0.8062	0.8062	0.2310
CelebA vs LSUN	0.9881	0.9900	0.9900	0.0345
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.7949	0.6897	0.6898	0.7180
CelebA vs TinyImagenet	0.5673	0.6602	0.6602	0.8043
CelebA vs iSUN	0.9692	0.9713	0.9713	0.0709
Constant vs CIFAR-10	0.9999	0.9999	0.9999	0.0006
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0003
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9999	0.9997	0.9997	0.0007
Constant vs TinyImagenet	0.9999	0.9998	0.9998	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9996	0.9996	0.9995	0.0002
Constant28 vs Omniglot	0.9999	0.9999	0.9999	0.0005
FashionMNIST vs Constant28	0.6293	0.5143	0.5143	0.4183
FashionMNIST vs KMNIST	0.6634	0.7050	0.7051	0.9468
FashionMNIST vs MNIST	0.9081	0.9341	0.9341	0.6543
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7002	0.6491	0.6492	0.6590
FashionMNIST vs Omniglot	0.9047	0.9357	0.9357	0.5967
KMNIST vs Constant28	0.9677	0.9056	0.9056	0.0672
KMNIST vs FashionMNIST	0.8990	0.8528	0.8529	0.2733
KMNIST vs MNIST	0.7375	0.7826	0.7827	0.9109
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.6770	0.5740	0.5741	0.7019
KMNIST vs Omniglot	0.7885	0.8168	0.8168	0.8297
MNIST vs Constant28	0.9907	0.9628	0.9629	0.0093
MNIST vs FashionMNIST	0.9984	0.9980	0.9980	0.0063
MNIST vs KMNIST	0.9695	0.9565	0.9566	0.1130
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0002
MNIST vs Omniglot	0.4072	0.4714	0.4715	0.9354
Noise vs CIFAR-10	0.3910	0.4305	0.4306	0.9478
Noise vs CIFAR-100	0.4202	0.4427	0.4428	0.9150
Noise vs CelebA	0.4842	0.3209	0.3211	0.9089
Noise vs Constant	0.9149	0.8427	0.8428	0.1604
Noise vs LSUN	0.4639	0.4878	0.4879	0.9428
Noise vs SVHN	0.3387	0.2048	0.2049	0.9542
Noise vs TinyImagenet	0.3990	0.4434	0.4435	0.9534

Noise vs iSUN	0.4372	0.5005	0.5006	0.9660
Noise28 vs Constant28	0.9143	0.8632	0.8632	0.1801
Noise28 vs FashionMNIST	0.5623	0.5592	0.5592	0.9096
Noise28 vs KMNIST	0.4510	0.5113	0.5113	0.9758
Noise28 vs MNIST	0.6289	0.6398	0.6398	0.9175
Noise28 vs NotMNIST	0.8803	0.8411	0.8411	0.3316
Noise28 vs Omniglot	0.5563	0.6290	0.6290	0.9343
NotMNIST vs Constant28	0.7787	0.6263	0.6264	0.2847
NotMNIST vs FashionMNIST	0.9737	0.9768	0.9768	0.1555
NotMNIST vs KMNIST	0.8741	0.8963	0.8963	0.6254
NotMNIST vs MNIST	0.9271	0.9488	0.9489	0.5909
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.8100	0.8859	0.8859	0.9777
Omniglot vs Constant28	0.9752	0.8999	0.9000	0.0353
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9962	0.9951	0.9951	0.0159
Omniglot vs MNIST	0.9608	0.9427	0.9427	0.1310
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9951	0.9971	0.9971	0.0146
SVHN vs CIFAR-100	0.9883	0.9909	0.9909	0.0334
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.4263	0.6242	0.6242	0.6749
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0002
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9966	0.9966	0.9966	0.0087
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0007
TinyImagenet vs CelebA	0.8057	0.7111	0.7112	0.6645
TinyImagenet vs Constant	0.8214	0.6809	0.6809	0.3212
TinyImagenet vs LSUN	0.9970	0.9962	0.9962	0.0112
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.4924	0.3196	0.3196	0.9747
TinyImagenet vs iSUN	0.9884	0.9858	0.9858	0.0379
Average	0.8376	0.8251	0.8251	0.3488

Table 50: The detailed performance for indicator $LLR(x) + 0.1p_S(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4730	0.3922	0.3923	0.9927
CIFAR-10 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.8706	0.8247	0.8248	0.4103
CIFAR-10 vs Noise	0.6387	0.6450	0.6449	0.9254
CIFAR-10 vs SVHN	0.0044	0.1538	0.1538	1.0000
CIFAR-10 vs iSUN	0.8571	0.8327	0.8327	0.4147
CIFAR-100 vs CelebA	0.5042	0.4520	0.4520	0.9941
CIFAR-100 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.8766	0.8490	0.8490	0.4142
CIFAR-100 vs Noise	0.6183	0.6388	0.6388	0.9786
CIFAR-100 vs SVHN	0.0069	0.1538	0.1539	1.0000
CIFAR-100 vs iSUN	0.8616	0.8523	0.8523	0.4311
CelebA vs CIFAR-10	0.2190	0.5037	0.5037	0.9867
CelebA vs CIFAR-100	0.2113	0.4994	0.4994	0.9812
CelebA vs Constant	0.0000	0.4503	0.4503	1.0000
CelebA vs LSUN	0.8582	0.8766	0.8766	0.3612
CelebA vs Noise	0.5293	0.7064	0.7064	0.9907
CelebA vs SVHN	0.0000	0.2577	0.2577	1.0000
CelebA vs TinyImagenet	0.3528	0.5567	0.5567	0.9522
CelebA vs iSUN	0.8308	0.8686	0.8686	0.3889
Constant vs CIFAR-10	0.8494	0.8844	0.8844	0.9688
Constant vs CIFAR-100	0.9386	0.9159	0.9160	0.2259
Constant vs CelebA	0.9623	0.9608	0.9608	0.1937
Constant vs LSUN	0.8885	0.9125	0.9125	0.8094
Constant vs Noise	0.5129	0.7107	0.7106	1.0000
Constant vs SVHN	0.2457	0.2371	0.2371	1.0000
Constant vs TinyImagenet	0.9557	0.9600	0.9600	0.2260
Constant vs iSUN	0.9328	0.9508	0.9508	0.4190
Constant28 vs FashionMNIST	0.2735	0.3716	0.3733	0.9579
Constant28 vs KMNIST	0.0082	0.3148	0.3157	1.0000
Constant28 vs MNIST	0.0050	0.3118	0.3128	1.0000
Constant28 vs Noise28	0.4788	0.6798	0.6801	1.0000
Constant28 vs NotMNIST	0.0253	0.3162	0.3171	1.0000
Constant28 vs Omniglot	0.0052	0.3545	0.3555	1.0000
FashionMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs KMNIST	0.0693	0.3132	0.3133	1.0000
FashionMNIST vs MNIST	0.0006	0.3069	0.3069	1.0000
FashionMNIST vs Noise28	0.6464	0.7201	0.7201	0.9458
FashionMNIST vs NotMNIST	0.0439	0.3114	0.3115	0.9973
FashionMNIST vs Omniglot	0.0001	0.3495	0.3495	1.0000
KMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
KMNIST vs FashionMNIST	0.6267	0.5788	0.5789	0.8434
KMNIST vs MNIST	0.0055	0.3069	0.3070	1.0000
KMNIST vs Noise28	0.7140	0.7339	0.7338	0.8194
KMNIST vs NotMNIST	0.1371	0.3276	0.3276	0.9855
KMNIST vs Omniglot	0.0054	0.3498	0.3498	1.0000
MNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
MNIST vs FashionMNIST	0.9350	0.9183	0.9183	0.2123
MNIST vs KMNIST	0.7995	0.7919	0.7919	0.5799
MNIST vs Noise28	0.4557	0.5085	0.5085	0.9415
MNIST vs NotMNIST	0.3853	0.4134	0.4135	0.8996
MNIST vs Omniglot	0.0679	0.3568	0.3569	1.0000
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.0002	0.3069	0.3070	1.0000
NotMNIST vs FashionMNIST	0.4177	0.4195	0.4196	0.9160
NotMNIST vs KMNIST	0.1599	0.3477	0.3477	0.9983
NotMNIST vs MNIST	0.0000	0.3069	0.3069	1.0000
NotMNIST vs Noise28	0.9784	0.9848	0.9847	0.0890
NotMNIST vs Omniglot	0.0011	0.3495	0.3496	1.0000
Omniglot vs Constant28	0.0006	0.2668	0.2669	1.0000
Omniglot vs FashionMNIST	0.9680	0.9574	0.9574	0.1583
Omniglot vs KMNIST	0.9095	0.8950	0.8950	0.3954
Omniglot vs MNIST	0.3718	0.3772	0.3773	0.9999
Omniglot vs Noise28	0.4991	0.4615	0.4616	0.9501
Omniglot vs NotMNIST	0.6117	0.5135	0.5136	0.8540
SVHN vs CIFAR-10	0.9624	0.9781	0.9781	0.1601
SVHN vs CIFAR-100	0.9427	0.9549	0.9549	0.1838
SVHN vs CelebA	0.9835	0.9880	0.9880	0.0736
SVHN vs Constant	0.0000	0.5076	0.5076	1.0000
SVHN vs LSUN	0.9857	0.9896	0.9896	0.0473
SVHN vs Noise	0.7248	0.8774	0.8774	0.8946
SVHN vs TinyImagenet	0.9714	0.9815	0.9815	0.1189
SVHN vs iSUN	0.9860	0.9938	0.9938	0.0697
TinyImagenet vs CelebA	0.3906	0.3402	0.3403	0.9979
TinyImagenet vs Constant	0.0000	0.3032	0.3032	1.0000
TinyImagenet vs LSUN	0.8471	0.8037	0.8037	0.4774
TinyImagenet vs Noise	0.6148	0.6024	0.6024	0.9345
TinyImagenet vs SVHN	0.0024	0.1514	0.1514	1.0000
TinyImagenet vs iSUN	0.8331	0.8112	0.8112	0.4747
Average	0.3788	0.5302	0.5303	0.8048

Table 51: The detailed performance for indicator $\log p_{\omega}(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9668	0.9704	0.9704	0.1316
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9969	0.9963	0.9963	0.0079
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9958	0.9934	0.9934	0.0051
CIFAR-10 vs iSUN	0.9901	0.9863	0.9863	0.0281
CIFAR-100 vs CelebA	0.9988	0.9984	0.9984	0.0004
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9974	0.9964	0.9964	0.0103
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9984	0.9959	0.9959	0.0046
CIFAR-100 vs iSUN	0.9919	0.9898	0.9898	0.0299
CelebA vs CIFAR-10	0.9668	0.9556	0.9556	0.0640
CelebA vs CIFAR-100	0.9988	0.9991	0.9991	0.0046
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9984	0.9987	0.9987	0.0056
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	1.0000	1.0000	0.0000
CelebA vs TinyImagenet	0.9995	0.9997	0.9997	0.0017
CelebA vs iSUN	0.9940	0.9949	0.9949	0.0154
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0001
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9958	0.9957	0.9958	0.0100
SVHN vs CIFAR-100	0.9984	0.9994	0.9994	0.0048
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9996	0.9998	0.9998	0.0005
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0002
TinyImagenet vs CelebA	0.9995	0.9993	0.9993	0.0001
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	0.9961	0.9942	0.9942	0.0133
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9996	0.9988	0.9988	0.0012
TinyImagenet vs iSUN	0.9831	0.9741	0.9741	0.0482
Average	0.9985	0.9982	0.9982	0.0042

Table 52: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9670	0.9684	0.9684	0.1672
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9968	0.9964	0.9964	0.0113
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9964	0.9939	0.9939	0.0055
CIFAR-10 vs iSUN	0.9894	0.9869	0.9869	0.0374
CIFAR-100 vs CelebA	0.9975	0.9963	0.9963	0.0033
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9968	0.9960	0.9960	0.0130
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9980	0.9953	0.9953	0.0050
CIFAR-100 vs iSUN	0.9906	0.9889	0.9889	0.0370
CelebA vs CIFAR-10	0.9722	0.9653	0.9654	0.0626
CelebA vs CIFAR-100	0.9992	0.9996	0.9996	0.0012
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9983	0.9990	0.9990	0.0094
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	1.0000	1.0000	0.0000
CelebA vs TinyImagenet	0.9991	0.9996	0.9996	0.0004
CelebA vs iSUN	0.9943	0.9966	0.9966	0.0257
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0001
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs FashionMNIST	0.9998	0.9999	0.9999	0.0000
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9966	0.9967	0.9967	0.0094
SVHN vs CIFAR-100	0.9981	0.9992	0.9992	0.0059
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9995	0.9998	0.9998	0.0010
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0002
TinyImagenet vs CelebA	0.9970	0.9958	0.9958	0.0035
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	0.9954	0.9937	0.9937	0.0166
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9995	0.9987	0.9987	0.0013
TinyImagenet vs iSUN	0.9813	0.9732	0.9732	0.0546
Average	0.9985	0.9983	0.9983	0.0051

Table 53: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x) + 0.1p_S(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4649	0.3526	0.3527	0.9906
CIFAR-10 vs Constant	0.0002	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.8089	0.7208	0.7209	0.4506
CIFAR-10 vs Noise	0.6584	0.7311	0.7311	1.0000
CIFAR-10 vs SVHN	0.0033	0.1538	0.1538	1.0000
CIFAR-10 vs iSUN	0.8325	0.7923	0.7923	0.4257
CIFAR-100 vs CelebA	0.5097	0.4261	0.4262	0.9914
CIFAR-100 vs Constant	0.0002	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.8199	0.7618	0.7618	0.4575
CIFAR-100 vs Noise	0.7679	0.8224	0.8224	0.9801
CIFAR-100 vs SVHN	0.0097	0.1540	0.1540	1.0000
CIFAR-100 vs iSUN	0.8484	0.8324	0.8324	0.4475
CelebA vs CIFAR-10	0.2005	0.5028	0.5029	0.9947
CelebA vs CIFAR-100	0.1965	0.4971	0.4971	0.9899
CelebA vs Constant	0.0000	0.4503	0.4503	1.0000
CelebA vs LSUN	0.8411	0.8686	0.8686	0.4071
CelebA vs Noise	0.7967	0.8967	0.8967	0.9122
CelebA vs SVHN	0.0000	0.2577	0.2577	1.0000
CelebA vs TinyImagenet	0.3232	0.5481	0.5481	0.9725
CelebA vs iSUN	0.8346	0.8905	0.8905	0.4338
Constant vs CIFAR-10	0.8215	0.8405	0.8405	0.9868
Constant vs CIFAR-100	0.8405	0.7870	0.7871	0.6680
Constant vs CelebA	0.8436	0.8407	0.8407	0.9793
Constant vs LSUN	0.5545	0.6424	0.6425	1.0000
Constant vs Noise	0.5166	0.7171	0.7171	1.0000
Constant vs SVHN	0.2347	0.2147	0.2147	1.0000
Constant vs TinyImagenet	0.9365	0.9229	0.9230	0.2954
Constant vs iSUN	0.5930	0.7110	0.7110	1.0000
Constant28 vs FashionMNIST	0.0953	0.3242	0.3253	0.9941
Constant28 vs KMNIST	0.0081	0.3148	0.3158	1.0000
Constant28 vs MNIST	0.0050	0.3118	0.3128	1.0000
Constant28 vs Noise28	0.5443	0.7319	0.7322	1.0000
Constant28 vs NotMNIST	0.0111	0.3138	0.3144	1.0000
Constant28 vs Omniglot	0.0050	0.3545	0.3555	1.0000
FashionMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs KMNIST	0.0649	0.3126	0.3126	1.0000
FashionMNIST vs MNIST	0.0006	0.3069	0.3069	1.0000
FashionMNIST vs Noise28	0.1427	0.3580	0.3580	1.0000
FashionMNIST vs NotMNIST	0.0547	0.3121	0.3121	0.9982
FashionMNIST vs Omniglot	0.0004	0.3495	0.3495	1.0000
KMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
KMNIST vs FashionMNIST	0.6622	0.6152	0.6153	0.8147
KMNIST vs MNIST	0.0099	0.3071	0.3071	1.0000
KMNIST vs Noise28	0.0249	0.3165	0.3166	1.0000
KMNIST vs NotMNIST	0.2283	0.3506	0.3507	0.9775
KMNIST vs Omniglot	0.0122	0.3503	0.3503	1.0000
MNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
MNIST vs FashionMNIST	0.9464	0.9345	0.9345	0.1958
MNIST vs KMNIST	0.8386	0.8239	0.8239	0.4828
MNIST vs Noise28	0.0606	0.3260	0.3260	1.0000
MNIST vs NotMNIST	0.5675	0.5300	0.5300	0.8315
MNIST vs Omniglot	0.1151	0.3664	0.3664	0.9996
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.0077	0.3070	0.3072	1.0000
NotMNIST vs FashionMNIST	0.4504	0.4362	0.4364	0.9263
NotMNIST vs KMNIST	0.1402	0.3389	0.3403	0.9990
NotMNIST vs MNIST	0.0000	0.3069	0.3069	1.0000
NotMNIST vs Noise28	0.9958	0.9971	0.9971	0.0000
NotMNIST vs Omniglot	0.0000	0.3495	0.3496	1.0000
Omniglot vs Constant28	0.0055	0.2669	0.2669	1.0000
Omniglot vs FashionMNIST	0.9771	0.9693	0.9693	0.1177
Omniglot vs KMNIST	0.9145	0.9013	0.9013	0.3812
Omniglot vs MNIST	0.4006	0.4077	0.4078	0.9992
Omniglot vs Noise28	0.9041	0.8701	0.8701	0.3396
Omniglot vs NotMNIST	0.7508	0.6585	0.6586	0.7543
SVHN vs CIFAR-10	0.9532	0.9684	0.9684	0.1775
SVHN vs CIFAR-100	0.8761	0.9010	0.9011	0.3309
SVHN vs CelebA	0.9743	0.9794	0.9794	0.1150
SVHN vs Constant	0.0011	0.5076	0.5077	1.0000
SVHN vs LSUN	0.9319	0.9499	0.9499	0.1525
SVHN vs Noise	0.7632	0.9094	0.9094	0.9810
SVHN vs TinyImagenet	0.9599	0.9699	0.9699	0.1343
SVHN vs iSUN	0.9672	0.9828	0.9828	0.1131
TinyImagenet vs CelebA	0.4113	0.3334	0.3335	0.9961
TinyImagenet vs Constant	0.0002	0.3032	0.3032	1.0000
TinyImagenet vs LSUN	0.8184	0.7482	0.7482	0.4978
TinyImagenet vs Noise	0.8550	0.8788	0.8788	0.8115
TinyImagenet vs SVHN	0.0046	0.1514	0.1515	1.0000
TinyImagenet vs iSUN	0.8275	0.7989	0.7990	0.4718
Average	0.3646	0.5225	0.5226	0.8258

Table 54: The detailed performance for indicator $\log p_\omega(x)$ when only 20% data in mixture distribution can be used for training, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9820	0.9833	0.9833	0.0146
CIFAR-10 vs Constant	0.9996	0.9997	0.9997	0.0001
CIFAR-10 vs LSUN	0.9904	0.9859	0.9859	0.0344
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9970	0.9934	0.9934	0.0078
CIFAR-10 vs iSUN	0.9726	0.9617	0.9617	0.0800
CIFAR-100 vs CelebA	0.9993	0.9986	0.9986	0.0022
CIFAR-100 vs Constant	0.9997	0.9997	0.9997	0.0000
CIFAR-100 vs LSUN	0.9897	0.9855	0.9855	0.0372
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9860	0.9571	0.9571	0.0487
CIFAR-100 vs iSUN	0.9747	0.9663	0.9663	0.0771
CelebA vs CIFAR-10	0.8991	0.9050	0.9051	0.2453
CelebA vs CIFAR-100	0.9153	0.9258	0.9258	0.2127
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9864	0.9864	0.9865	0.0399
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	1.0000	1.0000	0.0000
CelebA vs TinyImagenet	0.9826	0.9866	0.9866	0.0586
CelebA vs iSUN	0.9683	0.9681	0.9681	0.0716
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9995	0.9987	0.9987	0.0012
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs MNIST	0.9999	0.9999	0.9999	0.0002
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9997	0.9982	0.9983	0.0003
KMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0001
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	0.9999	0.9999	0.9999	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	0.9999	0.9999	0.0001
SVHN vs CIFAR-10	0.9975	0.9990	0.9990	0.0100
SVHN vs CIFAR-100	0.9913	0.9959	0.9959	0.0348
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.9999	0.9999	0.9999	0.0003
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9988	0.9995	0.9995	0.0043
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0004
TinyImagenet vs CelebA	0.9936	0.9829	0.9829	0.0223
TinyImagenet vs Constant	0.9997	0.9997	0.9997	0.0002
TinyImagenet vs LSUN	0.9861	0.9785	0.9785	0.0432
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9832	0.9656	0.9656	0.1081
TinyImagenet vs iSUN	0.9620	0.9426	0.9427	0.0943
Average	0.9951	0.9942	0.9942	0.0136

Table 55: The detailed performance for indicator $\log p_{\theta}(x) - \log p_{\omega}(x)$ when only 20% data in out-of-distribution can be used for training, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9812	0.9806	0.9806	0.0391
CIFAR-10 vs Constant	0.9997	0.9997	0.9997	0.0000
CIFAR-10 vs LSUN	0.9903	0.9858	0.9858	0.0358
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9973	0.9941	0.9941	0.0068
CIFAR-10 vs iSUN	0.9723	0.9615	0.9615	0.0804
CIFAR-100 vs CelebA	0.9966	0.9938	0.9938	0.0132
CIFAR-100 vs Constant	0.9997	0.9997	0.9997	0.0000
CIFAR-100 vs LSUN	0.9895	0.9851	0.9851	0.0383
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9872	0.9618	0.9618	0.0470
CIFAR-100 vs iSUN	0.9740	0.9653	0.9653	0.0791
CelebA vs CIFAR-10	0.9190	0.9326	0.9326	0.2395
CelebA vs CIFAR-100	0.9433	0.9598	0.9598	0.1941
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9864	0.9868	0.9868	0.0384
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	1.0000	1.0000	0.0000
CelebA vs TinyImagenet	0.9895	0.9943	0.9943	0.0437
CelebA vs iSUN	0.9679	0.9685	0.9685	0.0714
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9995	0.9987	0.9987	0.0013
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs MNIST	1.0000	1.0000	1.0000	0.0001
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9998	0.9992	0.9992	0.0003
KMNIST vs Omniglot	0.9999	0.9999	0.9999	0.0001
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0001
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	0.9999	0.9999	0.9999	0.0000
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	0.9999	0.9999	0.9999	0.0001
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9974	0.9989	0.9989	0.0102
SVHN vs CIFAR-100	0.9920	0.9961	0.9961	0.0301
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.9999	1.0000	1.0000	0.0001
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9988	0.9995	0.9995	0.0045
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0004
TinyImagenet vs CelebA	0.9830	0.9646	0.9646	0.0708
TinyImagenet vs Constant	0.9998	0.9998	0.9998	0.0000
TinyImagenet vs LSUN	0.9858	0.9781	0.9781	0.0444
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9879	0.9753	0.9753	0.0738
TinyImagenet vs iSUN	0.9616	0.9417	0.9417	0.0961
Average	0.9956	0.9948	0.9948	0.0137

Table 56: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x)$ when only 20% data in out-of-distribution can be used for training, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6428	0.4551	0.4552	0.9334
CIFAR-10 vs Constant	0.8713	0.8198	0.8199	0.3615
CIFAR-10 vs LSUN	0.9752	0.9642	0.9642	0.0821
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9329	0.8338	0.8339	0.2733
CIFAR-10 vs iSUN	0.9538	0.9373	0.9373	0.1324
CIFAR-100 vs CelebA	0.6284	0.4554	0.4555	0.9649
CIFAR-100 vs Constant	0.9119	0.8982	0.8982	0.3726
CIFAR-100 vs LSUN	0.9716	0.9601	0.9601	0.0944
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8986	0.7974	0.7974	0.4959
CIFAR-100 vs iSUN	0.9496	0.9322	0.9322	0.1489
CelebA vs CIFAR-10	0.6411	0.7460	0.7461	0.8108
CelebA vs CIFAR-100	0.6858	0.7744	0.7744	0.7456
CelebA vs Constant	0.9658	0.9717	0.9717	0.0964
CelebA vs LSUN	0.9741	0.9781	0.9781	0.0751
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9728	0.9503	0.9503	0.0905
CelebA vs TinyImagenet	0.6909	0.7807	0.7807	0.7432
CelebA vs iSUN	0.9590	0.9681	0.9681	0.1098
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9998	0.9998	0.9998	0.0000
Constant28 vs Omniglot	0.9989	0.9982	0.9983	0.0019
FashionMNIST vs Constant28	0.5178	0.5431	0.5431	0.9450
FashionMNIST vs KMNIST	0.4766	0.4893	0.4894	0.9844
FashionMNIST vs MNIST	0.8553	0.8838	0.8838	0.7289
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.4007	0.4436	0.4437	0.9804
FashionMNIST vs Omniglot	0.9182	0.9398	0.9398	0.4378
KMNIST vs Constant28	0.9998	0.9998	0.9998	0.0000
KMNIST vs FashionMNIST	0.8879	0.8426	0.8427	0.2836
KMNIST vs MNIST	0.6345	0.6108	0.6108	0.8649
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.7791	0.7124	0.7125	0.5536
KMNIST vs Omniglot	0.8044	0.8148	0.8148	0.7053
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9987	0.9983	0.9983	0.0053
MNIST vs KMNIST	0.9860	0.9816	0.9816	0.0618
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6188	0.6337	0.6339	0.8300
Noise vs CIFAR-10	0.3900	0.4294	0.4295	0.9479
Noise vs CIFAR-100	0.4192	0.4420	0.4420	0.9152
Noise vs CelebA	0.4837	0.3205	0.3205	0.9088
Noise vs Constant	0.9153	0.8459	0.8460	0.1590
Noise vs LSUN	0.4645	0.4883	0.4883	0.9417
Noise vs SVHN	0.3381	0.2047	0.2047	0.9542
Noise vs TinyImagenet	0.3981	0.4425	0.4425	0.9533

Noise vs iSUN	0.4375	0.5009	0.5009	0.9654
Noise28 vs Constant28	0.9133	0.8635	0.8635	0.1806
Noise28 vs FashionMNIST	0.5410	0.5222	0.5225	0.9191
Noise28 vs KMNIST	0.4084	0.4440	0.4442	0.9794
Noise28 vs MNIST	0.5839	0.5665	0.5669	0.9385
Noise28 vs NotMNIST	0.8715	0.8147	0.8148	0.3405
Noise28 vs Omniglot	0.5123	0.5617	0.5621	0.9497
NotMNIST vs Constant28	0.9712	0.9638	0.9638	0.0760
NotMNIST vs FashionMNIST	0.8950	0.8676	0.8677	0.3300
NotMNIST vs KMNIST	0.6564	0.6051	0.6052	0.8067
NotMNIST vs MNIST	0.3946	0.4408	0.4409	0.9997
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.5265	0.5841	0.5843	0.9876
Omniglot vs Constant28	0.9996	0.9994	0.9994	0.0030
Omniglot vs FashionMNIST	0.9999	0.9999	0.9999	0.0003
Omniglot vs KMNIST	0.9923	0.9900	0.9900	0.0383
Omniglot vs MNIST	0.8906	0.8057	0.8059	0.3113
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9983	0.9978	0.9978	0.0129
SVHN vs CIFAR-10	0.9907	0.9945	0.9945	0.0259
SVHN vs CIFAR-100	0.9849	0.9907	0.9907	0.0418
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.7622	0.8479	0.8479	0.4752
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9952	0.9973	0.9973	0.0137
SVHN vs iSUN	0.9997	0.9998	0.9998	0.0010
TinyImagenet vs CelebA	0.4753	0.3273	0.3274	0.9841
TinyImagenet vs Constant	0.9498	0.9247	0.9247	0.1449
TinyImagenet vs LSUN	0.9691	0.9512	0.9513	0.0897
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9478	0.8727	0.8727	0.2151
TinyImagenet vs iSUN	0.9431	0.9143	0.9144	0.1481
Average	0.8426	0.8330	0.8330	0.3334

Table 57: The detailed performance for indicator $p_S(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5141	0.3631	0.3632	0.9735
CIFAR-10 vs Constant	0.0123	0.3077	0.3077	0.9996
CIFAR-10 vs LSUN	0.9534	0.9375	0.9375	0.1719
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0117	0.1541	0.1541	1.0000
CIFAR-10 vs iSUN	0.9403	0.9284	0.9284	0.2022
CIFAR-100 vs CelebA	0.6048	0.5093	0.5094	0.9782
CIFAR-100 vs Constant	0.0226	0.3082	0.3082	0.9999
CIFAR-100 vs LSUN	0.9539	0.9417	0.9418	0.1703
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0200	0.1542	0.1542	1.0000
CIFAR-100 vs iSUN	0.9420	0.9374	0.9374	0.2119
CelebA vs CIFAR-10	0.4165	0.5874	0.5875	0.9240
CelebA vs CIFAR-100	0.3982	0.5711	0.5711	0.9125
CelebA vs Constant	0.0080	0.4514	0.4514	0.9992
CelebA vs LSUN	0.9549	0.9597	0.9597	0.1305
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0025	0.2579	0.2579	1.0000
CelebA vs TinyImagenet	0.5409	0.6532	0.6532	0.8256
CelebA vs iSUN	0.9407	0.9537	0.9537	0.1553
Constant vs CIFAR-10	0.9901	0.9904	0.9904	0.0237
Constant vs CIFAR-100	0.9742	0.9711	0.9711	0.0849
Constant vs CelebA	0.9967	0.9945	0.9945	0.0098
Constant vs LSUN	0.9983	0.9986	0.9986	0.0024
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.7637	0.6913	0.6913	0.8437
Constant vs TinyImagenet	0.9920	0.9911	0.9911	0.0254
Constant vs iSUN	0.9947	0.9963	0.9963	0.0039
Constant28 vs FashionMNIST	0.5543	0.6337	0.6344	0.9842
Constant28 vs KMNIST	0.2933	0.4567	0.4578	0.9997
Constant28 vs MNIST	0.1117	0.3743	0.3754	1.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.2362	0.4105	0.4115	0.9930
Constant28 vs Omniglot	0.0890	0.3955	0.3969	1.0000
FashionMNIST vs Constant28	0.4785	0.4427	0.4427	0.7560
FashionMNIST vs KMNIST	0.1725	0.3364	0.3365	0.9999
FashionMNIST vs MNIST	0.0059	0.3069	0.3070	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.1171	0.3221	0.3222	0.9957
FashionMNIST vs Omniglot	0.0041	0.3496	0.3496	1.0000
KMNIST vs Constant28	0.7159	0.5851	0.5851	0.4531
KMNIST vs FashionMNIST	0.8276	0.7957	0.7957	0.4966
KMNIST vs MNIST	0.0493	0.3104	0.3104	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.3759	0.4117	0.4118	0.9522
KMNIST vs Omniglot	0.0274	0.3518	0.3518	1.0000
MNIST vs Constant28	0.8777	0.7475	0.7475	0.1709
MNIST vs FashionMNIST	0.9941	0.9922	0.9922	0.0187
MNIST vs KMNIST	0.9529	0.9463	0.9463	0.1799
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.8753	0.7994	0.7995	0.2783
MNIST vs Omniglot	0.3180	0.4406	0.4407	0.9563
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.6441	0.5390	0.5398	0.6900
NotMNIST vs FashionMNIST	0.8709	0.8626	0.8626	0.4947
NotMNIST vs KMNIST	0.6217	0.6324	0.6325	0.9459
NotMNIST vs MNIST	0.1233	0.3383	0.3383	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.0842	0.3698	0.3710	1.0000
Omniglot vs Constant28	0.8880	0.7374	0.7375	0.2050
Omniglot vs FashionMNIST	0.9959	0.9946	0.9947	0.0183
Omniglot vs KMNIST	0.9721	0.9682	0.9682	0.1638
Omniglot vs MNIST	0.6839	0.6123	0.6124	0.9349
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9186	0.8445	0.8445	0.2673
SVHN vs CIFAR-10	0.9884	0.9948	0.9948	0.0513
SVHN vs CIFAR-100	0.9756	0.9869	0.9869	0.0994
SVHN vs CelebA	0.9974	0.9981	0.9981	0.0066
SVHN vs Constant	0.2543	0.5743	0.5743	0.9854
SVHN vs LSUN	0.9996	0.9998	0.9998	0.0015
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9908	0.9950	0.9950	0.0366
SVHN vs iSUN	0.9993	0.9998	0.9998	0.0018
TinyImagenet vs CelebA	0.4636	0.3639	0.3640	0.9916
TinyImagenet vs Constant	0.0048	0.3033	0.3033	1.0000
TinyImagenet vs LSUN	0.9271	0.9045	0.9045	0.2564
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0101	0.1517	0.1517	1.0000
TinyImagenet vs iSUN	0.9118	0.8972	0.8972	0.2891
Average	0.5473	0.6433	0.6434	0.5687

Table 58: The detailed performance for indicator $\log p_\gamma(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9743	0.9481	0.9481	0.0598
CIFAR-10 vs Constant	0.7698	0.6264	0.6264	0.3401
CIFAR-10 vs LSUN	0.9936	0.9934	0.9934	0.0093
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9843	0.9702	0.9702	0.0313
CIFAR-10 vs iSUN	0.9856	0.9821	0.9821	0.0306
CIFAR-100 vs CelebA	0.9956	0.9889	0.9889	0.0136
CIFAR-100 vs Constant	0.7304	0.6055	0.6056	0.4516
CIFAR-100 vs LSUN	0.9920	0.9861	0.9861	0.0183
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9881	0.9553	0.9553	0.0307
CIFAR-100 vs iSUN	0.9861	0.9797	0.9797	0.0338
CelebA vs CIFAR-10	0.8765	0.8637	0.8637	0.2361
CelebA vs CIFAR-100	0.8437	0.8332	0.8332	0.2858
CelebA vs Constant	0.6650	0.6795	0.6796	0.4129
CelebA vs LSUN	0.9973	0.9971	0.9971	0.0059
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9919	0.9770	0.9770	0.0182
CelebA vs TinyImagenet	0.8466	0.8480	0.8480	0.3056
CelebA vs iSUN	0.9914	0.9908	0.9908	0.0183
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0002
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.6741	0.5417	0.5417	0.3574
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0005
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9996	0.9989	0.9989	0.0009
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	0.8158	0.6574	0.6574	0.1879
KMNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs MNIST	0.9990	0.9974	0.9974	0.0023
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9997	0.9981	0.9981	0.0003
KMNIST vs Omniglot	0.9999	0.9999	0.9999	0.0001
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0001
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9462	0.8600	0.8602	0.0718
NotMNIST vs FashionMNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs KMNIST	0.9998	0.9999	0.9999	0.0000
NotMNIST vs MNIST	0.9998	0.9999	0.9999	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9996	0.9998	0.9998	0.0000
Omniglot vs Constant28	0.9970	0.9792	0.9792	0.0030
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	0.9997	0.9990	0.9990	0.0005
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9982	0.9993	0.9993	0.0067
SVHN vs CIFAR-100	0.9897	0.9946	0.9946	0.0353
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.8993	0.8947	0.8947	0.1599
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9981	0.9991	0.9991	0.0064
SVHN vs iSUN	0.9996	0.9998	0.9998	0.0012
TinyImagenet vs CelebA	0.9700	0.9150	0.9150	0.0827
TinyImagenet vs Constant	0.6610	0.5406	0.5406	0.5086
TinyImagenet vs LSUN	0.9953	0.9916	0.9916	0.0098
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9113	0.6728	0.6729	0.1781
TinyImagenet vs iSUN	0.9834	0.9713	0.9713	0.0342
Average	0.9723	0.9591	0.9591	0.0429

Table 59: The detailed performance for indicator $\log p_{\theta}(x) - \log p_{\gamma}(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9641	0.9305	0.9305	0.1241
CIFAR-10 vs Constant	0.8358	0.7048	0.7049	0.2903
CIFAR-10 vs LSUN	0.9946	0.9944	0.9944	0.0122
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9885	0.9772	0.9772	0.0232
CIFAR-10 vs iSUN	0.9857	0.9838	0.9838	0.0382
CIFAR-100 vs CelebA	0.9882	0.9755	0.9755	0.0504
CIFAR-100 vs Constant	0.7895	0.6700	0.6701	0.4041
CIFAR-100 vs LSUN	0.9916	0.9855	0.9855	0.0216
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9899	0.9655	0.9655	0.0314
CIFAR-100 vs iSUN	0.9830	0.9763	0.9763	0.0439
CelebA vs CIFAR-10	0.8974	0.9193	0.9194	0.4097
CelebA vs CIFAR-100	0.8830	0.9083	0.9083	0.4233
CelebA vs Constant	0.8145	0.7857	0.7857	0.2659
CelebA vs LSUN	0.9964	0.9976	0.9976	0.0145
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9989	0.9979	0.9979	0.0035
CelebA vs TinyImagenet	0.8522	0.8921	0.8922	0.4885
CelebA vs iSUN	0.9901	0.9941	0.9941	0.0388
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0002
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.6726	0.5407	0.5408	0.3611
FashionMNIST vs KMNIST	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0002
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9996	0.9990	0.9990	0.0009
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	0.8962	0.7565	0.7565	0.1090
KMNIST vs FashionMNIST	0.9997	0.9997	0.9997	0.0009
KMNIST vs MNIST	0.9981	0.9982	0.9982	0.0033
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9998	0.9991	0.9991	0.0008
KMNIST vs Omniglot	0.9974	0.9982	0.9982	0.0012
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9997	0.9997	0.9997	0.0012
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9969	0.9978	0.9978	0.0081
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	0.9999	0.9999	0.9999	0.0001
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9619	0.8953	0.8953	0.0687
NotMNIST vs FashionMNIST	0.9991	0.9993	0.9993	0.0000
NotMNIST vs KMNIST	0.9989	0.9992	0.9992	0.0000
NotMNIST vs MNIST	0.9993	0.9995	0.9995	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9980	0.9990	0.9990	0.0000
Omniglot vs Constant28	0.9970	0.9792	0.9792	0.0030
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9999	0.9999	0.9999	0.0002
Omniglot vs MNIST	0.9990	0.9986	0.9986	0.0028
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9980	0.9991	0.9991	0.0062
SVHN vs CIFAR-100	0.9918	0.9954	0.9954	0.0255
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.9050	0.9016	0.9017	0.1590
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9982	0.9990	0.9990	0.0049
SVHN vs iSUN	0.9997	0.9998	0.9998	0.0008
TinyImagenet vs CelebA	0.9421	0.8690	0.8690	0.2105
TinyImagenet vs Constant	0.7542	0.6256	0.6257	0.4310
TinyImagenet vs LSUN	0.9940	0.9905	0.9905	0.0149
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9596	0.8506	0.8506	0.1182
TinyImagenet vs iSUN	0.9797	0.9685	0.9685	0.0478
Average	0.9780	0.9676	0.9676	0.0464

Table 60: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5495	0.3583	0.3584	0.9389
CIFAR-10 vs Constant	0.3587	0.3914	0.3915	0.7900
CIFAR-10 vs LSUN	0.9344	0.8966	0.8966	0.2021
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0156	0.1542	0.1542	1.0000
CIFAR-10 vs iSUN	0.9232	0.9043	0.9043	0.2407
CIFAR-100 vs CelebA	0.5889	0.4414	0.4415	0.9502
CIFAR-100 vs Constant	0.3629	0.3923	0.3923	0.8232
CIFAR-100 vs LSUN	0.9364	0.9104	0.9104	0.2020
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0354	0.1555	0.1556	1.0000
CIFAR-100 vs iSUN	0.9263	0.9199	0.9199	0.2608
CelebA vs CIFAR-10	0.4580	0.6412	0.6413	0.9473
CelebA vs CIFAR-100	0.4415	0.6106	0.6106	0.9444
CelebA vs Constant	0.3857	0.5540	0.5540	0.7376
CelebA vs LSUN	0.9552	0.9607	0.9607	0.1326
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0075	0.2581	0.2582	0.9999
CelebA vs TinyImagenet	0.5050	0.6561	0.6562	0.9087
CelebA vs iSUN	0.9507	0.9677	0.9677	0.1517
Constant vs CIFAR-10	0.6031	0.7280	0.7280	1.0000
Constant vs CIFAR-100	0.6291	0.6996	0.6996	0.9997
Constant vs CelebA	0.6191	0.6430	0.6430	1.0000
Constant vs LSUN	0.8027	0.8705	0.8705	0.9995
Constant vs Noise	0.9220	0.9600	0.9600	1.0000
Constant vs SVHN	0.4412	0.4283	0.4283	0.9996
Constant vs TinyImagenet	0.6296	0.7370	0.7370	0.9997
Constant vs iSUN	0.7832	0.8701	0.8701	0.9988
Constant28 vs FashionMNIST	0.2696	0.4105	0.4124	0.9998
Constant28 vs KMNIST	0.0764	0.3278	0.3293	1.0000
Constant28 vs MNIST	0.0162	0.3122	0.3132	1.0000
Constant28 vs Noise28	0.9905	0.9952	0.9952	0.0000
Constant28 vs NotMNIST	0.1049	0.3333	0.3346	0.9997
Constant28 vs Omniglot	0.0237	0.3561	0.3572	1.0000
FashionMNIST vs Constant28	0.6992	0.6083	0.6083	0.5768
FashionMNIST vs KMNIST	0.1392	0.3272	0.3273	1.0000
FashionMNIST vs MNIST	0.0044	0.3069	0.3069	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.1901	0.3418	0.3419	0.9928
FashionMNIST vs Omniglot	0.0053	0.3496	0.3496	1.0000
KMNIST vs Constant28	0.9248	0.8632	0.8632	0.1845
KMNIST vs FashionMNIST	0.8635	0.8377	0.8377	0.4084
KMNIST vs MNIST	0.0546	0.3109	0.3109	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.5865	0.5580	0.5581	0.9091
KMNIST vs Omniglot	0.0477	0.3543	0.3543	1.0000
MNIST vs Constant28	0.9837	0.9467	0.9467	0.0297
MNIST vs FashionMNIST	0.9953	0.9937	0.9937	0.0142
MNIST vs KMNIST	0.9498	0.9416	0.9416	0.1796
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9464	0.8928	0.8929	0.1524
MNIST vs Omniglot	0.3869	0.4665	0.4665	0.9209
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0865	0.3245	0.3245	0.9153
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0107	0.3089	0.3089	0.9894
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.8779	0.7876	0.7877	0.3421
NotMNIST vs FashionMNIST	0.8113	0.7806	0.7807	0.5363
NotMNIST vs KMNIST	0.4093	0.4550	0.4551	0.9879
NotMNIST vs MNIST	0.0552	0.3240	0.3240	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.0449	0.3590	0.3628	1.0000
Omniglot vs Constant28	0.9827	0.9483	0.9484	0.0436
Omniglot vs FashionMNIST	0.9948	0.9930	0.9930	0.0228
Omniglot vs KMNIST	0.9526	0.9456	0.9457	0.2521
Omniglot vs MNIST	0.5980	0.5666	0.5666	0.9890
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9562	0.8946	0.8947	0.1691
SVHN vs CIFAR-10	0.9852	0.9925	0.9925	0.0612
SVHN vs CIFAR-100	0.9603	0.9715	0.9715	0.1371
SVHN vs CelebA	0.9760	0.9815	0.9816	0.1336
SVHN vs Constant	0.5929	0.7041	0.7042	0.6455
SVHN vs LSUN	0.9977	0.9989	0.9989	0.0086
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9815	0.9884	0.9884	0.0768
SVHN vs iSUN	0.9990	0.9996	0.9996	0.0025
TinyImagenet vs CelebA	0.4973	0.3458	0.3458	0.9731
TinyImagenet vs Constant	0.3581	0.3864	0.3864	0.7879
TinyImagenet vs LSUN	0.9268	0.8896	0.8897	0.2299
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0207	0.1528	0.1528	1.0000
TinyImagenet vs iSUN	0.9235	0.9105	0.9105	0.2555
Average	0.5437	0.6351	0.6353	0.6212

Table 61: The detailed performance for indicator $\log p_\gamma(x)$ when only 20% data in out-of-distribution can be used for training, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9248	0.8801	0.8801	0.3722
CIFAR-10 vs Constant	0.2779	0.3669	0.3669	0.8383
CIFAR-10 vs LSUN	0.9916	0.9884	0.9884	0.0306
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.7472	0.5955	0.5955	0.7934
CIFAR-10 vs iSUN	0.9704	0.9587	0.9587	0.0857
CIFAR-100 vs CelebA	0.9260	0.8818	0.8818	0.3658
CIFAR-100 vs Constant	0.1740	0.3382	0.3383	0.9306
CIFAR-100 vs LSUN	0.9870	0.9823	0.9823	0.0498
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.6144	0.3852	0.3852	0.8858
CIFAR-100 vs iSUN	0.9732	0.9643	0.9643	0.0806
CelebA vs CIFAR-10	0.6049	0.6710	0.6711	0.6820
CelebA vs CIFAR-100	0.6025	0.6701	0.6702	0.6532
CelebA vs Constant	0.1830	0.4925	0.4925	0.8689
CelebA vs LSUN	0.9813	0.9821	0.9821	0.0484
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.7963	0.6155	0.6155	0.4053
CelebA vs TinyImagenet	0.7164	0.7492	0.7493	0.5356
CelebA vs iSUN	0.9588	0.9577	0.9577	0.0866
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0002
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.4286	0.4183	0.4184	0.6520
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9932	0.9888	0.9888	0.0202
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0001
KMNIST vs Constant28	0.9038	0.7752	0.7752	0.1147
KMNIST vs FashionMNIST	0.9983	0.9961	0.9961	0.0036
KMNIST vs MNIST	0.9698	0.9229	0.9230	0.0456
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9874	0.9648	0.9649	0.0252
KMNIST vs Omniglot	0.9996	0.9995	0.9995	0.0005
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9999	0.9998	0.9998	0.0001
MNIST vs Omniglot	0.9998	0.9999	0.9999	0.0000
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9133	0.7814	0.7814	0.0883
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9889	0.9512	0.9513	0.0141
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.6183	0.5069	0.5072	0.4593
NotMNIST vs FashionMNIST	0.9951	0.9941	0.9941	0.0147
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	0.9711	0.8868	0.8868	0.0303
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	0.9994	0.9988	0.9988	0.0018
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9996	0.9979	0.9980	0.0006
SVHN vs CIFAR-10	0.9931	0.9969	0.9969	0.0299
SVHN vs CIFAR-100	0.9875	0.9936	0.9936	0.0468
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0001
SVHN vs Constant	0.6491	0.7241	0.7241	0.4740
SVHN vs LSUN	0.9998	0.9999	0.9999	0.0007
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9969	0.9984	0.9984	0.0110
SVHN vs iSUN	0.9991	0.9993	0.9993	0.0020
TinyImagenet vs CelebA	0.8025	0.7050	0.7050	0.6739
TinyImagenet vs Constant	0.1421	0.3280	0.3281	0.9339
TinyImagenet vs LSUN	0.9850	0.9766	0.9766	0.0434
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.4380	0.2335	0.2336	0.9530
TinyImagenet vs iSUN	0.9627	0.9433	0.9433	0.0917
Average	0.9147	0.9083	0.9083	0.1353

Table 62: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when only 20% data in out-of-distribution can be used for training, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9122	0.8694	0.8695	0.4634
CIFAR-10 vs Constant	0.3069	0.3755	0.3755	0.8320
CIFAR-10 vs LSUN	0.9914	0.9884	0.9884	0.0317
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9135	0.8399	0.8399	0.4365
CIFAR-10 vs iSUN	0.9705	0.9588	0.9588	0.0841
CIFAR-100 vs CelebA	0.9110	0.8659	0.8659	0.4539
CIFAR-100 vs Constant	0.1998	0.3442	0.3442	0.9275
CIFAR-100 vs LSUN	0.9876	0.9829	0.9829	0.0472
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.7261	0.5076	0.5076	0.7127
CIFAR-100 vs iSUN	0.9726	0.9633	0.9634	0.0822
CelebA vs CIFAR-10	0.6060	0.6821	0.6821	0.7129
CelebA vs CIFAR-100	0.6171	0.6882	0.6882	0.6663
CelebA vs Constant	0.2409	0.5083	0.5083	0.8335
CelebA vs LSUN	0.9827	0.9836	0.9836	0.0441
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9249	0.8210	0.8211	0.1666
CelebA vs TinyImagenet	0.7213	0.7684	0.7685	0.5608
CelebA vs iSUN	0.9603	0.9592	0.9593	0.0790
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0002
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.4269	0.4175	0.4176	0.6718
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9928	0.9888	0.9888	0.0221
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0001
KMNIST vs Constant28	0.9600	0.8750	0.8751	0.0441
KMNIST vs FashionMNIST	0.9986	0.9986	0.9986	0.0044
KMNIST vs MNIST	0.9833	0.9743	0.9743	0.0407
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9904	0.9808	0.9809	0.0286
KMNIST vs Omniglot	0.9924	0.9941	0.9941	0.0352
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9998	0.9998	0.9998	0.0012
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9884	0.9918	0.9918	0.0739
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9677	0.8932	0.8933	0.0387
Noise vs LSUN	1.0000	1.0000	1.0000	0.0002
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	0.9999	0.9999	0.9999	0.0002
Noise28 vs Constant28	0.9965	0.9802	0.9802	0.0035
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.6578	0.5315	0.5318	0.4094
NotMNIST vs FashionMNIST	0.9966	0.9966	0.9966	0.0049
NotMNIST vs KMNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs MNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0001
Omniglot vs Constant28	0.9965	0.9786	0.9786	0.0073
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	0.9993	0.9990	0.9990	0.0017
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9945	0.9975	0.9975	0.0219
SVHN vs CIFAR-100	0.9898	0.9946	0.9946	0.0367
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.6642	0.7316	0.7317	0.4563
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0005
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9974	0.9986	0.9986	0.0088
SVHN vs iSUN	0.9994	0.9995	0.9995	0.0015
TinyImagenet vs CelebA	0.7773	0.6871	0.6872	0.7786
TinyImagenet vs Constant	0.1687	0.3337	0.3338	0.9277
TinyImagenet vs LSUN	0.9849	0.9763	0.9763	0.0445
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.5998	0.3196	0.3197	0.8281
TinyImagenet vs iSUN	0.9621	0.9420	0.9420	0.0928
Average	0.9242	0.9205	0.9205	0.1274

Table 63: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when only 20% data in out-of-distribution can be used for training, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8411	0.7015	0.7015	0.4237
CIFAR-10 vs Constant	0.4846	0.4413	0.4414	0.7185
CIFAR-10 vs LSUN	0.9828	0.9762	0.9762	0.0539
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.5794	0.2851	0.2851	0.6482
CIFAR-10 vs iSUN	0.9613	0.9482	0.9482	0.1128
CIFAR-100 vs CelebA	0.8338	0.6899	0.6899	0.4543
CIFAR-100 vs Constant	0.3310	0.3809	0.3809	0.8688
CIFAR-100 vs LSUN	0.9797	0.9720	0.9720	0.0689
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.5884	0.2874	0.2875	0.6499
CIFAR-100 vs iSUN	0.9633	0.9491	0.9491	0.1098
CelebA vs CIFAR-10	0.6004	0.6824	0.6824	0.6972
CelebA vs CIFAR-100	0.6111	0.6910	0.6911	0.6891
CelebA vs Constant	0.3878	0.5557	0.5557	0.7490
CelebA vs LSUN	0.9551	0.9599	0.9599	0.1076
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5828	0.4292	0.4292	0.5730
CelebA vs TinyImagenet	0.6704	0.7368	0.7369	0.6178
CelebA vs iSUN	0.9366	0.9466	0.9466	0.1427
Constant vs CIFAR-10	0.9999	0.9999	0.9999	0.0004
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0001
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.4736	0.4347	0.4348	0.6309
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0001
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0003
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9896	0.9843	0.9843	0.0316
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0001
KMNIST vs Constant28	0.9456	0.8451	0.8452	0.0645
KMNIST vs FashionMNIST	0.9820	0.9696	0.9697	0.0528
KMNIST vs MNIST	0.9694	0.9310	0.9311	0.0562
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9794	0.9565	0.9566	0.0447
KMNIST vs Omniglot	0.9826	0.9847	0.9847	0.0912
MNIST vs Constant28	0.9969	0.9872	0.9872	0.0052
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9989	0.9987	0.9987	0.0064
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9912	0.9926	0.9926	0.0512
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9941	0.9771	0.9772	0.0076
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9858	0.9461	0.9461	0.0161
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.6995	0.5613	0.5613	0.3910
NotMNIST vs FashionMNIST	0.9671	0.9538	0.9539	0.0995
NotMNIST vs KMNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9999	0.9999	0.9999	0.0000
Omniglot vs Constant28	0.9662	0.8743	0.8744	0.0387
Omniglot vs FashionMNIST	0.9999	0.9999	0.9999	0.0003
Omniglot vs KMNIST	0.9999	0.9999	0.9999	0.0005
Omniglot vs MNIST	0.9998	0.9996	0.9996	0.0007
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9998	0.9981	0.9982	0.0004
SVHN vs CIFAR-10	0.9544	0.9759	0.9759	0.1500
SVHN vs CIFAR-100	0.9579	0.9777	0.9777	0.1409
SVHN vs CelebA	0.9997	0.9997	0.9997	0.0017
SVHN vs Constant	0.7824	0.8431	0.8431	0.3836
SVHN vs LSUN	0.9996	0.9998	0.9998	0.0012
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9787	0.9894	0.9894	0.0784
SVHN vs iSUN	0.9979	0.9988	0.9988	0.0053
TinyImagenet vs CelebA	0.7603	0.5824	0.5824	0.5937
TinyImagenet vs Constant	0.3061	0.3684	0.3684	0.8643
TinyImagenet vs LSUN	0.9798	0.9690	0.9690	0.0607
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.5423	0.2629	0.2630	0.7225
TinyImagenet vs iSUN	0.9575	0.9353	0.9353	0.1068
Average	0.9177	0.9014	0.9014	0.1346

Table 64: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is streaming, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8441	0.7058	0.7058	0.4596
CIFAR-10 vs Constant	0.5335	0.4673	0.4674	0.6966
CIFAR-10 vs LSUN	0.9856	0.9793	0.9793	0.0431
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.6475	0.3283	0.3284	0.5627
CIFAR-10 vs iSUN	0.9650	0.9516	0.9516	0.0977
CIFAR-100 vs CelebA	0.8327	0.6914	0.6914	0.4974
CIFAR-100 vs Constant	0.3714	0.3958	0.3958	0.8601
CIFAR-100 vs LSUN	0.9824	0.9751	0.9751	0.0590
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.6286	0.3091	0.3092	0.5831
CIFAR-100 vs iSUN	0.9656	0.9506	0.9506	0.0977
CelebA vs CIFAR-10	0.6145	0.6961	0.6962	0.7144
CelebA vs CIFAR-100	0.6370	0.7127	0.7127	0.6831
CelebA vs Constant	0.4985	0.6031	0.6031	0.6627
CelebA vs LSUN	0.9708	0.9716	0.9717	0.0704
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.6849	0.4994	0.4994	0.4682
CelebA vs TinyImagenet	0.6888	0.7528	0.7529	0.6178
CelebA vs iSUN	0.9503	0.9555	0.9556	0.1057
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0003
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.4743	0.4350	0.4351	0.6351
FashionMNIST vs KMNIST	0.9998	0.9998	0.9998	0.0002
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0001
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9890	0.9840	0.9840	0.0355
FashionMNIST vs Omniglot	0.9999	0.9999	0.9999	0.0001
KMNIST vs Constant28	0.9747	0.9131	0.9131	0.0320
KMNIST vs FashionMNIST	0.9942	0.9928	0.9928	0.0290
KMNIST vs MNIST	0.9811	0.9702	0.9702	0.0514
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9859	0.9749	0.9750	0.0398
KMNIST vs Omniglot	0.9769	0.9799	0.9799	0.0967
MNIST vs Constant28	0.9992	0.9943	0.9943	0.0008
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9996	0.9995	0.9995	0.0025
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9733	0.9791	0.9791	0.1546
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9983	0.9950	0.9950	0.0030
Noise vs LSUN	1.0000	1.0000	1.0000	0.0001
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	0.9999	0.9999	0.9999	0.0001
Noise28 vs Constant28	0.9949	0.9769	0.9769	0.0059
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.7436	0.5967	0.5967	0.3490
NotMNIST vs FashionMNIST	0.9817	0.9778	0.9778	0.0623
NotMNIST vs KMNIST	0.9989	0.9990	0.9990	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9987	0.9990	0.9990	0.0000
Omniglot vs Constant28	0.9942	0.9657	0.9657	0.0071
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9999	0.9999	0.9999	0.0002
Omniglot vs MNIST	0.9994	0.9992	0.9992	0.0015
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9698	0.9835	0.9835	0.0967
SVHN vs CIFAR-100	0.9705	0.9839	0.9839	0.0950
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0003
SVHN vs Constant	0.7880	0.8466	0.8466	0.3759
SVHN vs LSUN	0.9997	0.9998	0.9998	0.0008
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9868	0.9933	0.9933	0.0459
SVHN vs iSUN	0.9985	0.9991	0.9991	0.0041
TinyImagenet vs CelebA	0.7440	0.5670	0.5670	0.6772
TinyImagenet vs Constant	0.3621	0.3874	0.3874	0.8460
TinyImagenet vs LSUN	0.9814	0.9707	0.9707	0.0563
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.6159	0.2982	0.2982	0.6409
TinyImagenet vs iSUN	0.9584	0.9355	0.9355	0.0998
Average	0.9265	0.9092	0.9092	0.1275

Table 65: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when data is streaming, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8694	0.8119	0.8119	0.6298
CIFAR-10 vs Constant	0.3942	0.4030	0.4031	0.7716
CIFAR-10 vs LSUN	0.9882	0.9837	0.9837	0.0429
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.2170	0.1762	0.1762	0.9941
CIFAR-10 vs iSUN	0.9683	0.9563	0.9563	0.0931
CIFAR-100 vs CelebA	0.8493	0.7778	0.7778	0.6462
CIFAR-100 vs Constant	0.3017	0.3713	0.3713	0.8850
CIFAR-100 vs LSUN	0.9851	0.9793	0.9794	0.0548
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.2277	0.1807	0.1808	1.0000
CIFAR-100 vs iSUN	0.9625	0.9497	0.9497	0.1085
CelebA vs CIFAR-10	0.5352	0.6372	0.6372	0.8038
CelebA vs CIFAR-100	0.5395	0.6373	0.6373	0.7727
CelebA vs Constant	0.2727	0.5171	0.5171	0.8212
CelebA vs LSUN	0.9573	0.9585	0.9585	0.1076
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1176	0.2711	0.2711	0.9970
CelebA vs TinyImagenet	0.6543	0.7116	0.7116	0.6536
CelebA vs iSUN	0.9332	0.9335	0.9335	0.1448
Constant vs CIFAR-10	0.9999	0.9999	0.9999	0.0005
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0001
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.2175	0.3513	0.3513	0.8562
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	0.9997	0.9997	0.9997	0.0015
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9887	0.9848	0.9848	0.0437
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0001
KMNIST vs Constant28	0.8030	0.6477	0.6477	0.2406
KMNIST vs FashionMNIST	0.9771	0.9551	0.9551	0.0687
KMNIST vs MNIST	0.9853	0.9765	0.9765	0.0371
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9824	0.9570	0.9571	0.0408
KMNIST vs Omniglot	0.9945	0.9957	0.9957	0.0204
MNIST vs Constant28	0.9871	0.9521	0.9522	0.0148
MNIST vs FashionMNIST	1.0000	0.9999	0.9999	0.0001
MNIST vs KMNIST	0.9994	0.9994	0.9994	0.0031
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9965	0.9975	0.9975	0.0083
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9881	0.9502	0.9503	0.0143
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	0.9998	0.9971	0.9972	0.0002
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9542	0.8586	0.8586	0.0489
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.4019	0.4079	0.4079	0.6970
NotMNIST vs FashionMNIST	0.9741	0.9717	0.9717	0.1006
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9999	1.0000	1.0000	0.0001
Omniglot vs Constant28	0.9056	0.7415	0.7415	0.1178
Omniglot vs FashionMNIST	0.9998	0.9993	0.9993	0.0006
Omniglot vs KMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs MNIST	0.9998	0.9997	0.9997	0.0011
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9997	0.9980	0.9981	0.0005
SVHN vs CIFAR-10	0.9898	0.9953	0.9953	0.0444
SVHN vs CIFAR-100	0.9862	0.9933	0.9933	0.0577
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.8066	0.8389	0.8390	0.3505
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9953	0.9977	0.9977	0.0198
SVHN vs iSUN	0.9997	0.9999	0.9999	0.0012
TinyImagenet vs CelebA	0.7010	0.6108	0.6108	0.8996
TinyImagenet vs Constant	0.2251	0.3457	0.3458	0.9082
TinyImagenet vs LSUN	0.9816	0.9719	0.9719	0.0563
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.1297	0.1606	0.1606	1.0000
TinyImagenet vs iSUN	0.9569	0.9353	0.9353	0.1076
Average	0.8880	0.8896	0.8896	0.1662

Table 66: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is split to several blocks with size 4096, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8644	0.8089	0.8089	0.6699
CIFAR-10 vs Constant	0.4348	0.4192	0.4192	0.7670
CIFAR-10 vs LSUN	0.9885	0.9839	0.9839	0.0425
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.3084	0.1992	0.1993	0.9931
CIFAR-10 vs iSUN	0.9687	0.9564	0.9564	0.0901
CIFAR-100 vs CelebA	0.8443	0.7737	0.7737	0.6853
CIFAR-100 vs Constant	0.3369	0.3832	0.3832	0.8821
CIFAR-100 vs LSUN	0.9856	0.9797	0.9797	0.0528
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.2825	0.1956	0.1956	1.0000
CIFAR-100 vs iSUN	0.9632	0.9500	0.9500	0.1042
CelebA vs CIFAR-10	0.5379	0.6413	0.6414	0.8024
CelebA vs CIFAR-100	0.5546	0.6484	0.6484	0.7604
CelebA vs Constant	0.3454	0.5404	0.5405	0.7826
CelebA vs LSUN	0.9662	0.9643	0.9644	0.0815
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.2291	0.2958	0.2958	0.9959
CelebA vs TinyImagenet	0.6591	0.7206	0.7206	0.6512
CelebA vs iSUN	0.9414	0.9371	0.9371	0.1188
Constant vs CIFAR-10	0.9999	0.9999	0.9999	0.0005
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0001
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.2210	0.3519	0.3519	0.8612
FashionMNIST vs KMNIST	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs MNIST	0.9998	0.9998	0.9998	0.0006
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9876	0.9842	0.9842	0.0529
FashionMNIST vs Omniglot	0.9999	1.0000	1.0000	0.0001
KMNIST vs Constant28	0.9068	0.7783	0.7783	0.1174
KMNIST vs FashionMNIST	0.9952	0.9910	0.9911	0.0142
KMNIST vs MNIST	0.9942	0.9933	0.9933	0.0243
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9883	0.9746	0.9747	0.0369
KMNIST vs Omniglot	0.9791	0.9836	0.9836	0.1162
MNIST vs Constant28	0.9997	0.9996	0.9996	0.0011
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0001
MNIST vs KMNIST	0.9995	0.9995	0.9995	0.0027
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9656	0.9767	0.9767	0.2770
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0001
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9975	0.9894	0.9894	0.0043
Noise vs LSUN	1.0000	1.0000	1.0000	0.0001
Noise vs SVHN	0.9999	0.9980	0.9981	0.0002
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	0.9998	0.9998	0.9998	0.0006
Noise28 vs Constant28	0.9776	0.9192	0.9193	0.0250
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.4611	0.4306	0.4307	0.6546
NotMNIST vs FashionMNIST	0.9838	0.9855	0.9855	0.0379
NotMNIST vs KMNIST	0.9987	0.9988	0.9988	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9983	0.9988	0.9988	0.0001
Omniglot vs Constant28	0.9825	0.9228	0.9228	0.0239
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9999	0.9999	0.9999	0.0000
Omniglot vs MNIST	0.9995	0.9994	0.9994	0.0008
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9918	0.9961	0.9961	0.0345
SVHN vs CIFAR-100	0.9887	0.9944	0.9944	0.0455
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.8112	0.8429	0.8430	0.3495
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9962	0.9981	0.9981	0.0154
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0010
TinyImagenet vs CelebA	0.6935	0.6036	0.6036	0.9250
TinyImagenet vs Constant	0.2642	0.3562	0.3562	0.9010
TinyImagenet vs LSUN	0.9819	0.9721	0.9721	0.0554
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.1803	0.1686	0.1686	1.0000
TinyImagenet vs iSUN	0.9570	0.9346	0.9346	0.1066
Average	0.8969	0.8972	0.8972	0.1649

Table 67: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when data is split to several blocks with size 4096, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4951	0.3875	0.3876	0.9928
CIFAR-10 vs Constant	0.5984	0.5181	0.5181	0.8200
CIFAR-10 vs LSUN	0.8215	0.8691	0.8691	0.9523
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.4886	0.2465	0.2465	0.8860
CIFAR-10 vs iSUN	0.8066	0.8597	0.8598	0.9275
CIFAR-100 vs CelebA	0.4669	0.3549	0.3550	0.9986
CIFAR-100 vs Constant	0.6288	0.5442	0.5443	0.8485
CIFAR-100 vs LSUN	0.8448	0.8849	0.8849	0.9086
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.5648	0.2816	0.2817	0.8814
CIFAR-100 vs iSUN	0.8273	0.8742	0.8742	0.8917
CelebA vs CIFAR-10	0.6213	0.7574	0.7575	0.8935
CelebA vs CIFAR-100	0.6034	0.7289	0.7289	0.8801
CelebA vs Constant	0.5379	0.6243	0.6244	0.7542
CelebA vs LSUN	0.8801	0.9434	0.9434	0.8904
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.4701	0.3759	0.3760	0.8271
CelebA vs TinyImagenet	0.5669	0.7143	0.7143	0.9445
CelebA vs iSUN	0.8717	0.9457	0.9457	0.8828
Constant vs CIFAR-10	0.4904	0.6263	0.6263	0.9982
Constant vs CIFAR-100	0.4840	0.6080	0.6080	0.9889
Constant vs CelebA	0.4460	0.4891	0.4891	0.9999
Constant vs LSUN	0.6844	0.7824	0.7824	0.9911
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.4228	0.3014	0.3014	0.9922
Constant vs TinyImagenet	0.4535	0.6008	0.6008	0.9983
Constant vs iSUN	0.6640	0.7786	0.7786	0.9887
Constant28 vs FashionMNIST	0.4258	0.6293	0.6293	0.9988
Constant28 vs KMNIST	0.5022	0.6813	0.6814	0.9999
Constant28 vs MNIST	0.4682	0.6478	0.6479	1.0000
Constant28 vs Noise28	0.9716	0.9784	0.9784	0.1936
Constant28 vs NotMNIST	0.4946	0.6736	0.6736	0.9892
Constant28 vs Omniglot	0.5387	0.7215	0.7215	1.0000
FashionMNIST vs Constant28	0.8807	0.8312	0.8313	0.3036
FashionMNIST vs KMNIST	0.1982	0.3508	0.3510	1.0000
FashionMNIST vs MNIST	0.0387	0.3092	0.3092	1.0000
FashionMNIST vs Noise28	0.9941	0.9970	0.9970	0.0000
FashionMNIST vs NotMNIST	0.6386	0.6633	0.6634	0.8700
FashionMNIST vs Omniglot	0.0133	0.3499	0.3500	1.0000
KMNIST vs Constant28	0.9919	0.9612	0.9612	0.0086
KMNIST vs FashionMNIST	0.9327	0.9214	0.9214	0.2689
KMNIST vs MNIST	0.1888	0.3400	0.3401	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8530	0.8120	0.8120	0.5450
KMNIST vs Omniglot	0.0858	0.3605	0.3605	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9990	0.9988	0.9988	0.0040
MNIST vs KMNIST	0.9940	0.9927	0.9927	0.0243
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5075	0.5334	0.5335	0.8668
Noise vs CIFAR-10	0.2176	0.3466	0.3467	0.9501
Noise vs CIFAR-100	0.2659	0.3603	0.3603	0.9050
Noise vs CelebA	0.1853	0.2107	0.2107	0.9620
Noise vs Constant	0.4799	0.4411	0.4412	0.5474
Noise vs LSUN	0.3314	0.3849	0.3850	0.9296
Noise vs SVHN	0.2529	0.1824	0.1824	0.9422
Noise vs TinyImagenet	0.2238	0.3524	0.3524	0.9511

Noise vs iSUN	0.3126	0.4056	0.4057	0.9501
Noise28 vs Constant28	0.4867	0.4438	0.4438	0.5478
Noise28 vs FashionMNIST	0.0210	0.3102	0.3102	0.9934
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0317	0.3126	0.3126	0.9780
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9829	0.9549	0.9549	0.0407
NotMNIST vs FashionMNIST	0.9507	0.9542	0.9542	0.2745
NotMNIST vs KMNIST	0.8419	0.8552	0.8552	0.7174
NotMNIST vs MNIST	0.5929	0.5804	0.5804	0.9956
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3339	0.4505	0.4506	0.9993
Omniglot vs Constant28	0.9945	0.9678	0.9679	0.0080
Omniglot vs FashionMNIST	0.9999	0.9999	0.9999	0.0002
Omniglot vs KMNIST	0.9940	0.9931	0.9931	0.0298
Omniglot vs MNIST	0.9337	0.9135	0.9135	0.2560
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9982	0.9976	0.9976	0.0139
SVHN vs CIFAR-10	0.3087	0.6886	0.6886	0.9993
SVHN vs CIFAR-100	0.3079	0.6844	0.6844	0.9996
SVHN vs CelebA	0.3715	0.6179	0.6179	1.0000
SVHN vs Constant	0.3915	0.6806	0.6806	0.9624
SVHN vs LSUN	0.8418	0.9387	0.9387	0.6885
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.2849	0.6826	0.6826	0.9997
SVHN vs iSUN	0.8131	0.9307	0.9308	0.6775
TinyImagenet vs CelebA	0.5481	0.3978	0.3979	0.9747
TinyImagenet vs Constant	0.8126	0.7388	0.7388	0.6418
TinyImagenet vs LSUN	0.8532	0.8900	0.8900	0.8744
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.6509	0.3412	0.3412	0.8050
TinyImagenet vs iSUN	0.8340	0.8792	0.8792	0.8649
Average	0.6185	0.6813	0.6813	0.6706

Table 68: The detailed performance for indicator $\log p_{\theta}(x)$ with BN when 10% data in batch are mixture distribution, with batch size 64, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6896	0.6404	0.6404	0.9844
CIFAR-10 vs Constant	0.4600	0.4333	0.4333	0.8454
CIFAR-10 vs LSUN	0.9172	0.9383	0.9383	0.6357
CIFAR-10 vs Noise	0.9989	0.9994	0.9994	0.0000
CIFAR-10 vs SVHN	0.3419	0.2032	0.2032	0.9209
CIFAR-10 vs iSUN	0.9033	0.9193	0.9194	0.6141
CIFAR-100 vs CelebA	0.6292	0.5448	0.5448	0.9897
CIFAR-100 vs Constant	0.5344	0.4793	0.4793	0.8919
CIFAR-100 vs LSUN	0.9475	0.9574	0.9574	0.3365
CIFAR-100 vs Noise	0.9907	0.9949	0.9949	0.0000
CIFAR-100 vs SVHN	0.3647	0.2095	0.2095	0.9112
CIFAR-100 vs iSUN	0.9345	0.9372	0.9372	0.3574
CelebA vs CIFAR-10	0.6312	0.7639	0.7640	0.8881
CelebA vs CIFAR-100	0.6010	0.7279	0.7280	0.8771
CelebA vs Constant	0.5327	0.6188	0.6188	0.6833
CelebA vs LSUN	0.8711	0.9412	0.9412	0.9024
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.4891	0.3847	0.3848	0.7596
CelebA vs TinyImagenet	0.5770	0.7193	0.7193	0.9439
CelebA vs iSUN	0.8700	0.9452	0.9452	0.8861
Constant vs CIFAR-10	0.7709	0.8351	0.8351	0.9586
Constant vs CIFAR-100	0.7272	0.8017	0.8017	0.9413
Constant vs CelebA	0.8884	0.8960	0.8960	0.8878
Constant vs LSUN	0.8563	0.9025	0.9025	0.9063
Constant vs Noise	0.7729	0.8708	0.8709	1.0000
Constant vs SVHN	0.5746	0.4617	0.4617	0.9624
Constant vs TinyImagenet	0.8078	0.8663	0.8663	0.9517
Constant vs iSUN	0.8806	0.9208	0.9208	0.7955
Constant28 vs FashionMNIST	0.3534	0.5854	0.5854	0.9997
Constant28 vs KMNIST	0.2640	0.5216	0.5216	1.0000
Constant28 vs MNIST	0.2004	0.4612	0.4612	1.0000
Constant28 vs Noise28	0.3971	0.6233	0.6233	1.0000
Constant28 vs NotMNIST	0.4383	0.6399	0.6399	1.0000
Constant28 vs Omniglot	0.1712	0.4710	0.4710	1.0000
FashionMNIST vs Constant28	0.9613	0.9426	0.9427	0.2101
FashionMNIST vs KMNIST	0.2213	0.3605	0.3606	1.0000
FashionMNIST vs MNIST	0.0476	0.3101	0.3102	1.0000
FashionMNIST vs Noise28	0.9452	0.9710	0.9710	0.8093
FashionMNIST vs NotMNIST	0.6899	0.7007	0.7008	0.8074
FashionMNIST vs Omniglot	0.0227	0.3508	0.3508	1.0000
KMNIST vs Constant28	0.9922	0.9666	0.9667	0.0083
KMNIST vs FashionMNIST	0.9314	0.9202	0.9203	0.2712
KMNIST vs MNIST	0.1841	0.3387	0.3388	0.9999
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9088	0.9022	0.9022	0.3754
KMNIST vs Omniglot	0.1045	0.3642	0.3643	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9993	0.9992	0.9992	0.0035
MNIST vs KMNIST	0.9935	0.9925	0.9925	0.0261
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5030	0.5296	0.5296	0.8772
Noise vs CIFAR-10	0.1399	0.3282	0.3283	0.9688
Noise vs CIFAR-100	0.1948	0.3415	0.3416	0.9249
Noise vs CelebA	0.0840	0.1968	0.1968	0.9882
Noise vs Constant	0.4763	0.4396	0.4397	0.5533
Noise vs LSUN	0.2119	0.3454	0.3454	0.9685
Noise vs SVHN	0.0995	0.1609	0.1610	0.9876
Noise vs TinyImagenet	0.1469	0.3336	0.3336	0.9662

Noise vs iSUN	0.2082	0.3692	0.3693	0.9767
Noise28 vs Constant28	0.4863	0.4433	0.4434	0.5440
Noise28 vs FashionMNIST	0.0458	0.3141	0.3142	0.9859
Noise28 vs KMNIST	0.0007	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0634	0.3184	0.3185	0.9627
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9891	0.9597	0.9597	0.0124
NotMNIST vs FashionMNIST	0.9509	0.9550	0.9550	0.2761
NotMNIST vs KMNIST	0.8371	0.8550	0.8550	0.7452
NotMNIST vs MNIST	0.5951	0.6243	0.6244	0.9958
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.3481	0.4966	0.4966	0.9998
Omniglot vs Constant28	0.9949	0.9683	0.9684	0.0056
Omniglot vs FashionMNIST	0.9994	0.9992	0.9992	0.0034
Omniglot vs KMNIST	0.9898	0.9883	0.9883	0.0591
Omniglot vs MNIST	0.9172	0.8921	0.8921	0.3181
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9994	0.9992	0.9992	0.0026
SVHN vs CIFAR-10	0.4269	0.7650	0.7651	0.9988
SVHN vs CIFAR-100	0.4313	0.7637	0.7637	0.9977
SVHN vs CelebA	0.7341	0.8469	0.8469	0.9962
SVHN vs Constant	0.4671	0.7237	0.7237	0.9582
SVHN vs LSUN	0.9878	0.9952	0.9952	0.0652
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.4542	0.7857	0.7857	0.9987
SVHN vs iSUN	0.9756	0.9914	0.9914	0.1494
TinyImagenet vs CelebA	0.5692	0.4169	0.4170	0.9717
TinyImagenet vs Constant	0.6352	0.5353	0.5354	0.7659
TinyImagenet vs LSUN	0.9199	0.9372	0.9372	0.6169
TinyImagenet vs Noise	0.9986	0.9992	0.9992	0.0000
TinyImagenet vs SVHN	0.4860	0.2443	0.2444	0.8446
TinyImagenet vs iSUN	0.9054	0.9214	0.9214	0.5836
Average	0.6267	0.6963	0.6963	0.6567

Table 69: The detailed performance for indicator $\log p_\theta(x)$ with BN when 90% data in batch are mixture distribution, with batch size 64, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.2984	0.2468	0.2469	0.9976
CIFAR-10 vs Constant	0.6687	0.5757	0.5758	0.7629
CIFAR-10 vs LSUN	0.1991	0.3546	0.3547	0.9987
CIFAR-10 vs Noise	0.9972	0.9983	0.9983	0.0000
CIFAR-10 vs SVHN	0.5743	0.2868	0.2868	0.8422
CIFAR-10 vs iSUN	0.2091	0.3828	0.3829	0.9963
CIFAR-100 vs CelebA	0.3129	0.2538	0.2539	0.9974
CIFAR-100 vs Constant	0.6442	0.5413	0.5414	0.7388
CIFAR-100 vs LSUN	0.1698	0.3494	0.3495	0.9980
CIFAR-100 vs Noise	0.9982	0.9989	0.9989	0.0000
CIFAR-100 vs SVHN	0.6735	0.3776	0.3777	0.8554
CIFAR-100 vs iSUN	0.1682	0.3688	0.3688	0.9982
CelebA vs CIFAR-10	0.4800	0.6360	0.6361	0.9311
CelebA vs CIFAR-100	0.5023	0.6440	0.6440	0.9096
CelebA vs Constant	0.4853	0.5949	0.5949	0.7187
CelebA vs LSUN	0.3120	0.5861	0.5862	0.9903
CelebA vs Noise	0.0259	0.4529	0.4529	0.9999
CelebA vs SVHN	0.4437	0.3658	0.3658	0.8766
CelebA vs TinyImagenet	0.4729	0.6595	0.6596	0.9545
CelebA vs iSUN	0.3079	0.6118	0.6118	0.9886
Constant vs CIFAR-10	0.1780	0.3756	0.3756	0.9995
Constant vs CIFAR-100	0.1789	0.3727	0.3728	0.9994
Constant vs CelebA	0.1961	0.2809	0.2809	1.0000
Constant vs LSUN	0.3832	0.5733	0.5733	1.0000
Constant vs Noise	0.9898	0.9930	0.9930	0.0046
Constant vs SVHN	0.3310	0.2490	0.2491	0.9966
Constant vs TinyImagenet	0.1506	0.3597	0.3598	0.9997
Constant vs iSUN	0.3548	0.5778	0.5778	1.0000
Constant28 vs FashionMNIST	0.5430	0.7251	0.7251	1.0000
Constant28 vs KMNIST	0.6236	0.7768	0.7768	1.0000
Constant28 vs MNIST	0.6539	0.7882	0.7882	1.0000
Constant28 vs Noise28	0.8692	0.9193	0.9193	0.9059
Constant28 vs NotMNIST	0.5133	0.7038	0.7038	1.0000
Constant28 vs Omniglot	0.7365	0.8530	0.8530	0.9995
FashionMNIST vs Constant28	0.5133	0.4534	0.4535	0.6139
FashionMNIST vs KMNIST	0.1910	0.3961	0.3962	1.0000
FashionMNIST vs MNIST	0.1274	0.3398	0.3399	1.0000
FashionMNIST vs Noise28	0.5412	0.6943	0.6943	1.0000
FashionMNIST vs NotMNIST	0.0978	0.3192	0.3192	0.9999
FashionMNIST vs Omniglot	0.0829	0.3619	0.3620	1.0000
KMNIST vs Constant28	0.1836	0.3379	0.3379	0.9846
KMNIST vs FashionMNIST	0.3290	0.3824	0.3824	0.9281
KMNIST vs MNIST	0.5963	0.5086	0.5087	0.6978
KMNIST vs Noise28	0.0006	0.3069	0.3069	1.0000
KMNIST vs NotMNIST	0.0341	0.3100	0.3101	0.9994
KMNIST vs Omniglot	0.2741	0.4224	0.4225	0.9985
MNIST vs Constant28	0.6715	0.5402	0.5403	0.3706
MNIST vs FashionMNIST	0.5940	0.4958	0.4959	0.5345
MNIST vs KMNIST	0.7858	0.6895	0.6896	0.3701
MNIST vs Noise28	0.9962	0.9899	0.9899	0.0069
MNIST vs NotMNIST	0.8342	0.6793	0.6793	0.1879
MNIST vs Omniglot	0.5120	0.6857	0.6858	0.9918
Noise vs CIFAR-10	0.8435	0.7624	0.7625	0.4259
Noise vs CIFAR-100	0.8243	0.7262	0.7263	0.4373
Noise vs CelebA	0.9052	0.7623	0.7624	0.3131
Noise vs Constant	0.5237	0.4602	0.4604	0.5022
Noise vs LSUN	0.8700	0.8215	0.8215	0.3896
Noise vs SVHN	0.8494	0.5384	0.5385	0.3532
Noise vs TinyImagenet	0.8310	0.7529	0.7530	0.4432

Noise vs iSUN	0.8619	0.8253	0.8254	0.4255
Noise28 vs Constant28	0.4981	0.4488	0.4490	0.5268
Noise28 vs FashionMNIST	0.0066	0.3079	0.3080	0.9983
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0005	0.3069	0.3070	0.9998
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.1156	0.3244	0.3244	0.9775
NotMNIST vs FashionMNIST	0.4271	0.4484	0.4485	0.9975
NotMNIST vs KMNIST	0.4433	0.5215	0.5216	0.9999
NotMNIST vs MNIST	0.4395	0.5213	0.5214	0.9990
NotMNIST vs Noise28	0.0158	0.3078	0.3078	1.0000
NotMNIST vs Omniglot	0.4741	0.6248	0.6248	0.9981
Omniglot vs Constant28	0.4624	0.3826	0.3826	0.7284
Omniglot vs FashionMNIST	0.8937	0.8041	0.8042	0.2722
Omniglot vs KMNIST	0.8435	0.7905	0.7905	0.4633
Omniglot vs MNIST	0.9881	0.9843	0.9843	0.0641
Omniglot vs Noise28	0.9228	0.8752	0.8752	0.2469
Omniglot vs NotMNIST	0.1171	0.2813	0.2813	0.9858
SVHN vs CIFAR-10	0.2028	0.6048	0.6048	0.9993
SVHN vs CIFAR-100	0.1997	0.6024	0.6025	0.9993
SVHN vs CelebA	0.2330	0.5073	0.5074	1.0000
SVHN vs Constant	0.3600	0.6282	0.6282	0.9677
SVHN vs LSUN	0.4214	0.7575	0.7575	0.9998
SVHN vs Noise	0.9958	0.9985	0.9985	0.0046
SVHN vs TinyImagenet	0.1735	0.5993	0.5994	1.0000
SVHN vs iSUN	0.4178	0.7679	0.7679	0.9992
TinyImagenet vs CelebA	0.4532	0.3105	0.3106	0.9828
TinyImagenet vs Constant	0.8445	0.7310	0.7311	0.4251
TinyImagenet vs LSUN	0.2594	0.3599	0.3600	0.9923
TinyImagenet vs Noise	0.9998	0.9999	0.9999	0.0000
TinyImagenet vs SVHN	0.7241	0.4184	0.4184	0.7699
TinyImagenet vs iSUN	0.2813	0.3950	0.3950	0.9913
Average	0.4645	0.5540	0.5541	0.7807

Table 70: The detailed performance for indicator difference between $\log p_\theta(x)$ with BN when 10% data in batch are mixture distribution, and $\log p_\theta(x)$ with BN when 90% data in batch are mixture distribution, with batch size 64, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6906	0.7324	0.7324	0.9998
CIFAR-10 vs Constant	0.5222	0.4799	0.4800	0.8966
CIFAR-10 vs LSUN	0.8852	0.9228	0.9228	0.8816
CIFAR-10 vs Noise	0.9992	0.9996	0.9996	0.0000
CIFAR-10 vs SVHN	0.1985	0.1742	0.1742	0.9969
CIFAR-10 vs iSUN	0.8462	0.8865	0.8865	0.8857
CIFAR-100 vs CelebA	0.5673	0.5948	0.5948	1.0000
CIFAR-100 vs Constant	0.4485	0.4427	0.4427	0.9626
CIFAR-100 vs LSUN	0.8962	0.9289	0.9289	0.8430
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.1291	0.1665	0.1666	0.9998
CIFAR-100 vs iSUN	0.8593	0.8914	0.8914	0.8254
CelebA vs CIFAR-10	0.8287	0.9163	0.9163	0.7998
CelebA vs CIFAR-100	0.7774	0.8717	0.8717	0.7865
CelebA vs Constant	0.8970	0.9357	0.9357	0.4251
CelebA vs LSUN	0.9695	0.9871	0.9871	0.1530
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.8599	0.8730	0.8730	0.7725
CelebA vs TinyImagenet	0.6485	0.7992	0.7993	0.9597
CelebA vs iSUN	0.9649	0.9865	0.9865	0.2043
Constant vs CIFAR-10	0.3012	0.4619	0.4620	1.0000
Constant vs CIFAR-100	0.3088	0.4775	0.4775	1.0000
Constant vs CelebA	0.4507	0.5130	0.5130	0.9998
Constant vs LSUN	0.6070	0.7197	0.7197	0.9910
Constant vs Noise	0.7949	0.8878	0.8878	1.0000
Constant vs SVHN	0.1421	0.1812	0.1812	0.9993
Constant vs TinyImagenet	0.3619	0.5277	0.5277	0.9994
Constant vs iSUN	0.6301	0.7556	0.7556	0.9948
Constant28 vs FashionMNIST	0.3287	0.5556	0.5556	1.0000
Constant28 vs KMNIST	0.2532	0.5111	0.5112	1.0000
Constant28 vs MNIST	0.2140	0.4823	0.4823	1.0000
Constant28 vs Noise28	0.4234	0.6520	0.6520	1.0000
Constant28 vs NotMNIST	0.3362	0.5739	0.5739	1.0000
Constant28 vs Omniglot	0.2124	0.5179	0.5179	1.0000
FashionMNIST vs Constant28	0.9948	0.9733	0.9733	0.0052
FashionMNIST vs KMNIST	0.2633	0.3907	0.3908	1.0000
FashionMNIST vs MNIST	0.2900	0.4277	0.4278	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7275	0.7394	0.7395	0.7670
FashionMNIST vs Omniglot	0.5851	0.7364	0.7364	0.9918
KMNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
KMNIST vs FashionMNIST	0.9552	0.9493	0.9493	0.2035
KMNIST vs MNIST	0.3021	0.3871	0.3871	0.9996
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9899	0.9899	0.9899	0.0602
KMNIST vs Omniglot	0.5849	0.6737	0.6738	0.9686
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9998	0.9998	0.9998	0.0010
MNIST vs KMNIST	0.9927	0.9917	0.9917	0.0313
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5295	0.5480	0.5481	0.8528
Noise vs CIFAR-10	0.1897	0.3399	0.3400	0.9518
Noise vs CIFAR-100	0.2297	0.3509	0.3509	0.8986
Noise vs CelebA	0.2104	0.2164	0.2164	0.9457
Noise vs Constant	0.4847	0.4431	0.4432	0.5419
Noise vs LSUN	0.2558	0.3577	0.3578	0.9524
Noise vs SVHN	0.2742	0.1873	0.1873	0.9254
Noise vs TinyImagenet	0.2204	0.3518	0.3519	0.9377

Noise vs iSUN	0.2526	0.3818	0.3818	0.9559
Noise28 vs Constant28	0.4962	0.4476	0.4476	0.5440
Noise28 vs FashionMNIST	0.0883	0.3218	0.3218	0.9737
Noise28 vs KMNIST	0.0104	0.3079	0.3080	0.9997
Noise28 vs MNIST	0.0012	0.3070	0.3070	0.9999
Noise28 vs NotMNIST	0.1137	0.3282	0.3282	0.9324
Noise28 vs Omniglot	0.0047	0.3500	0.3501	0.9998
NotMNIST vs Constant28	0.9928	0.9676	0.9677	0.0078
NotMNIST vs FashionMNIST	0.9912	0.9926	0.9926	0.0333
NotMNIST vs KMNIST	0.9818	0.9871	0.9871	0.0689
NotMNIST vs MNIST	0.9775	0.9841	0.9841	0.1041
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9919	0.9955	0.9955	0.0002
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9955	0.9948	0.9948	0.0186
Omniglot vs MNIST	0.9226	0.9000	0.9000	0.2950
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.4477	0.7878	0.7878	0.9999
SVHN vs CIFAR-100	0.5025	0.8079	0.8079	0.9956
SVHN vs CelebA	0.7740	0.8785	0.8785	0.9703
SVHN vs Constant	0.5770	0.7918	0.7918	0.8577
SVHN vs LSUN	0.8929	0.9620	0.9620	0.6711
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.5013	0.8163	0.8163	0.9999
SVHN vs iSUN	0.8555	0.9513	0.9513	0.7133
TinyImagenet vs CelebA	0.5676	0.4484	0.4485	0.9884
TinyImagenet vs Constant	0.5607	0.5147	0.5148	0.9108
TinyImagenet vs LSUN	0.9035	0.9335	0.9335	0.7838
TinyImagenet vs Noise	0.9990	0.9994	0.9994	0.0000
TinyImagenet vs SVHN	0.2857	0.1966	0.1966	0.9861
TinyImagenet vs iSUN	0.8661	0.9006	0.9006	0.8428
Average	0.6410	0.7134	0.7134	0.6313

Table 71: The detailed performance for indicator $\log p_\theta(x)$ with BN based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6543	0.5729	0.5729	0.9779
CIFAR-10 vs Constant	0.4103	0.4115	0.4115	0.9281
CIFAR-10 vs LSUN	0.9245	0.9434	0.9434	0.5681
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.2601	0.1866	0.1867	0.9529
CIFAR-10 vs iSUN	0.9055	0.9229	0.9229	0.5867
CIFAR-100 vs CelebA	0.6710	0.5919	0.5919	0.9956
CIFAR-100 vs Constant	0.2339	0.3520	0.3521	0.9810
CIFAR-100 vs LSUN	0.9446	0.9570	0.9570	0.4163
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.1869	0.1736	0.1736	0.9671
CIFAR-100 vs iSUN	0.9258	0.9358	0.9358	0.4729
CelebA vs CIFAR-10	0.6031	0.7210	0.7211	0.8819
CelebA vs CIFAR-100	0.5891	0.6946	0.6946	0.8625
CelebA vs Constant	0.2594	0.5127	0.5128	0.8569
CelebA vs LSUN	0.9799	0.9846	0.9846	0.0662
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1569	0.2827	0.2827	0.9346
CelebA vs TinyImagenet	0.6087	0.7149	0.7149	0.8890
CelebA vs iSUN	0.9672	0.9777	0.9777	0.1097
Constant vs CIFAR-10	0.8606	0.8949	0.8949	0.7911
Constant vs CIFAR-100	0.8616	0.8948	0.8948	0.7821
Constant vs CelebA	0.8660	0.8711	0.8711	0.9081
Constant vs LSUN	0.9627	0.9713	0.9713	0.2289
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.6325	0.5487	0.5487	0.9330
Constant vs TinyImagenet	0.8594	0.8987	0.8988	0.8468
Constant vs iSUN	0.9518	0.9648	0.9648	0.3111
Constant28 vs FashionMNIST	0.6036	0.7542	0.7546	0.9941
Constant28 vs KMNIST	0.7039	0.8030	0.8033	0.9909
Constant28 vs MNIST	0.5612	0.7358	0.7361	1.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.7200	0.8082	0.8085	0.9168
Constant28 vs Omniglot	0.6291	0.7886	0.7889	0.9964
FashionMNIST vs Constant28	0.8475	0.8113	0.8114	0.3754
FashionMNIST vs KMNIST	0.2579	0.3745	0.3746	0.9999
FashionMNIST vs MNIST	0.0490	0.3103	0.3103	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6432	0.6758	0.6758	0.8644
FashionMNIST vs Omniglot	0.0172	0.3503	0.3503	1.0000
KMNIST vs Constant28	0.9916	0.9609	0.9609	0.0119
KMNIST vs FashionMNIST	0.9333	0.9217	0.9217	0.2671
KMNIST vs MNIST	0.1819	0.3381	0.3381	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8386	0.7861	0.7862	0.5582
KMNIST vs Omniglot	0.0910	0.3615	0.3615	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9978	0.9975	0.9975	0.0086
MNIST vs KMNIST	0.9864	0.9845	0.9845	0.0590
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.4517	0.5041	0.5042	0.9344
Noise vs CIFAR-10	0.2423	0.3535	0.3536	0.9447
Noise vs CIFAR-100	0.2880	0.3670	0.3671	0.8983
Noise vs CelebA	0.1974	0.2128	0.2129	0.9546
Noise vs Constant	0.4819	0.4420	0.4420	0.5428
Noise vs LSUN	0.3585	0.3960	0.3961	0.9163
Noise vs SVHN	0.2898	0.1895	0.1895	0.9272
Noise vs TinyImagenet	0.2476	0.3593	0.3594	0.9464

Noise vs iSUN	0.3418	0.4182	0.4183	0.9406
Noise28 vs Constant28	0.4904	0.4457	0.4458	0.5392
Noise28 vs FashionMNIST	0.0204	0.3101	0.3102	0.9932
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0251	0.3114	0.3115	0.9820
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9760	0.9486	0.9486	0.0525
NotMNIST vs FashionMNIST	0.9457	0.9480	0.9480	0.2912
NotMNIST vs KMNIST	0.8246	0.8342	0.8343	0.7440
NotMNIST vs MNIST	0.5439	0.5271	0.5276	0.9994
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2916	0.4242	0.4245	0.9996
Omniglot vs Constant28	0.9943	0.9675	0.9676	0.0125
Omniglot vs FashionMNIST	0.9999	0.9999	0.9999	0.0002
Omniglot vs KMNIST	0.9941	0.9932	0.9932	0.0294
Omniglot vs MNIST	0.9335	0.9133	0.9133	0.2572
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9986	0.9982	0.9982	0.0140
SVHN vs CIFAR-10	0.5658	0.8341	0.8341	0.9934
SVHN vs CIFAR-100	0.5678	0.8318	0.8318	0.9896
SVHN vs CelebA	0.7889	0.8722	0.8722	0.8751
SVHN vs Constant	0.5030	0.7385	0.7385	0.8988
SVHN vs LSUN	0.9940	0.9973	0.9973	0.0301
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.5893	0.8463	0.8463	0.9934
SVHN vs iSUN	0.9822	0.9927	0.9927	0.0717
TinyImagenet vs CelebA	0.6113	0.4545	0.4546	0.9479
TinyImagenet vs Constant	0.4965	0.4435	0.4436	0.8070
TinyImagenet vs LSUN	0.9461	0.9546	0.9546	0.3396
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.2879	0.1901	0.1901	0.8940
TinyImagenet vs iSUN	0.9258	0.9336	0.9336	0.4161
Average	0.6578	0.7134	0.7134	0.5921

Table 72: The detailed performance for indicator $\log p_{\theta}(x)$ trained with BN but testing without BN based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4465	0.3210	0.3211	0.9969
CIFAR-10 vs Constant	0.7093	0.6639	0.6640	0.7777
CIFAR-10 vs LSUN	0.4902	0.5443	0.5445	0.9980
CIFAR-10 vs Noise	0.8161	0.8817	0.8817	0.9946
CIFAR-10 vs SVHN	0.6371	0.3835	0.3835	0.8420
CIFAR-10 vs iSUN	0.4525	0.5399	0.5401	0.9962
CIFAR-100 vs CelebA	0.3568	0.2707	0.2708	0.9974
CIFAR-100 vs Constant	0.7795	0.7544	0.7544	0.7421
CIFAR-100 vs LSUN	0.4806	0.5384	0.5385	0.9982
CIFAR-100 vs Noise	0.6475	0.7705	0.7705	1.0000
CIFAR-100 vs SVHN	0.6844	0.4254	0.4255	0.8558
CIFAR-100 vs iSUN	0.4548	0.5459	0.5460	0.9982
CelebA vs CIFAR-10	0.5343	0.6803	0.6803	0.9183
CelebA vs CIFAR-100	0.5398	0.6761	0.6762	0.8840
CelebA vs Constant	0.8307	0.8715	0.8715	0.4561
CelebA vs LSUN	0.6557	0.8102	0.8102	0.9456
CelebA vs Noise	0.9740	0.9870	0.9870	0.1082
CelebA vs SVHN	0.7222	0.6341	0.6341	0.8656
CelebA vs TinyImagenet	0.4504	0.6336	0.6337	0.9492
CelebA vs iSUN	0.6352	0.8099	0.8099	0.9525
Constant vs CIFAR-10	0.1612	0.3383	0.3384	0.9995
Constant vs CIFAR-100	0.1571	0.3351	0.3352	0.9994
Constant vs CelebA	0.1191	0.2001	0.2001	1.0000
Constant vs LSUN	0.1430	0.3312	0.3313	1.0000
Constant vs Noise	0.8278	0.8907	0.8907	0.9814
Constant vs SVHN	0.3156	0.2065	0.2066	0.9966
Constant vs TinyImagenet	0.1325	0.3323	0.3324	0.9997
Constant vs iSUN	0.1354	0.3522	0.3523	1.0000
Constant28 vs FashionMNIST	0.0609	0.3122	0.3122	1.0000
Constant28 vs KMNIST	0.0951	0.3197	0.3197	1.0000
Constant28 vs MNIST	0.1468	0.3339	0.3340	1.0000
Constant28 vs Noise28	0.5172	0.6679	0.6679	0.9926
Constant28 vs NotMNIST	0.0651	0.3128	0.3128	1.0000
Constant28 vs Omniglot	0.2426	0.4280	0.4281	1.0000
FashionMNIST vs Constant28	0.8867	0.8329	0.8329	0.3067
FashionMNIST vs KMNIST	0.4348	0.5393	0.5394	1.0000
FashionMNIST vs MNIST	0.3245	0.4492	0.4493	1.0000
FashionMNIST vs Noise28	0.4581	0.6258	0.6259	1.0000
FashionMNIST vs NotMNIST	0.8695	0.8729	0.8730	0.6275
FashionMNIST vs Omniglot	0.4028	0.5881	0.5882	1.0000
KMNIST vs Constant28	0.8179	0.7896	0.7896	0.6373
KMNIST vs FashionMNIST	0.6935	0.6463	0.6464	0.7411
KMNIST vs MNIST	0.6202	0.5750	0.5751	0.7924
KMNIST vs Noise28	0.9994	0.9994	0.9994	0.0015
KMNIST vs NotMNIST	0.9660	0.9612	0.9612	0.1511
KMNIST vs Omniglot	0.7222	0.7611	0.7611	0.8307
MNIST vs Constant28	0.9137	0.8238	0.8240	0.1579
MNIST vs FashionMNIST	0.8587	0.8023	0.8024	0.3919
MNIST vs KMNIST	0.8329	0.7713	0.7714	0.4047
MNIST vs Noise28	0.9785	0.9552	0.9552	0.0484
MNIST vs NotMNIST	0.9548	0.9106	0.9106	0.0963
MNIST vs Omniglot	0.2298	0.4103	0.4103	0.9960
Noise vs CIFAR-10	0.5609	0.5277	0.5279	0.8435
Noise vs CIFAR-100	0.6046	0.5615	0.5619	0.7920
Noise vs CelebA	0.4465	0.2970	0.2970	0.9232
Noise vs Constant	0.9698	0.9467	0.9469	0.0767
Noise vs LSUN	0.6322	0.5870	0.5869	0.7825
Noise vs SVHN	0.4341	0.2325	0.2326	0.8846
Noise vs TinyImagenet	0.5428	0.5246	0.5246	0.8635

Noise vs iSUN	0.5997	0.5875	0.5874	0.8242
Noise28 vs Constant28	0.9753	0.9565	0.9565	0.0651
Noise28 vs FashionMNIST	0.9946	0.9910	0.9911	0.0156
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0001
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9997	0.9996	0.9996	0.0012
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.8867	0.8257	0.8258	0.3327
NotMNIST vs FashionMNIST	0.5141	0.5089	0.5091	0.9175
NotMNIST vs KMNIST	0.5278	0.5619	0.5620	0.9926
NotMNIST vs MNIST	0.5501	0.5770	0.5771	0.9926
NotMNIST vs Noise28	0.9842	0.9856	0.9856	0.0764
NotMNIST vs Omniglot	0.5185	0.6041	0.6042	0.9999
Omniglot vs Constant28	0.6413	0.4863	0.4864	0.6538
Omniglot vs FashionMNIST	0.2369	0.3076	0.3076	0.9815
Omniglot vs KMNIST	0.2243	0.3050	0.3050	0.9972
Omniglot vs MNIST	0.4217	0.3753	0.3754	0.9245
Omniglot vs Noise28	0.1234	0.2823	0.2824	0.9983
Omniglot vs NotMNIST	0.8840	0.8124	0.8125	0.4232
SVHN vs CIFAR-10	0.1696	0.5572	0.5572	0.9993
SVHN vs CIFAR-100	0.1681	0.5567	0.5568	0.9993
SVHN vs CelebA	0.1154	0.3805	0.3805	1.0000
SVHN vs Constant	0.4460	0.6957	0.6958	0.9638
SVHN vs LSUN	0.3685	0.6917	0.6918	0.9998
SVHN vs Noise	0.9929	0.9975	0.9975	0.0192
SVHN vs TinyImagenet	0.1428	0.5526	0.5527	1.0000
SVHN vs iSUN	0.3788	0.7163	0.7163	0.9992
TinyImagenet vs CelebA	0.4690	0.3235	0.3236	0.9824
TinyImagenet vs Constant	0.8917	0.8697	0.8698	0.4134
TinyImagenet vs LSUN	0.4710	0.5038	0.5040	0.9920
TinyImagenet vs Noise	0.9840	0.9902	0.9902	0.0050
TinyImagenet vs SVHN	0.7499	0.5262	0.5263	0.7699
TinyImagenet vs iSUN	0.4214	0.4950	0.4951	0.9913
Average	0.5698	0.6209	0.6209	0.7383

Table 73: The detailed performance for indicator $T_{b,10\%,90\%}$ with batch size 64, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8049	0.6660	0.6660	0.7159
CIFAR-10 vs Constant	0.1340	0.3281	0.3282	0.9640
CIFAR-10 vs LSUN	0.9914	0.9867	0.9867	0.0270
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0419	0.1563	0.1563	1.0000
CIFAR-10 vs iSUN	0.9797	0.9712	0.9712	0.0617
CIFAR-100 vs CelebA	0.8038	0.6983	0.6984	0.7393
CIFAR-100 vs Constant	0.0982	0.3260	0.3261	0.9971
CIFAR-100 vs LSUN	0.9914	0.9882	0.9882	0.0279
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0826	0.1692	0.1692	1.0000
CIFAR-100 vs iSUN	0.9800	0.9751	0.9751	0.0645
CelebA vs CIFAR-10	0.5331	0.6501	0.6501	0.8549
CelebA vs CIFAR-100	0.5002	0.6199	0.6200	0.8442
CelebA vs Constant	0.0841	0.4663	0.4663	0.9794
CelebA vs LSUN	0.9813	0.9826	0.9826	0.0525
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0218	0.2593	0.2593	0.9997
CelebA vs TinyImagenet	0.6034	0.6877	0.6877	0.7530
CelebA vs iSUN	0.9675	0.9736	0.9736	0.0843
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0001
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9997	0.9997	0.9997	0.0000
Constant28 vs Omniglot	0.9999	0.9999	0.9999	0.0004
FashionMNIST vs Constant28	0.8791	0.8778	0.8779	0.8533
FashionMNIST vs KMNIST	0.3474	0.4162	0.4163	0.9939
FashionMNIST vs MNIST	0.0626	0.3119	0.3119	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6333	0.6710	0.6710	0.9271
FashionMNIST vs Omniglot	0.0257	0.3511	0.3511	1.0000
KMNIST vs Constant28	0.9919	0.9612	0.9612	0.0080
KMNIST vs FashionMNIST	0.9329	0.9193	0.9193	0.2680
KMNIST vs MNIST	0.1801	0.3374	0.3374	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8502	0.7992	0.7993	0.5251
KMNIST vs Omniglot	0.0841	0.3602	0.3603	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9993	0.9992	0.9992	0.0031
MNIST vs KMNIST	0.9924	0.9912	0.9912	0.0328
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6030	0.6108	0.6109	0.7519
Noise vs CIFAR-10	0.2227	0.3487	0.3488	0.9382
Noise vs CIFAR-100	0.2792	0.3646	0.3647	0.8962
Noise vs CelebA	0.3300	0.2421	0.2421	0.9125
Noise vs Constant	0.5382	0.4670	0.4671	0.4854
Noise vs LSUN	0.2523	0.3565	0.3566	0.9524
Noise vs SVHN	0.2932	0.1921	0.1922	0.8835
Noise vs TinyImagenet	0.2136	0.3500	0.3501	0.9485

Noise vs iSUN	0.2384	0.3771	0.3772	0.9611
Noise28 vs Constant28	0.5247	0.4603	0.4603	0.5117
Noise28 vs FashionMNIST	0.0637	0.3175	0.3175	0.9778
Noise28 vs KMNIST	0.1296	0.3306	0.3307	0.9432
Noise28 vs MNIST	0.0329	0.3123	0.3123	0.9877
Noise28 vs NotMNIST	0.6886	0.5530	0.5531	0.3901
Noise28 vs Omniglot	0.0001	0.3495	0.3496	1.0000
NotMNIST vs Constant28	0.9874	0.9567	0.9595	0.0241
NotMNIST vs FashionMNIST	0.9484	0.9493	0.9493	0.2833
NotMNIST vs KMNIST	0.8104	0.8230	0.8230	0.7856
NotMNIST vs MNIST	0.5104	0.5340	0.5341	0.9997
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2946	0.4434	0.4435	0.9998
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9998	0.9998	0.9998	0.0009
Omniglot vs KMNIST	0.9912	0.9899	0.9899	0.0501
Omniglot vs MNIST	0.9021	0.8719	0.8719	0.3684
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9971	0.9988	0.9988	0.0114
SVHN vs CIFAR-100	0.9950	0.9979	0.9979	0.0199
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0001
SVHN vs Constant	0.8170	0.8687	0.8688	0.4349
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9983	0.9993	0.9993	0.0061
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0002
TinyImagenet vs CelebA	0.6685	0.5486	0.5487	0.9185
TinyImagenet vs Constant	0.0698	0.3129	0.3129	0.9814
TinyImagenet vs LSUN	0.9863	0.9795	0.9796	0.0444
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0373	0.1546	0.1546	1.0000
TinyImagenet vs iSUN	0.9671	0.9539	0.9539	0.0913
Average	0.7061	0.7484	0.7485	0.4060

Table 74: The detailed performance for indicator $W AIC'(x)$ which replace the likelihood in $\mathbb{E}_\theta \log p_\theta(x)$ with BPD, based on 5 models PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.3404	0.2710	0.2711	0.9976
CIFAR-10 vs Constant	0.9421	0.9381	0.9382	0.3153
CIFAR-10 vs LSUN	0.7703	0.8193	0.8193	0.9079
CIFAR-10 vs Noise	0.9994	0.9995	0.9995	0.0000
CIFAR-10 vs SVHN	0.6588	0.3533	0.3533	0.9024
CIFAR-10 vs iSUN	0.7666	0.8209	0.8209	0.8673
CIFAR-100 vs CelebA	0.5091	0.3762	0.3763	0.9869
CIFAR-100 vs Constant	0.9575	0.9553	0.9553	0.2241
CIFAR-100 vs LSUN	0.9560	0.9590	0.9590	0.2347
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8008	0.6702	0.6703	0.8925
CIFAR-100 vs iSUN	0.9356	0.9424	0.9424	0.3125
CelebA vs CIFAR-10	0.6373	0.7651	0.7652	0.9029
CelebA vs CIFAR-100	0.6442	0.7590	0.7591	0.8790
CelebA vs Constant	0.9852	0.9897	0.9897	0.0726
CelebA vs LSUN	0.8243	0.9263	0.9263	0.9786
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.4051	0.3511	0.3511	0.8990
CelebA vs TinyImagenet	0.6056	0.7433	0.7433	0.9457
CelebA vs iSUN	0.8184	0.9289	0.9289	0.9829
Constant vs CIFAR-10	0.9958	0.9947	0.9947	0.0167
Constant vs CIFAR-100	0.9941	0.9916	0.9916	0.0225
Constant vs CelebA	0.9998	0.9996	0.9996	0.0006
Constant vs LSUN	0.9954	0.9949	0.9949	0.0189
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9844	0.9564	0.9564	0.0710
Constant vs TinyImagenet	0.9971	0.9968	0.9968	0.0135
Constant vs iSUN	0.9959	0.9959	0.9959	0.0174
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9996	0.9996	0.9995	0.0003
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0001
FashionMNIST vs Constant28	0.9934	0.9719	0.9720	0.0087
FashionMNIST vs KMNIST	0.3381	0.4121	0.4122	0.9987
FashionMNIST vs MNIST	0.1435	0.3280	0.3280	0.9940
FashionMNIST vs Noise28	0.9877	0.9936	0.9936	0.0000
FashionMNIST vs NotMNIST	0.8327	0.8110	0.8110	0.4558
FashionMNIST vs Omniglot	0.0264	0.3512	0.3512	1.0000
KMNIST vs Constant28	0.9948	0.9733	0.9733	0.0080
KMNIST vs FashionMNIST	0.9402	0.9262	0.9262	0.2469
KMNIST vs MNIST	0.1991	0.3425	0.3426	0.9983
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9056	0.9094	0.9094	0.4416
KMNIST vs Omniglot	0.0864	0.3607	0.3607	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9945	0.9954	0.9954	0.0081
MNIST vs KMNIST	0.9680	0.9724	0.9724	0.1220
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9980	0.9986	0.9986	0.0000
MNIST vs Omniglot	0.5194	0.5531	0.5532	0.9181
Noise vs CIFAR-10	0.6158	0.5225	0.5226	0.6636
Noise vs CIFAR-100	0.6502	0.5455	0.5455	0.6037
Noise vs CelebA	0.7145	0.4439	0.4440	0.5875
Noise vs Constant	0.9998	0.9992	0.9992	0.0002
Noise vs LSUN	0.6195	0.5281	0.5282	0.6724
Noise vs SVHN	0.7921	0.4662	0.4663	0.4672
Noise vs TinyImagenet	0.5717	0.4989	0.4990	0.7199

Noise vs iSUN	0.5825	0.5325	0.5326	0.7203
Noise28 vs Constant28	0.9910	0.9677	0.9677	0.0129
Noise28 vs FashionMNIST	0.9662	0.9315	0.9315	0.0906
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0001
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9990	0.9979	0.9979	0.0021
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9944	0.9730	0.9730	0.0080
NotMNIST vs FashionMNIST	0.9117	0.8959	0.8959	0.3114
NotMNIST vs KMNIST	0.6022	0.6081	0.6082	0.9656
NotMNIST vs MNIST	0.3554	0.4005	0.4006	0.9763
NotMNIST vs Noise28	0.9976	0.9987	0.9987	0.0000
NotMNIST vs Omniglot	0.1405	0.3724	0.3725	1.0000
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9999	0.9999	0.9999	0.0003
Omniglot vs KMNIST	0.9928	0.9916	0.9916	0.0416
Omniglot vs MNIST	0.9128	0.8838	0.8838	0.3355
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.6441	0.8308	0.8308	0.8101
SVHN vs CIFAR-100	0.6730	0.8391	0.8391	0.7482
SVHN vs CelebA	0.9736	0.9780	0.9780	0.1196
SVHN vs Constant	0.9271	0.9606	0.9606	0.2145
SVHN vs LSUN	0.9982	0.9991	0.9991	0.0050
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.7663	0.8871	0.8871	0.6200
SVHN vs iSUN	0.9942	0.9972	0.9972	0.0187
TinyImagenet vs CelebA	0.5209	0.3889	0.3890	0.9896
TinyImagenet vs Constant	0.9710	0.9701	0.9701	0.1680
TinyImagenet vs LSUN	0.7897	0.8467	0.8467	0.9134
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.7322	0.4084	0.4084	0.6648
TinyImagenet vs iSUN	0.7797	0.8465	0.8465	0.9010
Average	0.8219	0.8244	0.8245	0.3698

Table 75: The detailed performance for indicator $WAIC(x)$ based on 5 models PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8053	0.6682	0.6683	0.7164
CIFAR-10 vs Constant	0.1061	0.3223	0.3223	0.9820
CIFAR-10 vs LSUN	0.9913	0.9866	0.9866	0.0272
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0423	0.1566	0.1566	1.0000
CIFAR-10 vs iSUN	0.9796	0.9711	0.9711	0.0620
CIFAR-100 vs CelebA	0.8040	0.6994	0.6994	0.7409
CIFAR-100 vs Constant	0.0803	0.3226	0.3226	0.9994
CIFAR-100 vs LSUN	0.9913	0.9881	0.9881	0.0283
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0816	0.1694	0.1694	1.0000
CIFAR-100 vs iSUN	0.9799	0.9749	0.9749	0.0651
CelebA vs CIFAR-10	0.5323	0.6491	0.6492	0.8552
CelebA vs CIFAR-100	0.4994	0.6192	0.6193	0.8440
CelebA vs Constant	0.0444	0.4576	0.4576	0.9926
CelebA vs LSUN	0.9812	0.9825	0.9825	0.0527
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0216	0.2593	0.2593	0.9997
CelebA vs TinyImagenet	0.6032	0.6873	0.6873	0.7529
CelebA vs iSUN	0.9674	0.9735	0.9736	0.0840
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9984	0.9983	0.9983	0.0126
Constant28 vs Omniglot	0.9998	0.9997	0.9997	0.0004
FashionMNIST vs Constant28	0.8624	0.8650	0.8651	0.9200
FashionMNIST vs KMNIST	0.3476	0.4163	0.4164	0.9939
FashionMNIST vs MNIST	0.0624	0.3119	0.3119	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6281	0.6684	0.6684	0.9386
FashionMNIST vs Omniglot	0.0257	0.3511	0.3511	1.0000
KMNIST vs Constant28	0.9919	0.9612	0.9612	0.0080
KMNIST vs FashionMNIST	0.9328	0.9193	0.9193	0.2682
KMNIST vs MNIST	0.1800	0.3374	0.3374	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8501	0.7990	0.7991	0.5253
KMNIST vs Omniglot	0.0841	0.3602	0.3603	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9993	0.9992	0.9992	0.0031
MNIST vs KMNIST	0.9925	0.9912	0.9912	0.0328
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.6032	0.6111	0.6112	0.7519
Noise vs CIFAR-10	0.2209	0.3482	0.3483	0.9401
Noise vs CIFAR-100	0.2758	0.3636	0.3637	0.9011
Noise vs CelebA	0.3289	0.2418	0.2419	0.9135
Noise vs Constant	0.5129	0.4554	0.4556	0.5128
Noise vs LSUN	0.2513	0.3562	0.3563	0.9532
Noise vs SVHN	0.2920	0.1919	0.1920	0.8844
Noise vs TinyImagenet	0.2125	0.3497	0.3498	0.9490

Noise vs iSUN	0.2376	0.3769	0.3770	0.9619
Noise28 vs Constant28	0.4785	0.4400	0.4401	0.5601
Noise28 vs FashionMNIST	0.0621	0.3172	0.3172	0.9784
Noise28 vs KMNIST	0.1238	0.3294	0.3295	0.9467
Noise28 vs MNIST	0.0288	0.3115	0.3116	0.9901
Noise28 vs NotMNIST	0.6774	0.5452	0.5453	0.4044
Noise28 vs Omniglot	0.0000	0.3495	0.3496	1.0000
NotMNIST vs Constant28	0.9865	0.9558	0.9586	0.0272
NotMNIST vs FashionMNIST	0.9484	0.9493	0.9493	0.2832
NotMNIST vs KMNIST	0.8107	0.8233	0.8234	0.7852
NotMNIST vs MNIST	0.5108	0.5345	0.5346	0.9997
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2951	0.4438	0.4439	0.9998
Omniglot vs Constant28	0.9950	0.9685	0.9685	0.0050
Omniglot vs FashionMNIST	0.9998	0.9998	0.9998	0.0009
Omniglot vs KMNIST	0.9912	0.9898	0.9898	0.0502
Omniglot vs MNIST	0.9020	0.8718	0.8718	0.3689
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9970	0.9988	0.9988	0.0106
SVHN vs CIFAR-100	0.9948	0.9978	0.9978	0.0199
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0001
SVHN vs Constant	0.7868	0.8514	0.8514	0.5159
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9983	0.9993	0.9993	0.0057
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0002
TinyImagenet vs CelebA	0.6684	0.5501	0.5501	0.9188
TinyImagenet vs Constant	0.0365	0.3067	0.3068	0.9997
TinyImagenet vs LSUN	0.9861	0.9793	0.9794	0.0445
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0366	0.1546	0.1546	1.0000
TinyImagenet vs iSUN	0.9669	0.9537	0.9537	0.0917
Average	0.7030	0.7473	0.7474	0.4096

Table 76: The detailed performance for indicator $\mathbb{E}_\theta \log p_\theta(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.2940	0.2432	0.2433	0.9976
CIFAR-10 vs Constant	0.9469	0.9524	0.9524	0.3113
CIFAR-10 vs LSUN	0.6973	0.7216	0.7216	0.9229
CIFAR-10 vs Noise	0.9991	0.9993	0.9993	0.0001
CIFAR-10 vs SVHN	0.7193	0.5532	0.5532	0.9002
CIFAR-10 vs iSUN	0.6995	0.7305	0.7306	0.8847
CIFAR-100 vs CelebA	0.4814	0.3783	0.3783	0.9885
CIFAR-100 vs Constant	0.9614	0.9650	0.9650	0.2201
CIFAR-100 vs LSUN	0.9499	0.9523	0.9523	0.2613
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8210	0.7602	0.7603	0.8915
CIFAR-100 vs iSUN	0.9272	0.9339	0.9339	0.3374
CelebA vs CIFAR-10	0.5903	0.7092	0.7092	0.9020
CelebA vs CIFAR-100	0.6047	0.7184	0.7185	0.8784
CelebA vs Constant	0.9886	0.9946	0.9946	0.0624
CelebA vs LSUN	0.6171	0.7703	0.7703	0.9814
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.7232	0.7042	0.7042	0.8938
CelebA vs TinyImagenet	0.5112	0.6620	0.6621	0.9450
CelebA vs iSUN	0.6181	0.7865	0.7865	0.9861
Constant vs CIFAR-10	0.9957	0.9946	0.9946	0.0168
Constant vs CIFAR-100	0.9940	0.9913	0.9913	0.0228
Constant vs CelebA	0.9998	0.9996	0.9996	0.0006
Constant vs LSUN	0.9953	0.9947	0.9947	0.0193
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9841	0.9556	0.9556	0.0715
Constant vs TinyImagenet	0.9971	0.9967	0.9967	0.0135
Constant vs iSUN	0.9958	0.9957	0.9957	0.0177
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9996	0.9996	0.9995	0.0003
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0001
FashionMNIST vs Constant28	0.9960	0.9954	0.9954	0.0197
FashionMNIST vs KMNIST	0.5550	0.5893	0.5893	0.9989
FashionMNIST vs MNIST	0.6351	0.6421	0.6422	0.9844
FashionMNIST vs Noise28	0.7775	0.8534	0.8534	1.0000
FashionMNIST vs NotMNIST	0.9015	0.9050	0.9050	0.4633
FashionMNIST vs Omniglot	0.2979	0.4448	0.4449	1.0000
KMNIST vs Constant28	0.9955	0.9882	0.9882	0.0050
KMNIST vs FashionMNIST	0.9294	0.8965	0.8966	0.2032
KMNIST vs MNIST	0.6573	0.6026	0.6027	0.7489
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9172	0.8974	0.8975	0.2879
KMNIST vs Omniglot	0.4022	0.4858	0.4859	0.9783
MNIST vs Constant28	0.9963	0.9936	0.9936	0.0050
MNIST vs FashionMNIST	0.9241	0.9139	0.9139	0.2823
MNIST vs KMNIST	0.6384	0.6316	0.6317	0.8774
MNIST vs Noise28	0.9998	0.9998	0.9998	0.0000
MNIST vs NotMNIST	0.9695	0.9708	0.9708	0.1318
MNIST vs Omniglot	0.2267	0.4102	0.4103	0.9999
Noise vs CIFAR-10	0.7021	0.6313	0.6314	0.6263
Noise vs CIFAR-100	0.7264	0.6533	0.6534	0.5713
Noise vs CelebA	0.7736	0.5592	0.5593	0.5570
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	0.6955	0.6269	0.6270	0.6440
Noise vs SVHN	0.8402	0.5952	0.5953	0.4271
Noise vs TinyImagenet	0.6635	0.6027	0.6028	0.6826

Noise vs iSUN	0.6616	0.6268	0.6269	0.6924
Noise28 vs Constant28	0.9951	0.9891	0.9891	0.0120
Noise28 vs FashionMNIST	0.9913	0.9891	0.9891	0.0379
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9996	0.9994	0.9994	0.0011
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9943	0.9728	0.9729	0.0050
NotMNIST vs FashionMNIST	0.7077	0.6515	0.6516	0.6663
NotMNIST vs KMNIST	0.1832	0.3444	0.3446	1.0000
NotMNIST vs MNIST	0.3288	0.3975	0.3976	0.9899
NotMNIST vs Noise28	0.8844	0.9148	0.9148	0.7549
NotMNIST vs Omniglot	0.1644	0.3849	0.3850	1.0000
Omniglot vs Constant28	0.9953	0.9822	0.9822	0.0050
Omniglot vs FashionMNIST	0.9897	0.9845	0.9845	0.0428
Omniglot vs KMNIST	0.9186	0.8820	0.8820	0.2929
Omniglot vs MNIST	0.8582	0.7950	0.7951	0.4475
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9997	0.9994	0.9994	0.0009
SVHN vs CIFAR-10	0.6300	0.8203	0.8203	0.8175
SVHN vs CIFAR-100	0.6602	0.8287	0.8288	0.7556
SVHN vs CelebA	0.9716	0.9762	0.9762	0.1260
SVHN vs Constant	0.9272	0.9610	0.9610	0.2147
SVHN vs LSUN	0.9981	0.9990	0.9990	0.0053
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.7556	0.8793	0.8793	0.6286
SVHN vs iSUN	0.9939	0.9970	0.9970	0.0192
TinyImagenet vs CelebA	0.5106	0.4045	0.4046	0.9900
TinyImagenet vs Constant	0.9739	0.9767	0.9767	0.1622
TinyImagenet vs LSUN	0.7041	0.7491	0.7491	0.9242
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.8106	0.7026	0.7026	0.6590
TinyImagenet vs iSUN	0.6953	0.7518	0.7519	0.9125
Average	0.8221	0.8295	0.8295	0.4042

Table 77: The detailed performance for indicator $Var_{\theta} \log p_{\theta}(x)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6621	0.4454	0.4454	0.8218
CIFAR-10 vs Constant	0.5861	0.5000	0.5001	0.6089
CIFAR-10 vs LSUN	0.9881	0.9809	0.9810	0.0370
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.2321	0.1839	0.1839	0.9707
CIFAR-10 vs iSUN	0.9772	0.9713	0.9713	0.0766
CIFAR-100 vs CelebA	0.5926	0.4622	0.4623	0.9909
CIFAR-100 vs Constant	0.7801	0.6557	0.6558	0.4779
CIFAR-100 vs LSUN	0.8502	0.8607	0.8607	0.6962
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.1693	0.1694	0.1695	0.9966
CIFAR-100 vs iSUN	0.8209	0.8363	0.8363	0.7152
CelebA vs CIFAR-10	0.5749	0.7144	0.7145	0.8857
CelebA vs CIFAR-100	0.5102	0.6521	0.6521	0.8975
CelebA vs Constant	0.3367	0.5452	0.5452	0.8620
CelebA vs LSUN	0.9822	0.9839	0.9839	0.0506
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1194	0.2734	0.2735	0.9993
CelebA vs TinyImagenet	0.5841	0.7054	0.7054	0.8502
CelebA vs iSUN	0.9748	0.9834	0.9834	0.0816
Constant vs CIFAR-10	0.9652	0.9681	0.9681	0.2099
Constant vs CIFAR-100	0.9578	0.9605	0.9605	0.2410
Constant vs CelebA	0.9908	0.9840	0.9840	0.0450
Constant vs LSUN	0.9992	0.9991	0.9991	0.0043
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.7301	0.6203	0.6203	0.8551
Constant vs TinyImagenet	0.9575	0.9591	0.9591	0.2364
Constant vs iSUN	0.9968	0.9969	0.9969	0.0197
Constant28 vs FashionMNIST	0.9981	0.9975	0.9975	0.0077
Constant28 vs KMNIST	0.9995	0.9992	0.9992	0.0011
Constant28 vs MNIST	0.9968	0.9966	0.9966	0.0206
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9909	0.9869	0.9869	0.0178
Constant28 vs Omniglot	0.9446	0.8981	0.8994	0.0942
FashionMNIST vs Constant28	0.9882	0.9667	0.9667	0.0318
FashionMNIST vs KMNIST	0.2731	0.3752	0.3753	0.9997
FashionMNIST vs MNIST	0.0539	0.3114	0.3114	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6197	0.6791	0.6791	0.9474
FashionMNIST vs Omniglot	0.0435	0.3538	0.3539	1.0000
KMNIST vs Constant28	0.9920	0.9613	0.9614	0.0080
KMNIST vs FashionMNIST	0.9333	0.9166	0.9166	0.2641
KMNIST vs MNIST	0.1269	0.3239	0.3239	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8435	0.7954	0.7955	0.5534
KMNIST vs Omniglot	0.0811	0.3597	0.3597	1.0000
MNIST vs Constant28	0.9944	0.9729	0.9729	0.0081
MNIST vs FashionMNIST	0.9988	0.9985	0.9985	0.0050
MNIST vs KMNIST	0.9844	0.9817	0.9817	0.0660
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.5670	0.5665	0.5666	0.7743
Noise vs CIFAR-10	0.0601	0.3179	0.3179	0.9613
Noise vs CIFAR-100	0.1290	0.3326	0.3326	0.9022
Noise vs CelebA	0.0581	0.1965	0.1965	0.9735
Noise vs Constant	0.4302	0.4212	0.4212	0.6070
Noise vs LSUN	0.1715	0.3397	0.3397	0.9193
Noise vs SVHN	0.0347	0.1576	0.1576	0.9771
Noise vs TinyImagenet	0.0545	0.3206	0.3206	0.9642

Noise vs iSUN	0.1221	0.3520	0.3520	0.9488
Noise28 vs Constant28	0.4403	0.4248	0.4248	0.5997
Noise28 vs FashionMNIST	0.4351	0.4208	0.4209	0.6950
Noise28 vs KMNIST	0.3218	0.3847	0.3848	0.6928
Noise28 vs MNIST	0.1491	0.3373	0.3374	0.8739
Noise28 vs NotMNIST	0.5015	0.4503	0.4503	0.5188
Noise28 vs Omniglot	0.3915	0.4539	0.4539	0.6217
NotMNIST vs Constant28	0.9916	0.9605	0.9630	0.0080
NotMNIST vs FashionMNIST	0.9056	0.8837	0.8837	0.3364
NotMNIST vs KMNIST	0.5245	0.5372	0.5373	0.9626
NotMNIST vs MNIST	0.1343	0.3404	0.3405	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.1024	0.3759	0.3759	1.0000
Omniglot vs Constant28	0.8914	0.8921	0.8922	0.6604
Omniglot vs FashionMNIST	0.8241	0.8549	0.8549	0.9504
Omniglot vs KMNIST	0.7750	0.8002	0.8002	0.9843
Omniglot vs MNIST	0.6624	0.6347	0.6348	0.9598
Omniglot vs Noise28	0.8792	0.9249	0.9249	1.0000
Omniglot vs NotMNIST	0.7704	0.7427	0.7428	0.9922
SVHN vs CIFAR-10	0.9728	0.9889	0.9889	0.1341
SVHN vs CIFAR-100	0.9677	0.9864	0.9864	0.1472
SVHN vs CelebA	0.9959	0.9974	0.9974	0.0076
SVHN vs Constant	0.8440	0.8951	0.8951	0.3594
SVHN vs LSUN	0.9980	0.9994	0.9994	0.0010
SVHN vs Noise	0.9983	0.9995	0.9995	0.0000
SVHN vs TinyImagenet	0.9766	0.9904	0.9904	0.1096
SVHN vs iSUN	0.9975	0.9993	0.9993	0.0031
TinyImagenet vs CelebA	0.6420	0.4791	0.4792	0.9505
TinyImagenet vs Constant	0.7505	0.6133	0.6134	0.4694
TinyImagenet vs LSUN	0.9079	0.9077	0.9077	0.4536
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.2261	0.1770	0.1770	0.9834
TinyImagenet vs iSUN	0.8795	0.8819	0.8820	0.5022
Average	0.6922	0.7242	0.7243	0.4854

Table 78: The detailed performance for indicator $\log p_\theta(x|y)$ based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4596	0.3465	0.3466	0.9800
CIFAR-10 vs Constant	0.9031	0.9277	0.9277	0.6236
CIFAR-10 vs LSUN	0.0359	0.3093	0.3093	0.9995
CIFAR-10 vs Noise	0.2196	0.4303	0.4304	1.0000
CIFAR-10 vs SVHN	0.8288	0.5716	0.5717	0.4438
CIFAR-10 vs iSUN	0.0638	0.3360	0.3360	0.9990
CIFAR-100 vs CelebA	0.6249	0.5153	0.5153	0.9502
CIFAR-100 vs Constant	0.9430	0.9567	0.9567	0.4085
CIFAR-100 vs LSUN	0.1050	0.3194	0.3194	0.9999
CIFAR-100 vs Noise	0.2509	0.4678	0.4678	1.0000
CIFAR-100 vs SVHN	0.8232	0.5678	0.5679	0.4799
CIFAR-100 vs iSUN	0.2101	0.3782	0.3782	0.9997
CelebA vs CIFAR-10	0.4150	0.5875	0.5876	0.9533
CelebA vs CIFAR-100	0.3367	0.5485	0.5486	0.9662
CelebA vs Constant	0.8483	0.9179	0.9179	0.5264
CelebA vs LSUN	0.1926	0.4983	0.4983	0.9972
CelebA vs Noise	0.0468	0.4597	0.4598	1.0000
CelebA vs SVHN	0.8971	0.8694	0.8694	0.4496
CelebA vs TinyImagenet	0.5878	0.7133	0.7133	0.8772
CelebA vs iSUN	0.3211	0.5768	0.5768	0.9863
Constant vs CIFAR-10	0.2640	0.3616	0.3616	0.9996
Constant vs CIFAR-100	0.0912	0.3199	0.3199	1.0000
Constant vs CelebA	0.0261	0.1908	0.1908	1.0000
Constant vs LSUN	0.2831	0.3698	0.3698	1.0000
Constant vs Noise	0.0002	0.3069	0.3069	1.0000
Constant vs SVHN	0.7090	0.3644	0.3644	0.5585
Constant vs TinyImagenet	0.1678	0.3400	0.3400	0.9991
Constant vs iSUN	0.0102	0.3301	0.3301	1.0000
Constant28 vs FashionMNIST	0.0151	0.3087	0.3095	1.0000
Constant28 vs KMNIST	0.0317	0.3107	0.3115	1.0000
Constant28 vs MNIST	0.4893	0.5154	0.5171	1.0000
Constant28 vs Noise28	0.0000	0.3069	0.3076	1.0000
Constant28 vs NotMNIST	0.0051	0.3075	0.3082	1.0000
Constant28 vs Omniglot	0.4907	0.7320	0.7323	1.0000
FashionMNIST vs Constant28	0.7765	0.7976	0.7976	0.5386
FashionMNIST vs KMNIST	0.3308	0.4218	0.4219	0.9985
FashionMNIST vs MNIST	0.5093	0.5264	0.5265	0.9916
FashionMNIST vs Noise28	0.3477	0.4789	0.4790	1.0000
FashionMNIST vs NotMNIST	0.0476	0.3109	0.3110	0.9992
FashionMNIST vs Omniglot	0.9780	0.9857	0.9857	0.0998
KMNIST vs Constant28	0.5857	0.5792	0.5792	0.6478
KMNIST vs FashionMNIST	0.5085	0.4810	0.4811	0.8815
KMNIST vs MNIST	0.8810	0.8912	0.8912	0.5775
KMNIST vs Noise28	0.6624	0.6186	0.6187	0.8107
KMNIST vs NotMNIST	0.0787	0.3179	0.3179	0.9949
KMNIST vs Omniglot	0.9870	0.9888	0.9888	0.0563
MNIST vs Constant28	0.7720	0.8214	0.8214	0.6655
MNIST vs FashionMNIST	0.3515	0.3948	0.3948	0.9479
MNIST vs KMNIST	0.1518	0.3300	0.3300	0.9983
MNIST vs Noise28	0.0001	0.3069	0.3069	1.0000
MNIST vs NotMNIST	0.0231	0.3098	0.3098	0.9987
MNIST vs Omniglot	0.9009	0.8829	0.8830	0.2978
Noise vs CIFAR-10	0.8449	0.6968	0.6968	0.2069
Noise vs CIFAR-100	0.8156	0.6878	0.6879	0.3479
Noise vs CelebA	0.6709	0.4301	0.4302	0.7065
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0002
Noise vs SVHN	0.9999	0.9996	0.9996	0.0001
Noise vs TinyImagenet	0.9023	0.8046	0.8047	0.1921

Noise vs iSUN	0.9804	0.9565	0.9565	0.0422
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	0.5274	0.5475	0.5476	0.9211
Noise28 vs KMNIST	0.9826	0.9865	0.9865	0.0943
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0003
Noise28 vs NotMNIST	0.0126	0.3076	0.3076	0.9997
Noise28 vs Omniglot	0.9998	0.9998	0.9998	0.0015
NotMNIST vs Constant28	0.9910	0.9947	0.9947	0.0000
NotMNIST vs FashionMNIST	0.9571	0.9558	0.9558	0.2024
NotMNIST vs KMNIST	0.9388	0.9483	0.9483	0.3604
NotMNIST vs MNIST	0.9909	0.9920	0.9920	0.0422
NotMNIST vs Noise28	0.9876	0.9901	0.9901	0.0463
NotMNIST vs Omniglot	0.9996	0.9997	0.9997	0.0005
Omniglot vs Constant28	0.5114	0.4087	0.4087	0.4912
Omniglot vs FashionMNIST	0.0044	0.2673	0.2673	0.9996
Omniglot vs KMNIST	0.0082	0.2672	0.2672	1.0000
Omniglot vs MNIST	0.0374	0.2691	0.2692	1.0000
Omniglot vs Noise28	0.0000	0.2668	0.2669	1.0000
Omniglot vs NotMNIST	0.0023	0.2671	0.2671	0.9997
SVHN vs CIFAR-10	0.2080	0.5781	0.5781	0.9998
SVHN vs CIFAR-100	0.1707	0.5600	0.5601	0.9997
SVHN vs CelebA	0.2485	0.4256	0.4256	0.9986
SVHN vs Constant	0.2515	0.6572	0.6572	0.9978
SVHN vs LSUN	0.0084	0.5085	0.5085	1.0000
SVHN vs Noise	0.0000	0.5076	0.5076	1.0000
SVHN vs TinyImagenet	0.1872	0.5735	0.5736	0.9992
SVHN vs iSUN	0.0501	0.5395	0.5395	1.0000
TinyImagenet vs CelebA	0.4538	0.3289	0.3290	0.9769
TinyImagenet vs Constant	0.9235	0.9346	0.9346	0.4955
TinyImagenet vs LSUN	0.0533	0.3075	0.3075	1.0000
TinyImagenet vs Noise	0.5000	0.7476	0.4952	1.0000
TinyImagenet vs SVHN	0.7358	0.4286	0.4287	0.6192
TinyImagenet vs iSUN	0.0246	0.3277	0.3277	0.9990
Average	0.4627	0.5791	0.5764	0.7222

Table 79: The detailed performance for indicator $\|D_\theta(x)\|$ based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9711	0.9470	0.9470	0.1345
CIFAR-10 vs Constant	0.9988	0.9990	0.9990	0.0000
CIFAR-10 vs LSUN	0.9393	0.9278	0.9278	0.2494
CIFAR-10 vs Noise	0.9890	0.9939	0.9939	0.0000
CIFAR-10 vs SVHN	0.9693	0.9407	0.9407	0.1573
CIFAR-10 vs iSUN	0.9066	0.8983	0.8983	0.3386
CIFAR-100 vs CelebA	0.9352	0.8794	0.8795	0.2709
CIFAR-100 vs Constant	0.9948	0.9958	0.9958	0.0017
CIFAR-100 vs LSUN	0.9189	0.9090	0.9090	0.3253
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9698	0.9379	0.9379	0.1590
CIFAR-100 vs iSUN	0.8883	0.8759	0.8759	0.3429
CelebA vs CIFAR-10	0.9638	0.9815	0.9815	0.2031
CelebA vs CIFAR-100	0.9376	0.9686	0.9686	0.3581
CelebA vs Constant	0.9998	0.9999	0.9999	0.0000
CelebA vs LSUN	0.9863	0.9931	0.9931	0.0673
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9960	0.9949	0.9949	0.0179
CelebA vs TinyImagenet	0.9752	0.9882	0.9882	0.1315
CelebA vs iSUN	0.9871	0.9943	0.9943	0.0654
Constant vs CIFAR-10	0.9988	0.9987	0.9987	0.0061
Constant vs CIFAR-100	0.9953	0.9943	0.9943	0.0198
Constant vs CelebA	0.9996	0.9991	0.9991	0.0031
Constant vs LSUN	0.9999	0.9999	0.9999	0.0004
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9803	0.9694	0.9694	0.1036
Constant vs TinyImagenet	0.9937	0.9923	0.9923	0.0323
Constant vs iSUN	0.9997	0.9997	0.9997	0.0013
Constant28 vs FashionMNIST	0.9995	0.9994	0.9994	0.0016
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9814	0.9339	0.9343	0.0218
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9992	0.9994	0.9994	0.0000
FashionMNIST vs KMNIST	0.9993	0.9993	0.9993	0.0028
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9975	0.9973	0.9973	0.0107
FashionMNIST vs Omniglot	0.9992	0.9993	0.9993	0.0010
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9994	0.9994	0.9994	0.0008
KMNIST vs MNIST	0.9998	0.9998	0.9998	0.0010
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9938	0.9934	0.9934	0.0366
KMNIST vs Omniglot	0.9965	0.9971	0.9971	0.0161
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9978	0.9979	0.9979	0.0058
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9999	0.9999	0.9999	0.0000
MNIST vs Omniglot	0.9963	0.9974	0.9974	0.0100
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9824	0.9908	0.9908	0.0000
NotMNIST vs FashionMNIST	0.9970	0.9972	0.9972	0.0089
NotMNIST vs KMNIST	0.9959	0.9962	0.9962	0.0166
NotMNIST vs MNIST	0.9996	0.9997	0.9997	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9999	0.9999	0.9999	0.0001
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9959	0.9945	0.9945	0.0207
Omniglot vs KMNIST	0.9958	0.9949	0.9949	0.0225
Omniglot vs MNIST	0.9959	0.9944	0.9944	0.0202
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9998	0.9997	0.9997	0.0012
SVHN vs CIFAR-10	0.9771	0.9898	0.9898	0.1051
SVHN vs CIFAR-100	0.9343	0.9722	0.9722	0.3416
SVHN vs CelebA	0.9854	0.9874	0.9874	0.0661
SVHN vs Constant	0.9808	0.9901	0.9901	0.0679
SVHN vs LSUN	0.9971	0.9986	0.9986	0.0105
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9717	0.9859	0.9859	0.1174
SVHN vs iSUN	0.9945	0.9976	0.9976	0.0205
TinyImagenet vs CelebA	0.9716	0.9416	0.9416	0.1201
TinyImagenet vs Constant	0.9935	0.9946	0.9946	0.0255
TinyImagenet vs LSUN	0.8560	0.8325	0.8325	0.5156
TinyImagenet vs Noise	0.5000	0.7476	0.4952	1.0000
TinyImagenet vs SVHN	0.9519	0.9179	0.9179	0.2920
TinyImagenet vs iSUN	0.8946	0.8881	0.8881	0.3913
Average	0.9807	0.9816	0.9788	0.0681

Table 80: The detailed performance for indicator $D_\omega(x)$ when only 20% data in mixture distribution can be used for training, based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6513	0.5495	0.5495	0.9185
CIFAR-10 vs Constant	0.5933	0.5557	0.5558	0.8133
CIFAR-10 vs LSUN	0.3022	0.3927	0.3928	0.9820
CIFAR-10 vs Noise	0.3038	0.5574	0.5574	1.0000
CIFAR-10 vs SVHN	0.9363	0.8939	0.8939	0.4030
CIFAR-10 vs iSUN	0.3410	0.4401	0.4403	0.9864
CIFAR-100 vs CelebA	0.6012	0.4903	0.4904	0.9316
CIFAR-100 vs Constant	0.3844	0.4024	0.4025	0.9005
CIFAR-100 vs LSUN	0.3382	0.4401	0.4401	0.9827
CIFAR-100 vs Noise	0.2551	0.5263	0.5264	1.0000
CIFAR-100 vs SVHN	0.9330	0.8855	0.8855	0.3714
CIFAR-100 vs iSUN	0.3800	0.4922	0.4923	0.9888
CelebA vs CIFAR-10	0.9473	0.9729	0.9729	0.2966
CelebA vs CIFAR-100	0.9299	0.9605	0.9605	0.3311
CelebA vs Constant	0.9311	0.9586	0.9586	0.2653
CelebA vs LSUN	0.9054	0.9524	0.9524	0.4946
CelebA vs Noise	0.9560	0.9845	0.9845	0.2170
CelebA vs SVHN	0.9712	0.9699	0.9699	0.2148
CelebA vs TinyImagenet	0.9207	0.9588	0.9588	0.4072
CelebA vs iSUN	0.9110	0.9600	0.9600	0.4761
Constant vs CIFAR-10	0.9413	0.9585	0.9585	0.4425
Constant vs CIFAR-100	0.9277	0.9431	0.9431	0.4903
Constant vs CelebA	0.9530	0.9486	0.9486	0.3432
Constant vs LSUN	0.9480	0.9648	0.9648	0.4068
Constant vs Noise	0.7857	0.8850	0.8850	1.0000
Constant vs SVHN	0.9600	0.9535	0.9535	0.3280
Constant vs TinyImagenet	0.9340	0.9490	0.9490	0.4560
Constant vs iSUN	0.9423	0.9637	0.9637	0.4533
Constant28 vs FashionMNIST	0.9439	0.9498	0.9499	0.3241
Constant28 vs KMNIST	0.9995	0.9995	0.9995	0.0021
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	0.7209	0.8456	0.8458	1.0000
Constant28 vs NotMNIST	0.7946	0.7697	0.7704	0.6540
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.3643	0.3937	0.3937	0.8917
FashionMNIST vs KMNIST	0.9623	0.9638	0.9638	0.2016
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	0.1627	0.4427	0.4427	1.0000
FashionMNIST vs NotMNIST	0.4091	0.4200	0.4200	0.9099
FashionMNIST vs Omniglot	0.9987	0.9991	0.9991	0.0029
KMNIST vs Constant28	0.2327	0.3528	0.3528	1.0000
KMNIST vs FashionMNIST	0.5643	0.6001	0.6001	0.9905
KMNIST vs MNIST	0.9985	0.9984	0.9984	0.0091
KMNIST vs Noise28	0.0534	0.3467	0.3467	1.0000
KMNIST vs NotMNIST	0.1430	0.3287	0.3287	0.9898
KMNIST vs Omniglot	0.8651	0.9039	0.9039	0.6171
MNIST vs Constant28	0.9901	0.9905	0.9905	0.0789
MNIST vs FashionMNIST	0.9984	0.9985	0.9985	0.0057
MNIST vs KMNIST	0.9545	0.9586	0.9586	0.2523
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9984	0.9983	0.9983	0.0084
MNIST vs Omniglot	0.8275	0.8830	0.8830	0.8050
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9767	0.9183	0.9184	0.0293
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9186	0.8097	0.8098	0.1179
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.5747	0.5057	0.5045	0.7404
NotMNIST vs FashionMNIST	0.8837	0.8956	0.8956	0.5011
NotMNIST vs KMNIST	0.9581	0.9659	0.9659	0.2954
NotMNIST vs MNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs Noise28	0.6640	0.8102	0.8102	1.0000
NotMNIST vs Omniglot	0.9985	0.9989	0.9989	0.0016
Omniglot vs Constant28	0.8783	0.8516	0.8516	0.4424
Omniglot vs FashionMNIST	0.9399	0.9084	0.9084	0.2108
Omniglot vs KMNIST	0.9249	0.9003	0.9003	0.3000
Omniglot vs MNIST	0.9941	0.9922	0.9922	0.0283
Omniglot vs Noise28	0.9009	0.9338	0.9338	0.9547
Omniglot vs NotMNIST	0.9092	0.8289	0.8290	0.2317
SVHN vs CIFAR-10	0.7159	0.8790	0.8790	0.9381
SVHN vs CIFAR-100	0.7375	0.8864	0.8864	0.8924
SVHN vs CelebA	0.8207	0.8954	0.8954	0.9840
SVHN vs Constant	0.6450	0.7807	0.7807	0.9072
SVHN vs LSUN	0.8340	0.9401	0.9401	0.9484
SVHN vs Noise	0.8511	0.9558	0.9558	1.0000
SVHN vs TinyImagenet	0.7232	0.8877	0.8877	0.9689
SVHN vs iSUN	0.7886	0.9270	0.9270	0.9795
TinyImagenet vs CelebA	0.5612	0.4588	0.4588	0.9796
TinyImagenet vs Constant	0.5159	0.4548	0.4549	0.7926
TinyImagenet vs LSUN	0.3413	0.3993	0.3994	0.9735
TinyImagenet vs Noise	0.6058	0.7670	0.7670	1.0000
TinyImagenet vs SVHN	0.9397	0.9018	0.9018	0.4076
TinyImagenet vs iSUN	0.3498	0.4308	0.4309	0.9812
Average	0.7915	0.8254	0.8254	0.4919

Table 81: The detailed performance for indicator $D_\theta(x)$ based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4706	0.3468	0.3469	0.9702
CIFAR-10 vs Constant	0.8438	0.8831	0.8831	0.7414
CIFAR-10 vs LSUN	0.0182	0.3080	0.3080	0.9995
CIFAR-10 vs Noise	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs SVHN	0.8364	0.5949	0.5950	0.4351
CIFAR-10 vs iSUN	0.0352	0.3325	0.3325	0.9984
CIFAR-100 vs CelebA	0.3719	0.2831	0.2832	0.9908
CIFAR-100 vs Constant	0.7277	0.7755	0.7755	0.7609
CIFAR-100 vs LSUN	0.2315	0.3605	0.3606	0.9999
CIFAR-100 vs Noise	0.0899	0.3362	0.3362	1.0000
CIFAR-100 vs SVHN	0.8361	0.5945	0.5946	0.4859
CIFAR-100 vs iSUN	0.1348	0.3498	0.3498	0.9998
CelebA vs CIFAR-10	0.4269	0.5940	0.5940	0.9490
CelebA vs CIFAR-100	0.4775	0.6170	0.6170	0.9156
CelebA vs Constant	0.8435	0.9095	0.9095	0.5445
CelebA vs LSUN	0.3742	0.5792	0.5792	0.9886
CelebA vs Noise	0.0018	0.4506	0.4506	1.0000
CelebA vs SVHN	0.9151	0.8797	0.8797	0.3634
CelebA vs TinyImagenet	0.5991	0.7081	0.7082	0.8644
CelebA vs iSUN	0.6434	0.7745	0.7745	0.9070
Constant vs CIFAR-10	0.1412	0.3289	0.3289	0.9999
Constant vs CIFAR-100	0.1100	0.3219	0.3219	0.9999
Constant vs CelebA	0.2301	0.2187	0.2187	1.0000
Constant vs LSUN	0.0667	0.3148	0.3149	1.0000
Constant vs Noise	0.0003	0.3069	0.3069	1.0000
Constant vs SVHN	0.6667	0.3337	0.3338	0.5578
Constant vs TinyImagenet	0.1746	0.3410	0.3411	0.9981
Constant vs iSUN	0.0556	0.3362	0.3362	1.0000
Constant28 vs FashionMNIST	0.1003	0.3231	0.3240	1.0000
Constant28 vs KMNIST	0.2586	0.3636	0.3647	1.0000
Constant28 vs MNIST	0.2590	0.3662	0.3673	1.0000
Constant28 vs Noise28	0.0000	0.3069	0.3076	1.0000
Constant28 vs NotMNIST	0.0077	0.3081	0.3088	1.0000
Constant28 vs Omniglot	0.0000	0.3495	0.3504	1.0000
FashionMNIST vs Constant28	0.9873	0.9908	0.9908	0.0000
FashionMNIST vs KMNIST	0.4391	0.5168	0.5169	0.9968
FashionMNIST vs MNIST	0.7547	0.8057	0.8058	0.9279
FashionMNIST vs Noise28	0.8880	0.9194	0.9194	0.7754
FashionMNIST vs NotMNIST	0.0221	0.3084	0.3084	0.9997
FashionMNIST vs Omniglot	0.9730	0.9839	0.9839	0.1312
KMNIST vs Constant28	0.6770	0.7002	0.7002	0.5761
KMNIST vs FashionMNIST	0.5779	0.5071	0.5072	0.7863
KMNIST vs MNIST	0.9485	0.9545	0.9545	0.2883
KMNIST vs Noise28	0.2208	0.3483	0.3483	0.9828
KMNIST vs NotMNIST	0.1028	0.3207	0.3208	0.9963
KMNIST vs Omniglot	0.9629	0.9692	0.9692	0.1580
MNIST vs Constant28	0.7394	0.7793	0.7793	0.5774
MNIST vs FashionMNIST	0.1515	0.3316	0.3317	0.9760
MNIST vs KMNIST	0.1138	0.3226	0.3226	0.9966
MNIST vs Noise28	0.1148	0.3226	0.3226	0.9950
MNIST vs NotMNIST	0.0226	0.3096	0.3096	0.9999
MNIST vs Omniglot	0.9253	0.9172	0.9172	0.2659
Noise vs CIFAR-10	0.7313	0.5973	0.5974	0.4551
Noise vs CIFAR-100	0.9702	0.9491	0.9492	0.0877
Noise vs CelebA	0.6251	0.3670	0.3670	0.6751
Noise vs Constant	0.9825	0.9752	0.9752	0.0491
Noise vs LSUN	0.9533	0.9178	0.9179	0.1250
Noise vs SVHN	0.9934	0.9413	0.9414	0.0095
Noise vs TinyImagenet	0.8695	0.8022	0.8023	0.3327

Noise vs iSUN	0.9954	0.9923	0.9923	0.0117
Noise28 vs Constant28	0.9221	0.9294	0.9294	0.3299
Noise28 vs FashionMNIST	0.5083	0.4721	0.4721	0.8552
Noise28 vs KMNIST	0.9489	0.9502	0.9502	0.2821
Noise28 vs MNIST	0.4185	0.4285	0.4286	0.9450
Noise28 vs NotMNIST	0.0150	0.3083	0.3084	0.9981
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9954	0.9966	0.9966	0.0000
NotMNIST vs FashionMNIST	0.9457	0.9485	0.9485	0.3057
NotMNIST vs KMNIST	0.9253	0.9368	0.9368	0.4449
NotMNIST vs MNIST	0.9937	0.9948	0.9948	0.0137
NotMNIST vs Noise28	0.9899	0.9904	0.9904	0.0393
NotMNIST vs Omniglot	0.9956	0.9974	0.9974	0.0014
Omniglot vs Constant28	0.7216	0.6473	0.6473	0.4581
Omniglot vs FashionMNIST	0.0233	0.2695	0.2695	0.9978
Omniglot vs KMNIST	0.0101	0.2674	0.2674	0.9999
Omniglot vs MNIST	0.1406	0.2869	0.2870	0.9998
Omniglot vs Noise28	0.0000	0.2668	0.2669	1.0000
Omniglot vs NotMNIST	0.0015	0.2670	0.2670	1.0000
SVHN vs CIFAR-10	0.1411	0.5469	0.5469	0.9999
SVHN vs CIFAR-100	0.1986	0.5725	0.5726	0.9990
SVHN vs CelebA	0.4393	0.5743	0.5743	0.9940
SVHN vs Constant	0.2982	0.6741	0.6741	0.9932
SVHN vs LSUN	0.0173	0.5089	0.5089	1.0000
SVHN vs Noise	0.0006	0.5077	0.5077	1.0000
SVHN vs TinyImagenet	0.2732	0.6242	0.6242	0.9993
SVHN vs iSUN	0.0800	0.5497	0.5497	1.0000
TinyImagenet vs CelebA	0.3553	0.2628	0.2629	0.9867
TinyImagenet vs Constant	0.5361	0.6107	0.6108	0.8967
TinyImagenet vs LSUN	0.0532	0.3074	0.3074	0.9999
TinyImagenet vs Noise	0.0137	0.3042	0.3042	1.0000
TinyImagenet vs SVHN	0.7892	0.5036	0.5037	0.5169
TinyImagenet vs iSUN	0.0803	0.3345	0.3345	0.9990
Average	0.4513	0.5673	0.5674	0.7359

Table 82: The detailed performance for indicator $\|\nabla_x D_\omega(x)\|$ based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9471	0.9081	0.9081	0.2532
CIFAR-10 vs Constant	0.9976	0.9979	0.9979	0.0000
CIFAR-10 vs LSUN	0.9386	0.9310	0.9310	0.2653
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9595	0.9277	0.9277	0.2248
CIFAR-10 vs iSUN	0.9286	0.9198	0.9198	0.2534
CIFAR-100 vs CelebA	0.9424	0.8935	0.8935	0.2482
CIFAR-100 vs Constant	0.9953	0.9961	0.9961	0.0028
CIFAR-100 vs LSUN	0.9161	0.9039	0.9039	0.3195
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9624	0.9219	0.9219	0.1983
CIFAR-100 vs iSUN	0.8939	0.8825	0.8826	0.3253
CelebA vs CIFAR-10	0.9588	0.9787	0.9787	0.2282
CelebA vs CIFAR-100	0.9418	0.9704	0.9704	0.3270
CelebA vs Constant	0.9999	0.9999	0.9999	0.0000
CelebA vs LSUN	0.9859	0.9928	0.9928	0.0684
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9965	0.9956	0.9956	0.0154
CelebA vs TinyImagenet	0.9685	0.9847	0.9847	0.1765
CelebA vs iSUN	0.9863	0.9939	0.9939	0.0737
Constant vs CIFAR-10	0.9980	0.9977	0.9977	0.0116
Constant vs CIFAR-100	0.9938	0.9923	0.9923	0.0289
Constant vs CelebA	0.9998	0.9996	0.9996	0.0015
Constant vs LSUN	0.9998	0.9998	0.9998	0.0010
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9816	0.9716	0.9716	0.0849
Constant vs TinyImagenet	0.9936	0.9926	0.9926	0.0330
Constant vs iSUN	0.9995	0.9995	0.9995	0.0027
Constant28 vs FashionMNIST	0.9985	0.9982	0.9982	0.0056
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9814	0.9339	0.9343	0.0216
Constant28 vs Omniglot	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs Constant28	0.9995	0.9996	0.9996	0.0000
FashionMNIST vs KMNIST	0.9995	0.9995	0.9995	0.0020
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0003
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9972	0.9971	0.9971	0.0122
FashionMNIST vs Omniglot	0.9986	0.9990	0.9990	0.0020
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9991	0.9992	0.9992	0.0012
KMNIST vs MNIST	0.9998	0.9998	0.9998	0.0010
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9963	0.9961	0.9961	0.0219
KMNIST vs Omniglot	0.9925	0.9940	0.9940	0.0398
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9999	0.9999	0.9999	0.0000
MNIST vs KMNIST	0.9997	0.9998	0.9998	0.0001
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9999	0.9999	0.9999	0.0001
MNIST vs Omniglot	0.9965	0.9975	0.9975	0.0099
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9834	0.9914	0.9914	0.0000
NotMNIST vs FashionMNIST	0.9973	0.9974	0.9974	0.0090
NotMNIST vs KMNIST	0.9942	0.9948	0.9948	0.0267
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9998	0.9998	0.9998	0.0001
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9989	0.9986	0.9986	0.0058
Omniglot vs KMNIST	0.9956	0.9946	0.9946	0.0236
Omniglot vs MNIST	0.9961	0.9945	0.9945	0.0182
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9998	0.9997	0.9997	0.0004
SVHN vs CIFAR-10	0.9787	0.9908	0.9908	0.1051
SVHN vs CIFAR-100	0.9335	0.9720	0.9720	0.3443
SVHN vs CelebA	0.9917	0.9926	0.9926	0.0358
SVHN vs Constant	0.9821	0.9914	0.9914	0.0708
SVHN vs LSUN	0.9905	0.9952	0.9952	0.0335
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9706	0.9845	0.9845	0.1159
SVHN vs iSUN	0.9934	0.9968	0.9968	0.0215
TinyImagenet vs CelebA	0.9752	0.9491	0.9491	0.1058
TinyImagenet vs Constant	0.9947	0.9957	0.9957	0.0073
TinyImagenet vs LSUN	0.8522	0.8332	0.8332	0.5343
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9726	0.9460	0.9460	0.1178
TinyImagenet vs iSUN	0.8447	0.8426	0.8426	0.5461
Average	0.9857	0.9840	0.9840	0.0585

Table 83: The detailed performance for indicator $D_\omega(x)$ based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6513	0.5495	0.5495	0.9185
CIFAR-10 vs Constant	0.5933	0.5557	0.5558	0.8133
CIFAR-10 vs LSUN	0.3022	0.3927	0.3928	0.9820
CIFAR-10 vs Noise	0.3038	0.5574	0.5574	1.0000
CIFAR-10 vs SVHN	0.9363	0.8939	0.8939	0.4030
CIFAR-10 vs iSUN	0.3410	0.4401	0.4403	0.9864
CIFAR-100 vs CelebA	0.6012	0.4903	0.4904	0.9316
CIFAR-100 vs Constant	0.3844	0.4024	0.4025	0.9005
CIFAR-100 vs LSUN	0.3382	0.4401	0.4401	0.9827
CIFAR-100 vs Noise	0.2551	0.5263	0.5264	1.0000
CIFAR-100 vs SVHN	0.9330	0.8855	0.8855	0.3714
CIFAR-100 vs iSUN	0.3800	0.4922	0.4923	0.9888
CelebA vs CIFAR-10	0.9473	0.9729	0.9729	0.2966
CelebA vs CIFAR-100	0.9299	0.9605	0.9605	0.3311
CelebA vs Constant	0.9311	0.9586	0.9586	0.2653
CelebA vs LSUN	0.9054	0.9524	0.9524	0.4946
CelebA vs Noise	0.9560	0.9845	0.9845	0.2170
CelebA vs SVHN	0.9712	0.9699	0.9699	0.2148
CelebA vs TinyImagenet	0.9207	0.9588	0.9588	0.4072
CelebA vs iSUN	0.9110	0.9600	0.9600	0.4761
Constant vs CIFAR-10	0.9413	0.9585	0.9585	0.4425
Constant vs CIFAR-100	0.9277	0.9431	0.9431	0.4903
Constant vs CelebA	0.9530	0.9486	0.9486	0.3432
Constant vs LSUN	0.9480	0.9648	0.9648	0.4068
Constant vs Noise	0.7857	0.8850	0.8850	1.0000
Constant vs SVHN	0.9600	0.9535	0.9535	0.3280
Constant vs TinyImagenet	0.9340	0.9490	0.9490	0.4560
Constant vs iSUN	0.9423	0.9637	0.9637	0.4533
Constant28 vs FashionMNIST	0.9439	0.9498	0.9499	0.3241
Constant28 vs KMNIST	0.9995	0.9995	0.9995	0.0021
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	0.7209	0.8456	0.8458	1.0000
Constant28 vs NotMNIST	0.7946	0.7697	0.7704	0.6540
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.3643	0.3937	0.3937	0.8917
FashionMNIST vs KMNIST	0.9623	0.9638	0.9638	0.2016
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	0.1627	0.4427	0.4427	1.0000
FashionMNIST vs NotMNIST	0.4091	0.4200	0.4200	0.9099
FashionMNIST vs Omniglot	0.9987	0.9991	0.9991	0.0029
KMNIST vs Constant28	0.2327	0.3528	0.3528	1.0000
KMNIST vs FashionMNIST	0.5643	0.6001	0.6001	0.9905
KMNIST vs MNIST	0.9985	0.9984	0.9984	0.0091
KMNIST vs Noise28	0.0534	0.3467	0.3467	1.0000
KMNIST vs NotMNIST	0.1430	0.3287	0.3287	0.9898
KMNIST vs Omniglot	0.8651	0.9039	0.9039	0.6171
MNIST vs Constant28	0.9901	0.9905	0.9905	0.0789
MNIST vs FashionMNIST	0.9984	0.9985	0.9985	0.0057
MNIST vs KMNIST	0.9545	0.9586	0.9586	0.2523
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9984	0.9983	0.9983	0.0084
MNIST vs Omniglot	0.8275	0.8830	0.8830	0.8050
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9767	0.9183	0.9184	0.0293
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	0.9186	0.8097	0.8098	0.1179
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.5747	0.5057	0.5045	0.7404
NotMNIST vs FashionMNIST	0.8837	0.8956	0.8956	0.5011
NotMNIST vs KMNIST	0.9581	0.9659	0.9659	0.2954
NotMNIST vs MNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs Noise28	0.6640	0.8102	0.8102	1.0000
NotMNIST vs Omniglot	0.9985	0.9989	0.9989	0.0016
Omniglot vs Constant28	0.8783	0.8516	0.8516	0.4424
Omniglot vs FashionMNIST	0.9399	0.9084	0.9084	0.2108
Omniglot vs KMNIST	0.9249	0.9003	0.9003	0.3000
Omniglot vs MNIST	0.9941	0.9922	0.9922	0.0283
Omniglot vs Noise28	0.9009	0.9338	0.9338	0.9547
Omniglot vs NotMNIST	0.9092	0.8289	0.8290	0.2317
SVHN vs CIFAR-10	0.7159	0.8790	0.8790	0.9381
SVHN vs CIFAR-100	0.7375	0.8864	0.8864	0.8924
SVHN vs CelebA	0.8207	0.8954	0.8954	0.9840
SVHN vs Constant	0.6450	0.7807	0.7807	0.9072
SVHN vs LSUN	0.8340	0.9401	0.9401	0.9484
SVHN vs Noise	0.8511	0.9558	0.9558	1.0000
SVHN vs TinyImagenet	0.7232	0.8877	0.8877	0.9689
SVHN vs iSUN	0.7886	0.9270	0.9270	0.9795
TinyImagenet vs CelebA	0.5612	0.4588	0.4588	0.9796
TinyImagenet vs Constant	0.5159	0.4548	0.4549	0.7926
TinyImagenet vs LSUN	0.3413	0.3993	0.3994	0.9735
TinyImagenet vs Noise	0.6058	0.7670	0.7670	1.0000
TinyImagenet vs SVHN	0.9397	0.9018	0.9018	0.4076
TinyImagenet vs iSUN	0.3498	0.4308	0.4309	0.9812
Average	0.7915	0.8254	0.8254	0.4919

Table 84: The detailed performance for indicator $\|\nabla_x D_\theta(x)\|$ based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.0454	0.1920	0.1920	0.9995
CIFAR-10 vs Constant	0.2979	0.4347	0.4347	0.9698
CIFAR-10 vs LSUN	0.0029	0.3071	0.3071	0.9999
CIFAR-10 vs Noise	0.0019	0.3069	0.3069	1.0000
CIFAR-10 vs SVHN	0.6878	0.4504	0.4505	0.8007
CIFAR-10 vs iSUN	0.0101	0.3303	0.3303	0.9984
CIFAR-100 vs CelebA	0.1433	0.2028	0.2028	0.9986
CIFAR-100 vs Constant	0.3414	0.4394	0.4394	0.9627
CIFAR-100 vs LSUN	0.0064	0.3072	0.3072	1.0000
CIFAR-100 vs Noise	0.0046	0.3071	0.3072	1.0000
CIFAR-100 vs SVHN	0.6868	0.4521	0.4523	0.7843
CIFAR-100 vs iSUN	0.0333	0.3319	0.3320	0.9998
CelebA vs CIFAR-10	0.0340	0.4534	0.4534	1.0000
CelebA vs CIFAR-100	0.0299	0.4529	0.4530	1.0000
CelebA vs Constant	0.1468	0.4827	0.4828	0.9756
CelebA vs LSUN	0.0075	0.4507	0.4507	1.0000
CelebA vs Noise	0.0006	0.4505	0.4505	1.0000
CelebA vs SVHN	0.2263	0.2961	0.2961	0.9965
CelebA vs TinyImagenet	0.0326	0.4573	0.4574	1.0000
CelebA vs iSUN	0.0069	0.4752	0.4752	1.0000
Constant vs CIFAR-10	0.0275	0.3099	0.3099	1.0000
Constant vs CIFAR-100	0.0009	0.3069	0.3069	1.0000
Constant vs CelebA	0.0376	0.1920	0.1920	1.0000
Constant vs LSUN	0.0096	0.3077	0.3077	1.0000
Constant vs Noise	0.0000	0.3069	0.3069	1.0000
Constant vs SVHN	0.2480	0.1848	0.1849	0.9586
Constant vs TinyImagenet	0.0018	0.3107	0.3107	1.0000
Constant vs iSUN	0.0000	0.3292	0.3292	1.0000
Constant28 vs FashionMNIST	0.0000	0.3069	0.3076	1.0000
Constant28 vs KMNIST	0.0000	0.3069	0.3076	1.0000
Constant28 vs MNIST	0.0000	0.3069	0.3076	1.0000
Constant28 vs Noise28	0.0000	0.3069	0.3076	1.0000
Constant28 vs NotMNIST	0.0066	0.3078	0.3085	1.0000
Constant28 vs Omniglot	0.0018	0.3498	0.3506	1.0000
FashionMNIST vs Constant28	0.5090	0.4548	0.4548	0.4912
FashionMNIST vs KMNIST	0.0698	0.3136	0.3137	0.9996
FashionMNIST vs MNIST	0.0775	0.3153	0.3154	1.0000
FashionMNIST vs Noise28	0.0051	0.3069	0.3069	1.0000
FashionMNIST vs NotMNIST	0.0032	0.3070	0.3070	1.0000
FashionMNIST vs Omniglot	0.3632	0.4911	0.4911	0.9926
KMNIST vs Constant28	0.4491	0.4304	0.4304	0.7298
KMNIST vs FashionMNIST	0.0543	0.3128	0.3128	0.9980
KMNIST vs MNIST	0.2896	0.3855	0.3856	0.9979
KMNIST vs Noise28	0.0000	0.3069	0.3069	1.0000
KMNIST vs NotMNIST	0.0358	0.3099	0.3100	0.9997
KMNIST vs Omniglot	0.4684	0.5697	0.5698	0.9792
MNIST vs Constant28	0.5088	0.4545	0.4546	0.4912
MNIST vs FashionMNIST	0.0092	0.3078	0.3078	1.0000
MNIST vs KMNIST	0.0032	0.3071	0.3071	1.0000
MNIST vs Noise28	0.0000	0.3069	0.3069	1.0000
MNIST vs NotMNIST	0.0002	0.3069	0.3069	1.0000
MNIST vs Omniglot	0.3546	0.4511	0.4512	0.9677
Noise vs CIFAR-10	0.0852	0.3216	0.3216	0.9631
Noise vs CIFAR-100	0.3241	0.3825	0.3825	0.7604
Noise vs CelebA	0.0052	0.1898	0.1898	0.9991
Noise vs Constant	0.0597	0.3150	0.3150	0.9923
Noise vs LSUN	0.4625	0.4310	0.4310	0.7084
Noise vs SVHN	0.6714	0.3304	0.3304	0.4156
Noise vs TinyImagenet	0.3637	0.3982	0.3982	0.7622

Noise vs iSUN	0.2226	0.3746	0.3746	0.9276
Noise28 vs Constant28	0.2511	0.3622	0.3622	0.7732
Noise28 vs FashionMNIST	0.0052	0.3075	0.3075	0.9996
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0008	0.3070	0.3070	0.9997
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9905	0.9931	0.9932	0.0000
NotMNIST vs FashionMNIST	0.2965	0.3757	0.3759	0.9584
NotMNIST vs KMNIST	0.2396	0.3718	0.3719	0.9987
NotMNIST vs MNIST	0.2160	0.3571	0.3573	0.9994
NotMNIST vs Noise28	0.0117	0.3076	0.3077	1.0000
NotMNIST vs Omniglot	0.6112	0.7375	0.7375	0.9750
Omniglot vs Constant28	0.5118	0.4097	0.4098	0.4882
Omniglot vs FashionMNIST	0.0019	0.2670	0.2670	1.0000
Omniglot vs KMNIST	0.0033	0.2669	0.2669	1.0000
Omniglot vs MNIST	0.0343	0.2689	0.2689	1.0000
Omniglot vs Noise28	0.0000	0.2668	0.2669	1.0000
Omniglot vs NotMNIST	0.0001	0.2668	0.2669	1.0000
SVHN vs CIFAR-10	0.1438	0.5416	0.5416	0.9997
SVHN vs CIFAR-100	0.0877	0.5239	0.5239	0.9994
SVHN vs CelebA	0.0116	0.3607	0.3607	1.0000
SVHN vs Constant	0.0601	0.5184	0.5184	0.9964
SVHN vs LSUN	0.0055	0.5083	0.5083	1.0000
SVHN vs Noise	0.0001	0.5076	0.5076	1.0000
SVHN vs TinyImagenet	0.0970	0.5305	0.5305	0.9998
SVHN vs iSUN	0.0044	0.5325	0.5326	1.0000
TinyImagenet vs CelebA	0.0684	0.1909	0.1909	0.9994
TinyImagenet vs Constant	0.3137	0.4140	0.4140	0.9567
TinyImagenet vs LSUN	0.0148	0.3041	0.3042	1.0000
TinyImagenet vs Noise	0.0001	0.3032	0.3032	1.0000
TinyImagenet vs SVHN	0.7039	0.4201	0.4203	0.6819
TinyImagenet vs iSUN	0.0320	0.3282	0.3282	0.9990
Average	0.1434	0.3686	0.3686	0.9396

Table 85: The detailed performance for indicator $\|\nabla_x D_\gamma(x)\|$ based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9627	0.9330	0.9330	0.1807
CIFAR-10 vs Constant	0.9986	0.9988	0.9988	0.0000
CIFAR-10 vs LSUN	0.9467	0.9383	0.9383	0.2269
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9427	0.9157	0.9157	0.4518
CIFAR-10 vs iSUN	0.9237	0.9055	0.9055	0.2357
CIFAR-100 vs CelebA	0.9431	0.8927	0.8927	0.2405
CIFAR-100 vs Constant	0.9945	0.9955	0.9955	0.0078
CIFAR-100 vs LSUN	0.9233	0.9114	0.9115	0.3133
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9531	0.9286	0.9286	0.2911
CIFAR-100 vs iSUN	0.8948	0.8798	0.8798	0.2978
CelebA vs CIFAR-10	0.9631	0.9812	0.9812	0.2105
CelebA vs CIFAR-100	0.9603	0.9803	0.9803	0.2310
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9884	0.9944	0.9944	0.0562
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9896	0.9896	0.9896	0.0362
CelebA vs TinyImagenet	0.9834	0.9921	0.9921	0.0782
CelebA vs iSUN	0.9935	0.9973	0.9973	0.0227
Constant vs CIFAR-10	0.9992	0.9991	0.9991	0.0042
Constant vs CIFAR-100	0.9965	0.9959	0.9959	0.0176
Constant vs CelebA	0.9996	0.9993	0.9993	0.0025
Constant vs LSUN	0.9995	0.9994	0.9994	0.0021
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9848	0.9774	0.9774	0.0532
Constant vs TinyImagenet	0.9943	0.9930	0.9930	0.0279
Constant vs iSUN	0.9998	0.9998	0.9998	0.0010
Constant28 vs FashionMNIST	0.9998	0.9998	0.9998	0.0006
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9830	0.9366	0.9370	0.0190
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9976	0.9981	0.9981	0.0000
FashionMNIST vs KMNIST	0.9997	0.9997	0.9997	0.0012
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9975	0.9975	0.9975	0.0107
FashionMNIST vs Omniglot	0.9994	0.9995	0.9995	0.0007
KMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
KMNIST vs FashionMNIST	0.9971	0.9972	0.9972	0.0135
KMNIST vs MNIST	0.9967	0.9966	0.9966	0.0189
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9926	0.9921	0.9921	0.0427
KMNIST vs Omniglot	0.9972	0.9977	0.9977	0.0125
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9998	0.9998	0.9998	0.0001
MNIST vs KMNIST	0.9983	0.9984	0.9984	0.0037
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9999	0.9999	0.9999	0.0004
MNIST vs Omniglot	0.9965	0.9974	0.9974	0.0103
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9820	0.9905	0.9905	0.0000
NotMNIST vs FashionMNIST	0.9934	0.9942	0.9942	0.0178
NotMNIST vs KMNIST	0.9958	0.9961	0.9961	0.0173
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9998	0.9999	0.9999	0.0001
Omniglot vs Constant28	0.9999	0.9999	0.9999	0.0000
Omniglot vs FashionMNIST	0.9972	0.9963	0.9963	0.0157
Omniglot vs KMNIST	0.9958	0.9948	0.9948	0.0221
Omniglot vs MNIST	0.9967	0.9954	0.9954	0.0159
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9997	0.9996	0.9996	0.0020
SVHN vs CIFAR-10	0.8423	0.9344	0.9344	0.6430
SVHN vs CIFAR-100	0.8273	0.9292	0.9292	0.7652
SVHN vs CelebA	0.9914	0.9934	0.9934	0.0441
SVHN vs Constant	0.9490	0.9774	0.9774	0.2371
SVHN vs LSUN	0.9198	0.9726	0.9726	0.6383
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.8397	0.9349	0.9349	0.6712
SVHN vs iSUN	0.9574	0.9849	0.9849	0.2458
TinyImagenet vs CelebA	0.9718	0.9422	0.9422	0.1187
TinyImagenet vs Constant	0.9946	0.9956	0.9956	0.0122
TinyImagenet vs LSUN	0.8421	0.8168	0.8168	0.5565
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9510	0.9221	0.9221	0.3292
TinyImagenet vs iSUN	0.8787	0.8687	0.8687	0.4461
Average	0.9806	0.9820	0.9820	0.0861

Table 86: The detailed performance for indicator $D_\gamma(x)$ based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.1168	0.1991	0.1991	0.9985
CIFAR-10 vs Constant	0.2130	0.3740	0.3741	0.9765
CIFAR-10 vs LSUN	0.0058	0.3073	0.3074	0.9997
CIFAR-10 vs Noise	0.0003	0.3069	0.3069	1.0000
CIFAR-10 vs SVHN	0.7180	0.4727	0.4728	0.7180
CIFAR-10 vs iSUN	0.0097	0.3302	0.3302	0.9989
CIFAR-100 vs CelebA	0.1879	0.2108	0.2108	0.9985
CIFAR-100 vs Constant	0.4620	0.5095	0.5096	0.9236
CIFAR-100 vs LSUN	0.0157	0.3079	0.3079	0.9999
CIFAR-100 vs Noise	0.0001	0.3069	0.3069	1.0000
CIFAR-100 vs SVHN	0.7754	0.5345	0.5346	0.6325
CIFAR-100 vs iSUN	0.0197	0.3306	0.3307	0.9998
CelebA vs CIFAR-10	0.0650	0.4593	0.4594	0.9999
CelebA vs CIFAR-100	0.0324	0.4533	0.4533	1.0000
CelebA vs Constant	0.1036	0.4730	0.4730	0.9839
CelebA vs LSUN	0.0055	0.4504	0.4505	1.0000
CelebA vs Noise	0.0000	0.4503	0.4503	1.0000
CelebA vs SVHN	0.3304	0.3365	0.3366	0.9910
CelebA vs TinyImagenet	0.0569	0.4618	0.4618	1.0000
CelebA vs iSUN	0.0053	0.4751	0.4752	1.0000
Constant vs CIFAR-10	0.0002	0.3069	0.3069	1.0000
Constant vs CIFAR-100	0.0534	0.3131	0.3131	1.0000
Constant vs CelebA	0.0126	0.1898	0.1898	1.0000
Constant vs LSUN	0.0000	0.3069	0.3069	1.0000
Constant vs Noise	0.0000	0.3069	0.3069	1.0000
Constant vs SVHN	0.2833	0.1910	0.1910	0.9376
Constant vs TinyImagenet	0.0014	0.3107	0.3107	1.0000
Constant vs iSUN	0.0000	0.3292	0.3292	1.0000
Constant28 vs FashionMNIST	0.0001	0.3069	0.3076	1.0000
Constant28 vs KMNIST	0.0003	0.3069	0.3077	1.0000
Constant28 vs MNIST	0.0000	0.3069	0.3076	1.0000
Constant28 vs Noise28	0.0000	0.3069	0.3076	1.0000
Constant28 vs NotMNIST	0.0064	0.3078	0.3085	1.0000
Constant28 vs Omniglot	0.0000	0.3495	0.3504	1.0000
FashionMNIST vs Constant28	0.4668	0.4388	0.4389	0.7733
FashionMNIST vs KMNIST	0.0962	0.3182	0.3183	0.9992
FashionMNIST vs MNIST	0.0950	0.3174	0.3175	1.0000
FashionMNIST vs Noise28	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs NotMNIST	0.0033	0.3070	0.3070	1.0000
FashionMNIST vs Omniglot	0.4071	0.5408	0.5408	0.9838
KMNIST vs Constant28	0.4744	0.4461	0.4462	0.7180
KMNIST vs FashionMNIST	0.1003	0.3201	0.3202	0.9965
KMNIST vs MNIST	0.3419	0.4319	0.4320	0.9942
KMNIST vs Noise28	0.0005	0.3069	0.3069	1.0000
KMNIST vs NotMNIST	0.0160	0.3082	0.3082	1.0000
KMNIST vs Omniglot	0.7314	0.7882	0.7883	0.8006
MNIST vs Constant28	0.5088	0.4545	0.4546	0.4912
MNIST vs FashionMNIST	0.0141	0.3084	0.3084	0.9999
MNIST vs KMNIST	0.0111	0.3080	0.3080	1.0000
MNIST vs Noise28	0.0000	0.3069	0.3069	1.0000
MNIST vs NotMNIST	0.0000	0.3069	0.3069	1.0000
MNIST vs Omniglot	0.4139	0.4900	0.4901	0.9791
Noise vs CIFAR-10	0.4517	0.4271	0.4272	0.6927
Noise vs CIFAR-100	0.3084	0.3754	0.3754	0.8620
Noise vs CelebA	0.3174	0.2387	0.2388	0.9309
Noise vs Constant	0.1444	0.3326	0.3326	0.9638
Noise vs LSUN	0.0963	0.3237	0.3237	0.9607
Noise vs SVHN	0.8037	0.4426	0.4427	0.2460
Noise vs TinyImagenet	0.2497	0.3619	0.3619	0.8948

Noise vs iSUN	0.2220	0.3744	0.3744	0.9192
Noise28 vs Constant28	0.2249	0.3558	0.3558	0.8020
Noise28 vs FashionMNIST	0.0002	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0002	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.9932	0.9943	0.9943	0.0050
NotMNIST vs FashionMNIST	0.2567	0.3620	0.3622	0.9739
NotMNIST vs KMNIST	0.1968	0.3495	0.3498	0.9994
NotMNIST vs MNIST	0.0657	0.3176	0.3177	1.0000
NotMNIST vs Noise28	0.0130	0.3076	0.3077	1.0000
NotMNIST vs Omniglot	0.8864	0.9139	0.9139	0.5740
Omniglot vs Constant28	0.5274	0.4167	0.4167	0.4726
Omniglot vs FashionMNIST	0.0022	0.2670	0.2670	1.0000
Omniglot vs KMNIST	0.0044	0.2670	0.2670	1.0000
Omniglot vs MNIST	0.0129	0.2678	0.2678	0.9996
Omniglot vs Noise28	0.0000	0.2668	0.2669	1.0000
Omniglot vs NotMNIST	0.0001	0.2668	0.2669	1.0000
SVHN vs CIFAR-10	0.0830	0.5226	0.5226	0.9998
SVHN vs CIFAR-100	0.1231	0.5335	0.5335	0.9995
SVHN vs CelebA	0.0134	0.3609	0.3609	1.0000
SVHN vs Constant	0.0547	0.5175	0.5175	0.9984
SVHN vs LSUN	0.0056	0.5083	0.5083	1.0000
SVHN vs Noise	0.1106	0.5988	0.5988	1.0000
SVHN vs TinyImagenet	0.1257	0.5388	0.5388	0.9989
SVHN vs iSUN	0.0035	0.5324	0.5324	1.0000
TinyImagenet vs CelebA	0.1322	0.1981	0.1982	0.9990
TinyImagenet vs Constant	0.3429	0.4380	0.4380	0.9214
TinyImagenet vs LSUN	0.0099	0.3039	0.3039	1.0000
TinyImagenet vs Noise	0.0001	0.3032	0.3032	1.0000
TinyImagenet vs SVHN	0.6015	0.3303	0.3304	0.8066
TinyImagenet vs iSUN	0.0305	0.3282	0.3283	0.9989
Average	0.1584	0.3773	0.3774	0.9338

Table 87: The detailed performance for indicator D_γ when only 20% data in mixture distribution can be used for training, based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9655	0.9354	0.9354	0.1529
CIFAR-10 vs Constant	0.9982	0.9984	0.9984	0.0000
CIFAR-10 vs LSUN	0.9129	0.9020	0.9020	0.3588
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9683	0.9470	0.9470	0.1710
CIFAR-10 vs iSUN	0.9225	0.9072	0.9072	0.2539
CIFAR-100 vs CelebA	0.9232	0.8571	0.8571	0.3080
CIFAR-100 vs Constant	0.9950	0.9960	0.9960	0.0006
CIFAR-100 vs LSUN	0.9211	0.9068	0.9068	0.2900
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9447	0.9162	0.9162	0.3672
CIFAR-100 vs iSUN	0.9288	0.9230	0.9230	0.2555
CelebA vs CIFAR-10	0.9724	0.9864	0.9864	0.1608
CelebA vs CIFAR-100	0.9515	0.9756	0.9756	0.2803
CelebA vs Constant	0.9999	0.9999	0.9999	0.0000
CelebA vs LSUN	0.9924	0.9962	0.9962	0.0346
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9920	0.9918	0.9918	0.0245
CelebA vs TinyImagenet	0.9860	0.9933	0.9933	0.0565
CelebA vs iSUN	0.9927	0.9968	0.9968	0.0317
Constant vs CIFAR-10	0.9988	0.9987	0.9987	0.0068
Constant vs CIFAR-100	0.9952	0.9941	0.9941	0.0223
Constant vs CelebA	0.9997	0.9993	0.9993	0.0026
Constant vs LSUN	0.9999	0.9998	0.9998	0.0005
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9885	0.9824	0.9824	0.0253
Constant vs TinyImagenet	0.9957	0.9947	0.9947	0.0212
Constant vs iSUN	0.9999	0.9999	0.9999	0.0008
Constant28 vs FashionMNIST	0.9993	0.9991	0.9991	0.0027
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0002
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9807	0.9332	0.9336	0.0234
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9994	0.9995	0.9995	0.0000
FashionMNIST vs KMNIST	0.9992	0.9992	0.9992	0.0040
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9958	0.9955	0.9955	0.0210
FashionMNIST vs Omniglot	0.9993	0.9994	0.9994	0.0010
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9977	0.9978	0.9978	0.0077
KMNIST vs MNIST	0.9997	0.9997	0.9997	0.0016
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9908	0.9902	0.9902	0.0509
KMNIST vs Omniglot	0.9943	0.9955	0.9955	0.0283
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9998	0.9998	0.9998	0.0000
MNIST vs KMNIST	0.9982	0.9982	0.9982	0.0051
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9999	0.9999	0.9999	0.0004
MNIST vs Omniglot	0.9976	0.9983	0.9983	0.0051
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9821	0.9905	0.9905	0.0000
NotMNIST vs FashionMNIST	0.9950	0.9956	0.9956	0.0134
NotMNIST vs KMNIST	0.9957	0.9961	0.9961	0.0168
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9998	0.9998	0.9998	0.0001
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9975	0.9967	0.9967	0.0143
Omniglot vs KMNIST	0.9959	0.9949	0.9949	0.0221
Omniglot vs MNIST	0.9966	0.9953	0.9953	0.0164
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9998	0.9998	0.9998	0.0007
SVHN vs CIFAR-10	0.8351	0.9314	0.9314	0.7058
SVHN vs CIFAR-100	0.8146	0.9235	0.9235	0.7870
SVHN vs CelebA	0.9954	0.9964	0.9964	0.0237
SVHN vs Constant	0.9513	0.9785	0.9785	0.2345
SVHN vs LSUN	0.9124	0.9700	0.9700	0.6740
SVHN vs Noise	0.9973	0.9992	0.9992	0.0000
SVHN vs TinyImagenet	0.8613	0.9445	0.9445	0.6414
SVHN vs iSUN	0.9527	0.9839	0.9839	0.2971
TinyImagenet vs CelebA	0.9617	0.9197	0.9197	0.1544
TinyImagenet vs Constant	0.9948	0.9959	0.9959	0.0038
TinyImagenet vs LSUN	0.8668	0.8450	0.8451	0.4770
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9554	0.9289	0.9290	0.2887
TinyImagenet vs iSUN	0.8884	0.8758	0.8759	0.3807
Average	0.9809	0.9822	0.9822	0.0840

Table 88: The detailed performance for indicator $D_\gamma(x)$ when only 20% data in mixture distribution can be used for training based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9572	0.9221	0.9221	0.1995
CIFAR-10 vs Constant	0.9970	0.9973	0.9973	0.0083
CIFAR-10 vs LSUN	0.9284	0.9188	0.9188	0.3039
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9600	0.9360	0.9360	0.2417
CIFAR-10 vs iSUN	0.9144	0.8995	0.8995	0.2836
CIFAR-100 vs CelebA	0.9336	0.8762	0.8762	0.2737
CIFAR-100 vs Constant	0.9922	0.9933	0.9933	0.0343
CIFAR-100 vs LSUN	0.9414	0.9318	0.9318	0.2422
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9451	0.9130	0.9130	0.3499
CIFAR-100 vs iSUN	0.9052	0.8923	0.8923	0.2825
CelebA vs CIFAR-10	0.9644	0.9821	0.9821	0.2055
CelebA vs CIFAR-100	0.9450	0.9723	0.9723	0.3220
CelebA vs Constant	0.9997	0.9999	0.9999	0.0000
CelebA vs LSUN	0.9901	0.9953	0.9953	0.0440
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9888	0.9884	0.9884	0.0474
CelebA vs TinyImagenet	0.9790	0.9901	0.9901	0.1129
CelebA vs iSUN	0.9915	0.9964	0.9964	0.0342
Constant vs CIFAR-10	0.9982	0.9981	0.9981	0.0091
Constant vs CIFAR-100	0.9951	0.9938	0.9938	0.0207
Constant vs CelebA	0.9995	0.9990	0.9990	0.0027
Constant vs LSUN	0.9998	0.9997	0.9997	0.0012
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9854	0.9785	0.9785	0.0425
Constant vs TinyImagenet	0.9922	0.9909	0.9909	0.0408
Constant vs iSUN	0.9996	0.9996	0.9996	0.0020
Constant28 vs FashionMNIST	0.9998	0.9998	0.9998	0.0009
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9827	0.9420	0.9423	0.0203
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9977	0.9981	0.9981	0.0000
FashionMNIST vs KMNIST	0.9986	0.9986	0.9986	0.0059
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0004
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9956	0.9954	0.9954	0.0199
FashionMNIST vs Omniglot	0.9979	0.9985	0.9985	0.0020
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9964	0.9965	0.9965	0.0175
KMNIST vs MNIST	0.9983	0.9982	0.9982	0.0096
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9900	0.9892	0.9892	0.0547
KMNIST vs Omniglot	0.9946	0.9957	0.9957	0.0258
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9993	0.9994	0.9994	0.0007
MNIST vs KMNIST	0.9990	0.9991	0.9991	0.0022
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9998	0.9998	0.9998	0.0010
MNIST vs Omniglot	0.9951	0.9964	0.9964	0.0173
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9815	0.9898	0.9898	0.0000
NotMNIST vs FashionMNIST	0.9933	0.9940	0.9940	0.0224
NotMNIST vs KMNIST	0.9866	0.9885	0.9885	0.0752
NotMNIST vs MNIST	0.9998	0.9998	0.9998	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9993	0.9995	0.9995	0.0001
Omniglot vs Constant28	0.9998	0.9998	0.9998	0.0000
Omniglot vs FashionMNIST	0.9976	0.9967	0.9967	0.0132
Omniglot vs KMNIST	0.9955	0.9945	0.9945	0.0237
Omniglot vs MNIST	0.9959	0.9944	0.9944	0.0187
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9997	0.9996	0.9996	0.0022
SVHN vs CIFAR-10	0.8089	0.9213	0.9213	0.7997
SVHN vs CIFAR-100	0.8008	0.9176	0.9176	0.8076
SVHN vs CelebA	0.9875	0.9907	0.9907	0.0717
SVHN vs Constant	0.9426	0.9748	0.9748	0.2728
SVHN vs LSUN	0.9356	0.9774	0.9774	0.4872
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.8361	0.9335	0.9335	0.6902
SVHN vs iSUN	0.9398	0.9793	0.9793	0.3476
TinyImagenet vs CelebA	0.9656	0.9270	0.9270	0.1386
TinyImagenet vs Constant	0.9880	0.9882	0.9882	0.0538
TinyImagenet vs LSUN	0.8881	0.8731	0.8731	0.4307
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9489	0.9192	0.9192	0.3475
TinyImagenet vs iSUN	0.8856	0.8768	0.8768	0.4182
Average	0.9796	0.9816	0.9816	0.0903

Table 89: The detailed performance for indicator $D_\gamma(x)$ based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9583	0.9242	0.9242	0.1919
CIFAR-10 vs Constant	0.9951	0.9955	0.9955	0.0220
CIFAR-10 vs LSUN	0.9097	0.9002	0.9002	0.3774
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9537	0.9252	0.9252	0.3102
CIFAR-10 vs iSUN	0.8842	0.8642	0.8642	0.3613
CIFAR-100 vs CelebA	0.9253	0.8636	0.8636	0.3190
CIFAR-100 vs Constant	0.9886	0.9896	0.9896	0.0508
CIFAR-100 vs LSUN	0.9115	0.8965	0.8965	0.3357
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9412	0.9071	0.9071	0.3740
CIFAR-100 vs iSUN	0.9059	0.8949	0.8949	0.2922
CelebA vs CIFAR-10	0.9610	0.9798	0.9798	0.2121
CelebA vs CIFAR-100	0.9487	0.9747	0.9747	0.2997
CelebA vs Constant	0.9992	0.9996	0.9996	0.0027
CelebA vs LSUN	0.9894	0.9948	0.9948	0.0511
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9873	0.9864	0.9864	0.0625
CelebA vs TinyImagenet	0.9766	0.9889	0.9889	0.1234
CelebA vs iSUN	0.9883	0.9950	0.9950	0.0568
Constant vs CIFAR-10	0.9975	0.9972	0.9972	0.0136
Constant vs CIFAR-100	0.9931	0.9922	0.9922	0.0272
Constant vs CelebA	0.9991	0.9982	0.9982	0.0044
Constant vs LSUN	0.9998	0.9998	0.9998	0.0007
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9832	0.9762	0.9762	0.0439
Constant vs TinyImagenet	0.9874	0.9875	0.9875	0.0561
Constant vs iSUN	0.9990	0.9991	0.9991	0.0046
Constant28 vs FashionMNIST	0.9997	0.9997	0.9997	0.0011
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9827	0.9425	0.9425	0.0208
Constant28 vs Omniglot	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs Constant28	0.9994	0.9995	0.9995	0.0000
FashionMNIST vs KMNIST	0.9986	0.9986	0.9986	0.0068
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0002
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9946	0.9944	0.9944	0.0267
FashionMNIST vs Omniglot	0.9976	0.9983	0.9983	0.0031
KMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
KMNIST vs FashionMNIST	0.9949	0.9951	0.9951	0.0254
KMNIST vs MNIST	0.9960	0.9959	0.9959	0.0232
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9869	0.9854	0.9854	0.0657
KMNIST vs Omniglot	0.9931	0.9946	0.9946	0.0326
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9989	0.9989	0.9989	0.0021
MNIST vs KMNIST	0.9981	0.9982	0.9982	0.0047
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9999	0.9999	0.9999	0.0005
MNIST vs Omniglot	0.9932	0.9951	0.9951	0.0306
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9804	0.9892	0.9892	0.0000
NotMNIST vs FashionMNIST	0.9906	0.9913	0.9913	0.0450
NotMNIST vs KMNIST	0.9818	0.9844	0.9844	0.1201
NotMNIST vs MNIST	0.9999	0.9999	0.9999	0.0001
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9995	0.9996	0.9996	0.0002
Omniglot vs Constant28	0.9978	0.9973	0.9973	0.0153
Omniglot vs FashionMNIST	0.9960	0.9944	0.9944	0.0200
Omniglot vs KMNIST	0.9932	0.9915	0.9915	0.0345
Omniglot vs MNIST	0.9956	0.9939	0.9939	0.0218
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9996	0.9995	0.9995	0.0026
SVHN vs CIFAR-10	0.8083	0.9205	0.9205	0.7697
SVHN vs CIFAR-100	0.7817	0.9099	0.9099	0.8578
SVHN vs CelebA	0.9797	0.9849	0.9849	0.1226
SVHN vs Constant	0.9395	0.9719	0.9719	0.2608
SVHN vs LSUN	0.9266	0.9745	0.9745	0.5638
SVHN vs Noise	0.9994	0.9998	0.9998	0.0000
SVHN vs TinyImagenet	0.8099	0.9234	0.9234	0.7699
SVHN vs iSUN	0.9043	0.9685	0.9685	0.6180
TinyImagenet vs CelebA	0.9570	0.9107	0.9107	0.1740
TinyImagenet vs Constant	0.9889	0.9893	0.9893	0.0449
TinyImagenet vs LSUN	0.8829	0.8644	0.8644	0.4605
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9415	0.9054	0.9054	0.4030
TinyImagenet vs iSUN	0.8801	0.8696	0.8697	0.4427
Average	0.9766	0.9789	0.9789	0.1042

Table 90: The detailed performance for indicator $D_\gamma(x)$ when data is split to several blocks with size 4096, based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.3614	0.2710	0.2711	0.9992
CIFAR-10 vs Constant	0.2265	0.3539	0.3540	1.0000
CIFAR-10 vs LSUN	0.2783	0.3740	0.3741	0.9978
CIFAR-10 vs Noise	0.3560	0.4216	0.4217	0.9933
CIFAR-10 vs SVHN	0.3493	0.2222	0.2224	0.9995
CIFAR-10 vs iSUN	0.2868	0.4036	0.4037	0.9968
CIFAR-100 vs CelebA	0.5271	0.3815	0.3816	0.9717
CIFAR-100 vs Constant	0.5095	0.5393	0.5394	0.9528
CIFAR-100 vs LSUN	0.4523	0.4793	0.4794	0.9804
CIFAR-100 vs Noise	0.5928	0.6186	0.6187	0.9384
CIFAR-100 vs SVHN	0.3911	0.2344	0.2345	0.9950
CIFAR-100 vs iSUN	0.4583	0.5138	0.5139	0.9810
CelebA vs CIFAR-10	0.4990	0.6651	0.6652	0.9502
CelebA vs CIFAR-100	0.5001	0.6665	0.6666	0.9554
CelebA vs Constant	0.4997	0.6666	0.6666	0.9498
CelebA vs LSUN	0.5022	0.6672	0.6673	0.9447
CelebA vs Noise	0.5044	0.6703	0.6703	0.9513
CelebA vs SVHN	0.4990	0.4316	0.4316	0.9463
CelebA vs TinyImagenet	0.5016	0.6718	0.6719	0.9525
CelebA vs iSUN	0.4960	0.6904	0.6904	0.9545
Constant vs CIFAR-10	0.4971	0.4967	0.4969	0.9487
Constant vs CIFAR-100	0.5044	0.5035	0.5036	0.9514
Constant vs CelebA	0.5046	0.3375	0.3375	0.9510
Constant vs LSUN	0.4933	0.4949	0.4950	0.9502
Constant vs Noise	0.5100	0.5089	0.5090	0.9487
Constant vs SVHN	0.4916	0.2714	0.2715	0.9511
Constant vs TinyImagenet	0.5000	0.5045	0.5046	0.9507
Constant vs iSUN	0.5018	0.5316	0.5317	0.9501
Constant28 vs FashionMNIST	0.4975	0.4987	0.4989	0.9529
Constant28 vs KMNIST	0.5055	0.5055	0.5056	0.9476
Constant28 vs MNIST	0.4906	0.4953	0.4954	0.9520
Constant28 vs Noise28	0.4997	0.5012	0.5013	0.9487
Constant28 vs NotMNIST	0.4978	0.4978	0.4980	0.9489
Constant28 vs Omniglot	0.5005	0.5551	0.5553	0.9475
FashionMNIST vs Constant28	0.0127	0.3072	0.3072	1.0000
FashionMNIST vs KMNIST	0.0463	0.3106	0.3107	1.0000
FashionMNIST vs MNIST	0.0342	0.3090	0.3091	1.0000
FashionMNIST vs Noise28	0.0228	0.3082	0.3082	1.0000
FashionMNIST vs NotMNIST	0.0607	0.3123	0.3123	0.9999
FashionMNIST vs Omniglot	0.0533	0.3544	0.3545	1.0000
KMNIST vs Constant28	0.1425	0.3321	0.3322	1.0000
KMNIST vs FashionMNIST	0.0591	0.3117	0.3117	1.0000
KMNIST vs MNIST	0.0300	0.3085	0.3085	1.0000
KMNIST vs Noise28	0.0562	0.3118	0.3119	1.0000
KMNIST vs NotMNIST	0.0613	0.3121	0.3121	1.0000
KMNIST vs Omniglot	0.0291	0.3513	0.3513	1.0000
MNIST vs Constant28	0.0003	0.3069	0.3069	1.0000
MNIST vs FashionMNIST	0.0162	0.3077	0.3077	1.0000
MNIST vs KMNIST	0.0221	0.3084	0.3084	1.0000
MNIST vs Noise28	0.0031	0.3069	0.3069	1.0000
MNIST vs NotMNIST	0.0179	0.3080	0.3080	1.0000
MNIST vs Omniglot	0.0417	0.3540	0.3541	0.9991
Noise vs CIFAR-10	0.4935	0.4945	0.4946	0.9511
Noise vs CIFAR-100	0.5027	0.4991	0.4992	0.9493
Noise vs CelebA	0.5020	0.3333	0.3334	0.9476
Noise vs Constant	0.5008	0.5017	0.5018	0.9460
Noise vs LSUN	0.4958	0.4986	0.4987	0.9478
Noise vs SVHN	0.4962	0.2770	0.2771	0.9499
Noise vs TinyImagenet	0.4977	0.5022	0.5023	0.9533

Noise vs iSUN	0.4999	0.5275	0.5276	0.9518
Noise28 vs Constant28	0.4969	0.5017	0.5017	0.9514
Noise28 vs FashionMNIST	0.4906	0.4912	0.4914	0.9613
Noise28 vs KMNIST	0.5027	0.4985	0.4987	0.9493
Noise28 vs MNIST	0.4995	0.5010	0.5011	0.9495
Noise28 vs NotMNIST	0.4989	0.4995	0.4996	0.9502
Noise28 vs Omniglot	0.4941	0.5482	0.5483	0.9525
NotMNIST vs Constant28	0.0567	0.3110	0.3111	1.0000
NotMNIST vs FashionMNIST	0.0897	0.3169	0.3169	0.9999
NotMNIST vs KMNIST	0.0798	0.3155	0.3155	0.9996
NotMNIST vs MNIST	0.0766	0.3147	0.3148	0.9996
NotMNIST vs Noise28	0.1034	0.3205	0.3205	0.9980
NotMNIST vs Omniglot	0.0597	0.3556	0.3556	0.9999
Omniglot vs Constant28	0.0890	0.2755	0.2756	1.0000
Omniglot vs FashionMNIST	0.5418	0.4557	0.4558	0.8789
Omniglot vs KMNIST	0.5551	0.4919	0.4921	0.9196
Omniglot vs MNIST	0.5472	0.4891	0.4892	0.9285
Omniglot vs Noise28	0.2212	0.3046	0.3047	0.9911
Omniglot vs NotMNIST	0.6114	0.5459	0.5461	0.8820
SVHN vs CIFAR-10	0.1453	0.5046	0.5046	0.9994
SVHN vs CIFAR-100	0.1490	0.5067	0.5067	0.9995
SVHN vs CelebA	0.1509	0.3506	0.3506	0.9999
SVHN vs Constant	0.0833	0.4866	0.4867	1.0000
SVHN vs LSUN	0.1728	0.5181	0.5181	0.9995
SVHN vs Noise	0.1511	0.5081	0.5082	0.9999
SVHN vs TinyImagenet	0.1434	0.5088	0.5088	0.9997
SVHN vs iSUN	0.1665	0.5413	0.5413	0.9998
TinyImagenet vs CelebA	0.4482	0.3128	0.3129	0.9792
TinyImagenet vs Constant	0.2834	0.3622	0.3623	0.9561
TinyImagenet vs LSUN	0.5301	0.5385	0.5386	0.9474
TinyImagenet vs Noise	0.7411	0.7709	0.7709	0.7610
TinyImagenet vs SVHN	0.3588	0.2071	0.2072	0.9862
TinyImagenet vs iSUN	0.5147	0.5507	0.5508	0.9487
Average	0.3319	0.4370	0.4371	0.9695

Table 91: The detailed performance for indicator H based on model VIB

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4991	0.3688	0.3689	0.9881
CIFAR-10 vs Constant	0.5309	0.5957	0.5957	0.9789
CIFAR-10 vs LSUN	0.4673	0.4746	0.4747	0.9580
CIFAR-10 vs Noise	0.7439	0.6744	0.6745	0.6629
CIFAR-10 vs SVHN	0.4305	0.2908	0.2909	0.9981
CIFAR-10 vs iSUN	0.4504	0.4902	0.4903	0.9551
CIFAR-100 vs CelebA	0.6374	0.4287	0.4288	0.8492
CIFAR-100 vs Constant	0.4779	0.5499	0.5500	0.9987
CIFAR-100 vs LSUN	0.5387	0.5039	0.5040	0.8847
CIFAR-100 vs Noise	0.9710	0.9618	0.9618	0.1111
CIFAR-100 vs SVHN	0.5206	0.3546	0.3547	0.9852
CIFAR-100 vs iSUN	0.5514	0.5395	0.5396	0.8691
CelebA vs CIFAR-10	0.5022	0.6693	0.6693	0.9461
CelebA vs CIFAR-100	0.5130	0.9534	0.9534	0.9570
CelebA vs Constant	0.4985	0.6648	0.6648	0.9481
CelebA vs LSUN	0.5000	0.6673	0.6673	0.9489
CelebA vs Noise	0.5017	0.6679	0.6679	0.9515
CelebA vs SVHN	0.4995	0.4499	0.4500	0.9485
CelebA vs TinyImagenet	0.5028	0.6705	0.6705	0.9443
CelebA vs iSUN	0.4962	0.6888	0.6889	0.9517
Constant vs CIFAR-10	0.5018	0.5039	0.5040	0.9504
Constant vs CIFAR-100	0.4948	0.9078	0.9078	0.9500
Constant vs CelebA	0.4962	0.3306	0.3307	0.9527
Constant vs LSUN	0.5005	0.4997	0.4999	0.9505
Constant vs Noise	0.5030	0.5016	0.5017	0.9532
Constant vs SVHN	0.4949	0.2885	0.2886	0.9477
Constant vs TinyImagenet	0.5009	0.5043	0.5045	0.9486
Constant vs iSUN	0.4978	0.5262	0.5263	0.9463
Constant28 vs FashionMNIST	0.5032	0.5040	0.5041	0.9465
Constant28 vs KMNIST	0.5000	0.5011	0.5012	0.9538
Constant28 vs MNIST	0.5002	0.5014	0.5015	0.9460
Constant28 vs Noise28	0.4984	0.4999	0.5000	0.9511
Constant28 vs NotMNIST	0.5017	0.5022	0.5024	0.9511
Constant28 vs Omniglot	0.5050	0.8184	0.8185	0.9469
FashionMNIST vs Constant28	0.0602	0.3130	0.3130	1.0000
FashionMNIST vs KMNIST	0.4528	0.4667	0.4668	0.9691
FashionMNIST vs MNIST	0.3925	0.4422	0.4424	0.9891
FashionMNIST vs Noise28	0.1971	0.3413	0.3413	0.9930
FashionMNIST vs NotMNIST	0.2829	0.3686	0.3686	0.9919
FashionMNIST vs Omniglot	0.3889	0.7779	0.7780	0.9897
KMNIST vs Constant28	0.9306	0.9057	0.9057	0.1971
KMNIST vs FashionMNIST	0.8419	0.8219	0.8219	0.5126
KMNIST vs MNIST	0.3738	0.4115	0.4116	0.9864
KMNIST vs Noise28	0.9497	0.9545	0.9545	0.2673
KMNIST vs NotMNIST	0.6079	0.5676	0.5677	0.8486
KMNIST vs Omniglot	0.3543	0.7511	0.7512	0.9960
MNIST vs Constant28	0.3145	0.3956	0.3957	0.9996
MNIST vs FashionMNIST	0.6094	0.5481	0.5482	0.8246
MNIST vs KMNIST	0.6382	0.5753	0.5754	0.7890
MNIST vs Noise28	0.2070	0.3439	0.3439	0.9928
MNIST vs NotMNIST	0.3174	0.3780	0.3780	0.9614
MNIST vs Omniglot	0.7701	0.9240	0.9240	0.6912
Noise vs CIFAR-10	0.5006	0.4964	0.4966	0.9482
Noise vs CIFAR-100	0.4915	0.9084	0.9084	0.9540
Noise vs CelebA	0.4921	0.3285	0.3286	0.9456
Noise vs Constant	0.4999	0.4984	0.4985	0.9510
Noise vs LSUN	0.4982	0.4974	0.4975	0.9528
Noise vs SVHN	0.4988	0.2923	0.2924	0.9540
Noise vs TinyImagenet	0.4907	0.5001	0.5002	0.9561

Noise vs iSUN	0.4972	0.5267	0.5269	0.9514
Noise28 vs Constant28	0.5017	0.5015	0.5016	0.9504
Noise28 vs FashionMNIST	0.4976	0.4972	0.4973	0.9512
Noise28 vs KMNIST	0.4970	0.4996	0.4998	0.9480
Noise28 vs MNIST	0.5010	0.5011	0.5012	0.9546
Noise28 vs NotMNIST	0.5030	0.5026	0.5028	0.9514
Noise28 vs Omniglot	0.5002	0.8165	0.8166	0.9451
NotMNIST vs Constant28	0.8526	0.8878	0.8878	0.8832
NotMNIST vs FashionMNIST	0.8539	0.8787	0.8788	0.7571
NotMNIST vs KMNIST	0.8929	0.9015	0.9015	0.5596
NotMNIST vs MNIST	0.8411	0.8666	0.8666	0.7749
NotMNIST vs Noise28	0.9465	0.9480	0.9481	0.2789
NotMNIST vs Omniglot	0.8887	0.9740	0.9740	0.6488
Omniglot vs Constant28	0.4101	0.3630	0.3630	0.6594
Omniglot vs FashionMNIST	0.7306	0.5706	0.5707	0.4808
Omniglot vs KMNIST	0.7981	0.6898	0.6900	0.5274
Omniglot vs MNIST	0.6621	0.5564	0.5565	0.7344
Omniglot vs Noise28	0.9998	0.9998	0.9998	0.0003
Omniglot vs NotMNIST	0.9702	0.9350	0.9351	0.0801
SVHN vs CIFAR-10	0.8233	0.9261	0.9261	0.7339
SVHN vs CIFAR-100	0.8212	0.9901	0.9901	0.7082
SVHN vs CelebA	0.7433	0.8165	0.8165	0.8913
SVHN vs Constant	0.9480	0.9784	0.9784	0.2410
SVHN vs LSUN	0.8512	0.9377	0.9377	0.6570
SVHN vs Noise	0.8678	0.9483	0.9483	0.6656
SVHN vs TinyImagenet	0.8272	0.9287	0.9287	0.7220
SVHN vs iSUN	0.8561	0.9450	0.9450	0.6380
TinyImagenet vs CelebA	0.6743	0.4679	0.4680	0.8308
TinyImagenet vs Constant	0.2800	0.3791	0.3792	0.9993
TinyImagenet vs LSUN	0.7620	0.6827	0.6829	0.5749
TinyImagenet vs Noise	0.9999	0.9999	0.9999	0.0002
TinyImagenet vs SVHN	0.5443	0.4195	0.4195	0.9937
TinyImagenet vs iSUN	0.7402	0.6758	0.6760	0.5823
Average	0.5878	0.6236	0.6237	0.8159

Table 92: The detailed performance for indicator R based on model VIB

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6403	0.5476	0.5476	0.9243
CIFAR-10 vs Constant	0.7727	0.8083	0.8083	0.7715
CIFAR-10 vs LSUN	0.7209	0.7398	0.7398	0.8387
CIFAR-10 vs Noise	0.6442	0.6675	0.6675	0.9152
CIFAR-10 vs SVHN	0.6496	0.5080	0.5080	0.9311
CIFAR-10 vs iSUN	0.7134	0.7482	0.7482	0.8391
CIFAR-100 vs CelebA	0.4740	0.3474	0.3475	0.9763
CIFAR-100 vs Constant	0.4917	0.5054	0.5055	0.9783
CIFAR-100 vs LSUN	0.5456	0.5627	0.5628	0.9556
CIFAR-100 vs Noise	0.4059	0.4523	0.4524	0.9922
CIFAR-100 vs SVHN	0.6067	0.4187	0.4188	0.9377
CIFAR-100 vs iSUN	0.5428	0.5878	0.5878	0.9555
CelebA vs CIFAR-10	0.5079	0.6723	0.6724	0.9476
CelebA vs CIFAR-100	0.5004	0.6671	0.6671	0.9515
CelebA vs Constant	0.5051	0.6695	0.6696	0.9537
CelebA vs LSUN	0.5075	0.6702	0.6702	0.9471
CelebA vs Noise	0.5001	0.6642	0.6642	0.9523
CelebA vs SVHN	0.4989	0.4334	0.4335	0.9564
CelebA vs TinyImagenet	0.4976	0.6678	0.6679	0.9518
CelebA vs iSUN	0.5037	0.6929	0.6930	0.9501
Constant vs CIFAR-10	0.4963	0.4983	0.4984	0.9521
Constant vs CIFAR-100	0.4996	0.4975	0.4976	0.9479
Constant vs CelebA	0.5005	0.3358	0.3359	0.9501
Constant vs LSUN	0.5009	0.5018	0.5019	0.9520
Constant vs Noise	0.4944	0.4945	0.4946	0.9494
Constant vs SVHN	0.5009	0.2781	0.2782	0.9503
Constant vs TinyImagenet	0.4955	0.5006	0.5008	0.9495
Constant vs iSUN	0.5041	0.5322	0.5324	0.9495
Constant28 vs FashionMNIST	0.4991	0.4989	0.4990	0.9504
Constant28 vs KMNIST	0.5042	0.5025	0.5026	0.9515
Constant28 vs MNIST	0.5028	0.5010	0.5012	0.9500
Constant28 vs Noise28	0.4990	0.5039	0.5041	0.9489
Constant28 vs NotMNIST	0.4970	0.4953	0.4954	0.9513
Constant28 vs Omniglot	0.5023	0.5564	0.5565	0.9461
FashionMNIST vs Constant28	0.9876	0.9899	0.9899	0.0497
FashionMNIST vs KMNIST	0.9533	0.9559	0.9559	0.2340
FashionMNIST vs MNIST	0.9658	0.9696	0.9696	0.1894
FashionMNIST vs Noise28	0.9769	0.9781	0.9781	0.1170
FashionMNIST vs NotMNIST	0.9397	0.9434	0.9434	0.3143
FashionMNIST vs Omniglot	0.9467	0.9612	0.9612	0.3026
KMNIST vs Constant28	0.8609	0.8944	0.8944	0.7404
KMNIST vs FashionMNIST	0.9427	0.9531	0.9531	0.3471
KMNIST vs MNIST	0.9701	0.9748	0.9748	0.1657
KMNIST vs Noise28	0.9445	0.9570	0.9570	0.3550
KMNIST vs NotMNIST	0.9381	0.9469	0.9469	0.3638
KMNIST vs Omniglot	0.9720	0.9805	0.9805	0.1524
MNIST vs Constant28	0.9997	0.9997	0.9997	0.0000
MNIST vs FashionMNIST	0.9839	0.9850	0.9850	0.0790
MNIST vs KMNIST	0.9772	0.9769	0.9769	0.1042
MNIST vs Noise28	0.9969	0.9973	0.9973	0.0072
MNIST vs NotMNIST	0.9824	0.9825	0.9825	0.0733
MNIST vs Omniglot	0.9575	0.9578	0.9579	0.1684
Noise vs CIFAR-10	0.4967	0.4969	0.4970	0.9494
Noise vs CIFAR-100	0.4947	0.4949	0.4951	0.9556
Noise vs CelebA	0.5003	0.3347	0.3348	0.9488
Noise vs Constant	0.5037	0.5013	0.5014	0.9507
Noise vs LSUN	0.5060	0.5044	0.5045	0.9518
Noise vs SVHN	0.5005	0.2789	0.2790	0.9513
Noise vs TinyImagenet	0.4956	0.5022	0.5023	0.9494

Noise vs iSUN	0.5005	0.5268	0.5270	0.9533
Noise28 vs Constant28	0.5014	0.5021	0.5021	0.9514
Noise28 vs FashionMNIST	0.4981	0.4997	0.4998	0.9569
Noise28 vs KMNIST	0.4936	0.4949	0.4951	0.9496
Noise28 vs MNIST	0.5009	0.4973	0.4974	0.9453
Noise28 vs NotMNIST	0.5034	0.5017	0.5018	0.9528
Noise28 vs Omniglot	0.5022	0.5552	0.5553	0.9460
NotMNIST vs Constant28	0.9425	0.9559	0.9559	0.4423
NotMNIST vs FashionMNIST	0.9105	0.9168	0.9168	0.4233
NotMNIST vs KMNIST	0.9204	0.9241	0.9241	0.3913
NotMNIST vs MNIST	0.9233	0.9281	0.9281	0.4078
NotMNIST vs Noise28	0.8974	0.8943	0.8943	0.5051
NotMNIST vs Omniglot	0.9415	0.9557	0.9557	0.3014
Omniglot vs Constant28	0.9091	0.8998	0.8998	0.3962
Omniglot vs FashionMNIST	0.4580	0.3980	0.3980	0.9290
Omniglot vs KMNIST	0.4454	0.4037	0.4038	0.9665
Omniglot vs MNIST	0.4527	0.4111	0.4113	0.9681
Omniglot vs Noise28	0.7775	0.7051	0.7053	0.6673
Omniglot vs NotMNIST	0.3889	0.3698	0.3699	0.9776
SVHN vs CIFAR-10	0.8546	0.9309	0.9309	0.6638
SVHN vs CIFAR-100	0.8514	0.9286	0.9286	0.6596
SVHN vs CelebA	0.8485	0.8791	0.8791	0.6980
SVHN vs Constant	0.9166	0.9653	0.9653	0.5163
SVHN vs LSUN	0.8281	0.9171	0.9171	0.7296
SVHN vs Noise	0.8477	0.9294	0.9294	0.6873
SVHN vs TinyImagenet	0.8582	0.9345	0.9345	0.6620
SVHN vs iSUN	0.8355	0.9292	0.9292	0.7144
TinyImagenet vs CelebA	0.5510	0.3935	0.3935	0.9537
TinyImagenet vs Constant	0.7146	0.6344	0.6344	0.6394
TinyImagenet vs LSUN	0.4709	0.4796	0.4797	0.9731
TinyImagenet vs Noise	0.2606	0.3702	0.3702	0.9998
TinyImagenet vs SVHN	0.6400	0.3959	0.3960	0.8572
TinyImagenet vs iSUN	0.4843	0.5190	0.5191	0.9706
Average	0.6679	0.6717	0.6717	0.7294

Table 93: The detailed performance for indicator $-H$ based on model VIB

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4989	0.3880	0.3880	0.9796
CIFAR-10 vs Constant	0.4668	0.5264	0.5265	0.9938
CIFAR-10 vs LSUN	0.5357	0.5262	0.5263	0.9342
CIFAR-10 vs Noise	0.2624	0.3597	0.3598	0.9711
CIFAR-10 vs SVHN	0.5665	0.4414	0.4415	0.9711
CIFAR-10 vs iSUN	0.5468	0.5590	0.5592	0.9268
CIFAR-100 vs CelebA	0.3622	0.2561	0.2562	0.9694
CIFAR-100 vs Constant	0.5191	0.5975	0.5975	0.9887
CIFAR-100 vs LSUN	0.4678	0.4540	0.4541	0.9254
CIFAR-100 vs Noise	0.0280	0.3097	0.3097	0.9991
CIFAR-100 vs SVHN	0.4823	0.3206	0.3206	0.9902
CIFAR-100 vs iSUN	0.4461	0.4684	0.4685	0.9345
CelebA vs CIFAR-10	0.4958	0.6625	0.6626	0.9478
CelebA vs CIFAR-100	0.5042	0.9525	0.9525	0.9510
CelebA vs Constant	0.5021	0.6688	0.6688	0.9461
CelebA vs LSUN	0.4986	0.6645	0.6645	0.9494
CelebA vs Noise	0.4983	0.6647	0.6648	0.9517
CelebA vs SVHN	0.5045	0.4545	0.4546	0.9472
CelebA vs TinyImagenet	0.4966	0.6664	0.6664	0.9475
CelebA vs iSUN	0.5007	0.6913	0.6914	0.9522
Constant vs CIFAR-10	0.5013	0.5016	0.5018	0.9400
Constant vs CIFAR-100	0.4970	0.9075	0.9076	0.9420
Constant vs CelebA	0.5005	0.3325	0.3326	0.9517
Constant vs LSUN	0.5049	0.5047	0.5048	0.9495
Constant vs Noise	0.4987	0.5010	0.5012	0.9551
Constant vs SVHN	0.4995	0.2937	0.2938	0.9484
Constant vs TinyImagenet	0.5005	0.5042	0.5043	0.9440
Constant vs iSUN	0.5113	0.5340	0.5341	0.9495
Constant28 vs FashionMNIST	0.5032	0.5017	0.5018	0.9487
Constant28 vs KMNIST	0.5041	0.5035	0.5036	0.9493
Constant28 vs MNIST	0.4924	0.4965	0.4966	0.9563
Constant28 vs Noise28	0.5052	0.5072	0.5073	0.9475
Constant28 vs NotMNIST	0.5069	0.5061	0.5062	0.9489
Constant28 vs Omniglot	0.5079	0.8189	0.8190	0.9465
FashionMNIST vs Constant28	0.9382	0.9389	0.9389	0.2718
FashionMNIST vs KMNIST	0.5465	0.5453	0.5454	0.9341
FashionMNIST vs MNIST	0.6121	0.6359	0.6359	0.9295
FashionMNIST vs Noise28	0.8024	0.7712	0.7712	0.5800
FashionMNIST vs NotMNIST	0.7184	0.7053	0.7054	0.7336
FashionMNIST vs Omniglot	0.6140	0.8829	0.8829	0.9259
KMNIST vs Constant28	0.0677	0.3160	0.3161	0.9988
KMNIST vs FashionMNIST	0.1585	0.3320	0.3320	0.9949
KMNIST vs MNIST	0.6243	0.6209	0.6210	0.8668
KMNIST vs Noise28	0.0496	0.3116	0.3116	1.0000
KMNIST vs NotMNIST	0.3911	0.4179	0.4180	0.9619
KMNIST vs Omniglot	0.6433	0.8927	0.8927	0.8826
MNIST vs Constant28	0.6846	0.7192	0.7192	0.8778
MNIST vs FashionMNIST	0.3955	0.4125	0.4126	0.9277
MNIST vs KMNIST	0.3576	0.3946	0.3946	0.9503
MNIST vs Noise28	0.7894	0.7562	0.7563	0.6084
MNIST vs NotMNIST	0.6807	0.6129	0.6130	0.7096
MNIST vs Omniglot	0.2263	0.6846	0.6847	0.9897
Noise vs CIFAR-10	0.4972	0.4959	0.4961	0.9550
Noise vs CIFAR-100	0.5148	0.9127	0.9127	0.9470
Noise vs CelebA	0.5013	0.3338	0.3339	0.9467
Noise vs Constant	0.5046	0.5050	0.5052	0.9500
Noise vs LSUN	0.4929	0.4954	0.4955	0.9520
Noise vs SVHN	0.4974	0.2914	0.2916	0.9494
Noise vs TinyImagenet	0.4957	0.5012	0.5013	0.9499

Noise vs iSUN	0.4968	0.5258	0.5259	0.9486
Noise28 vs Constant28	0.4955	0.4967	0.4968	0.9516
Noise28 vs FashionMNIST	0.4975	0.4981	0.4983	0.9507
Noise28 vs KMNIST	0.5016	0.5011	0.5012	0.9499
Noise28 vs MNIST	0.4996	0.4986	0.4987	0.9507
Noise28 vs NotMNIST	0.5056	0.5039	0.5040	0.9477
Noise28 vs Omniglot	0.4946	0.8139	0.8140	0.9536
NotMNIST vs Constant28	0.1440	0.3586	0.3586	1.0000
NotMNIST vs FashionMNIST	0.1436	0.3346	0.3346	0.9998
NotMNIST vs KMNIST	0.1064	0.3201	0.3202	0.9993
NotMNIST vs MNIST	0.1581	0.3402	0.3403	0.9995
NotMNIST vs Noise28	0.0537	0.3116	0.3117	0.9996
NotMNIST vs Omniglot	0.1159	0.6568	0.6569	1.0000
Omniglot vs Constant28	0.5892	0.4467	0.4467	0.5767
Omniglot vs FashionMNIST	0.2673	0.3185	0.3185	0.9456
Omniglot vs KMNIST	0.2034	0.2998	0.2998	0.9817
Omniglot vs MNIST	0.3385	0.3393	0.3394	0.9704
Omniglot vs Noise28	0.0002	0.2668	0.2669	1.0000
Omniglot vs NotMNIST	0.0291	0.2705	0.2705	0.9973
SVHN vs CIFAR-10	0.1776	0.5588	0.5589	0.9996
SVHN vs CIFAR-100	0.1760	0.9102	0.9103	1.0000
SVHN vs CelebA	0.2559	0.4391	0.4391	0.9991
SVHN vs Constant	0.0524	0.5160	0.5160	1.0000
SVHN vs LSUN	0.1496	0.5447	0.5448	0.9996
SVHN vs Noise	0.1303	0.5410	0.5410	1.0000
SVHN vs TinyImagenet	0.1738	0.5610	0.5611	0.9994
SVHN vs iSUN	0.1417	0.5673	0.5673	0.9998
TinyImagenet vs CelebA	0.3251	0.2406	0.2407	0.9780
TinyImagenet vs Constant	0.7216	0.7494	0.7494	0.8852
TinyImagenet vs LSUN	0.2371	0.3483	0.3484	0.9734
TinyImagenet vs Noise	0.0001	0.3032	0.3032	1.0000
TinyImagenet vs SVHN	0.4577	0.3401	0.3402	0.9966
TinyImagenet vs iSUN	0.2594	0.3796	0.3797	0.9685
Average	0.4122	0.5177	0.5178	0.9366

Table 94: The detailed performance for indicator $-R$ based on model VIB

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4806	0.3626	0.3627	0.9639
CIFAR-10 vs Constant	0.8072	0.8481	0.8481	0.7351
CIFAR-10 vs LSUN	0.7063	0.7177	0.7178	0.8583
CIFAR-10 vs Noise	0.5816	0.6269	0.6270	0.9562
CIFAR-10 vs SVHN	0.7200	0.5858	0.5859	0.8900
CIFAR-10 vs iSUN	0.6964	0.7282	0.7282	0.8644
CIFAR-100 vs CelebA	0.4594	0.3744	0.3744	0.9744
CIFAR-100 vs Constant	0.6304	0.6677	0.6677	0.9397
CIFAR-100 vs LSUN	0.6809	0.7218	0.7218	0.9188
CIFAR-100 vs Noise	0.7394	0.8033	0.8033	0.9594
CIFAR-100 vs SVHN	0.6732	0.5433	0.5433	0.9347
CIFAR-100 vs iSUN	0.6571	0.7099	0.7099	0.9336
CelebA vs CIFAR-10	0.5372	0.7427	0.6946	1.0000
CelebA vs CIFAR-100	0.5317	0.7384	0.6904	1.0000
CelebA vs Constant	0.4995	0.7232	0.6772	1.0000
CelebA vs LSUN	0.5725	0.7630	0.7127	1.0000
CelebA vs Noise	0.6217	0.8239	0.7719	1.0000
CelebA vs SVHN	0.4787	0.5072	0.4291	1.0000
CelebA vs TinyImagenet	0.4909	0.7225	0.6775	1.0000
CelebA vs iSUN	0.5394	0.7648	0.7202	1.0000
Constant vs CIFAR-10	0.3414	0.4284	0.4285	0.9992
Constant vs CIFAR-100	0.3651	0.4487	0.4488	0.9969
Constant vs CelebA	0.3719	0.3311	0.3312	1.0000
Constant vs LSUN	0.3120	0.4111	0.4112	0.9993
Constant vs Noise	0.7522	0.8560	0.8560	1.0000
Constant vs SVHN	0.4296	0.2880	0.2880	1.0000
Constant vs TinyImagenet	0.3840	0.4801	0.4802	0.9979
Constant vs iSUN	0.3367	0.4595	0.4596	0.9992
Constant28 vs FashionMNIST	0.2707	0.4318	0.4332	0.9849
Constant28 vs KMNIST	0.1874	0.3777	0.3796	0.9998
Constant28 vs MNIST	0.1192	0.3602	0.3617	1.0000
Constant28 vs Noise28	0.5164	0.7159	0.7162	1.0000
Constant28 vs NotMNIST	0.4127	0.5216	0.5228	0.9286
Constant28 vs Omniglot	0.0739	0.3640	0.3672	1.0000
FashionMNIST vs Constant28	0.9735	0.9819	0.9819	0.2823
FashionMNIST vs KMNIST	0.9531	0.9602	0.9603	0.3081
FashionMNIST vs MNIST	0.9065	0.9131	0.9131	0.5198
FashionMNIST vs Noise28	0.8850	0.9071	0.9071	0.6678
FashionMNIST vs NotMNIST	0.9186	0.9240	0.9240	0.4654
FashionMNIST vs Omniglot	0.9159	0.9378	0.9378	0.5052
KMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
KMNIST vs FashionMNIST	0.9563	0.9657	0.9657	0.3074
KMNIST vs MNIST	0.9296	0.9434	0.9434	0.4631
KMNIST vs Noise28	0.9894	0.9912	0.9912	0.0525
KMNIST vs NotMNIST	0.9374	0.9481	0.9481	0.4011
KMNIST vs Omniglot	0.9377	0.9550	0.9550	0.3929
MNIST vs Constant28	0.9991	0.9993	0.9993	0.0000
MNIST vs FashionMNIST	0.9895	0.9900	0.9900	0.0410
MNIST vs KMNIST	0.9649	0.9640	0.9640	0.1477
MNIST vs Noise28	0.9997	0.9998	0.9998	0.0000
MNIST vs NotMNIST	0.9478	0.9482	0.9482	0.2283
MNIST vs Omniglot	0.9510	0.9553	0.9553	0.1964
Noise vs CIFAR-10	0.6187	0.6106	0.6107	0.9086
Noise vs CIFAR-100	0.6376	0.6334	0.6335	0.8904
Noise vs CelebA	0.6220	0.4548	0.4549	0.9065
Noise vs Constant	0.8737	0.8980	0.8980	0.6358
Noise vs LSUN	0.5730	0.5630	0.5631	0.9164
Noise vs SVHN	0.7121	0.5288	0.5288	0.8891
Noise vs TinyImagenet	0.6375	0.6321	0.6322	0.8867

Noise vs iSUN	0.5851	0.6019	0.6020	0.9141
Noise28 vs Constant28	0.7694	0.8162	0.8162	0.7344
Noise28 vs FashionMNIST	0.6698	0.6437	0.6437	0.7983
Noise28 vs KMNIST	0.6025	0.5872	0.5872	0.8614
Noise28 vs MNIST	0.5918	0.5837	0.5838	0.8670
Noise28 vs NotMNIST	0.6355	0.6221	0.6221	0.8562
Noise28 vs Omniglot	0.6616	0.6923	0.6923	0.7898
NotMNIST vs Constant28	0.9534	0.9672	0.9672	0.4428
NotMNIST vs FashionMNIST	0.9235	0.9346	0.9347	0.4597
NotMNIST vs KMNIST	0.9437	0.9538	0.9538	0.3720
NotMNIST vs MNIST	0.9118	0.9095	0.9095	0.4749
NotMNIST vs Noise28	0.9714	0.9780	0.9780	0.1814
NotMNIST vs Omniglot	0.9510	0.9649	0.9649	0.3128
Omniglot vs Constant28	0.8435	0.8961	0.8961	0.9511
Omniglot vs FashionMNIST	0.4813	0.4324	0.4325	0.9681
Omniglot vs KMNIST	0.5165	0.4447	0.4448	0.9251
Omniglot vs MNIST	0.5618	0.5101	0.5102	0.9124
Omniglot vs Noise28	0.8049	0.8079	0.8079	0.8299
Omniglot vs NotMNIST	0.6551	0.5674	0.5675	0.8975
SVHN vs CIFAR-10	0.9281	0.9712	0.9712	0.4074
SVHN vs CIFAR-100	0.9258	0.9704	0.9704	0.4154
SVHN vs CelebA	0.9484	0.9665	0.9665	0.3463
SVHN vs Constant	0.9213	0.9698	0.9698	0.3870
SVHN vs LSUN	0.9218	0.9681	0.9681	0.4375
SVHN vs Noise	0.9069	0.9622	0.9622	0.4925
SVHN vs TinyImagenet	0.9292	0.9725	0.9725	0.3974
SVHN vs iSUN	0.9248	0.9725	0.9725	0.4111
TinyImagenet vs CelebA	0.4153	0.3260	0.3261	0.9912
TinyImagenet vs Constant	0.4499	0.4801	0.4802	0.8992
TinyImagenet vs LSUN	0.5440	0.5682	0.5683	0.9668
TinyImagenet vs Noise	0.4161	0.5651	0.5652	0.9997
TinyImagenet vs SVHN	0.4960	0.3184	0.3185	0.9819
TinyImagenet vs iSUN	0.5321	0.5824	0.5824	0.9638
Average	0.6859	0.7181	0.7137	0.7227

Table 95: The detailed performance for indicator Deconf-C of h in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5104	0.4400	0.4400	0.9991
CIFAR-10 vs Constant	0.5745	0.7036	0.7036	1.0000
CIFAR-10 vs LSUN	0.6000	0.6373	0.6373	0.9966
CIFAR-10 vs Noise	0.2699	0.3942	0.3942	1.0000
CIFAR-10 vs SVHN	0.5339	0.4513	0.4513	1.0000
CIFAR-10 vs iSUN	0.5598	0.6159	0.6159	0.9963
CIFAR-100 vs CelebA	0.6580	0.5003	0.5003	0.8469
CIFAR-100 vs Constant	0.4894	0.5821	0.5821	0.9999
CIFAR-100 vs LSUN	0.6529	0.6633	0.6633	0.9702
CIFAR-100 vs Noise	0.8931	0.9106	0.9106	0.6502
CIFAR-100 vs SVHN	0.1977	0.1737	0.1735	0.9871
CIFAR-100 vs iSUN	0.6204	0.6550	0.6551	0.9717
CelebA vs CIFAR-10	0.5132	0.6828	0.6810	0.9753
CelebA vs CIFAR-100	0.5093	0.6702	0.6712	0.9497
CelebA vs Constant	0.3667	0.5668	0.5809	0.9970
CelebA vs LSUN	0.5595	0.7144	0.7112	0.9842
CelebA vs Noise	0.5473	0.8118	0.7955	1.0000
CelebA vs SVHN	0.4353	0.3743	0.3830	0.9593
CelebA vs TinyImagenet	0.4450	0.6353	0.6397	0.9871
CelebA vs iSUN	0.5130	0.7195	0.7153	0.9935
Constant vs CIFAR-10	0.4548	0.5740	0.5740	0.9987
Constant vs CIFAR-100	0.4169	0.5142	0.5142	0.9950
Constant vs CelebA	0.3973	0.4145	0.4146	1.0000
Constant vs LSUN	0.4381	0.5643	0.5643	0.9994
Constant vs Noise	0.8199	0.8996	0.8996	1.0000
Constant vs SVHN	0.5555	0.4368	0.4369	0.9984
Constant vs TinyImagenet	0.4136	0.5218	0.5219	0.9975
Constant vs iSUN	0.4560	0.5976	0.5976	0.9990
Constant28 vs FashionMNIST	0.5341	0.6729	0.6734	1.0000
Constant28 vs KMNIST	0.6601	0.7791	0.7794	0.9971
Constant28 vs MNIST	0.6341	0.7781	0.7784	1.0000
Constant28 vs Noise28	0.4859	0.6974	0.6978	1.0000
Constant28 vs NotMNIST	0.5234	0.5773	0.5785	0.9946
Constant28 vs Omniglot	0.6111	0.7907	0.7910	1.0000
FashionMNIST vs Constant28	0.7224	0.8172	0.8172	1.0000
FashionMNIST vs KMNIST	0.7599	0.8175	0.8175	0.9988
FashionMNIST vs MNIST	0.7300	0.7942	0.7942	1.0000
FashionMNIST vs Noise28	0.9037	0.9453	0.9453	0.9955
FashionMNIST vs NotMNIST	0.7932	0.8263	0.8263	0.9840
FashionMNIST vs Omniglot	0.7690	0.8523	0.8523	0.9958
KMNIST vs Constant28	0.6916	0.8163	0.8163	1.0000
KMNIST vs FashionMNIST	0.5932	0.7272	0.7272	1.0000
KMNIST vs MNIST	0.5643	0.6565	0.6565	1.0000
KMNIST vs Noise28	0.6020	0.7395	0.7395	1.0000
KMNIST vs NotMNIST	0.6364	0.7049	0.7050	0.9998
KMNIST vs Omniglot	0.5838	0.7431	0.7431	1.0000
MNIST vs Constant28	0.6365	0.7916	0.7916	1.0000
MNIST vs FashionMNIST	0.6555	0.7634	0.7634	1.0000
MNIST vs KMNIST	0.6491	0.7383	0.7383	1.0000
MNIST vs Noise28	0.6090	0.7670	0.7670	1.0000
MNIST vs NotMNIST	0.7036	0.7648	0.7648	1.0000
MNIST vs Omniglot	0.6063	0.7424	0.7424	1.0000
Noise vs CIFAR-10	0.2754	0.4044	0.4043	0.9976
Noise vs CIFAR-100	0.2822	0.4122	0.4120	0.9982
Noise vs CelebA	0.4375	0.3442	0.3440	0.9960
Noise vs Constant	0.2561	0.4452	0.4452	1.0000
Noise vs LSUN	0.3386	0.4297	0.4296	0.9932
Noise vs SVHN	0.2345	0.2201	0.2201	0.9992
Noise vs TinyImagenet	0.2725	0.4197	0.4197	0.9990

Noise vs iSUN	0.3163	0.4495	0.4495	0.9944
Noise28 vs Constant28	0.3999	0.4596	0.4596	0.9330
Noise28 vs FashionMNIST	0.4154	0.4645	0.4644	0.9474
Noise28 vs KMNIST	0.4535	0.4654	0.4649	0.9341
Noise28 vs MNIST	0.4494	0.4688	0.4684	0.9299
Noise28 vs NotMNIST	0.5722	0.5279	0.5273	0.8103
Noise28 vs Omniglot	0.3530	0.4848	0.4848	0.9736
NotMNIST vs Constant28	0.6034	0.7377	0.7376	1.0000
NotMNIST vs FashionMNIST	0.6180	0.6757	0.6758	1.0000
NotMNIST vs KMNIST	0.5051	0.5189	0.5191	1.0000
NotMNIST vs MNIST	0.5025	0.5581	0.5582	1.0000
NotMNIST vs Noise28	0.5963	0.6958	0.6958	1.0000
NotMNIST vs Omniglot	0.4996	0.5913	0.5915	1.0000
Omniglot vs Constant28	0.7294	0.6297	0.6298	0.4512
Omniglot vs FashionMNIST	0.5047	0.4270	0.4266	0.7727
Omniglot vs KMNIST	0.5806	0.4683	0.4673	0.8026
Omniglot vs MNIST	0.5928	0.4679	0.4667	0.7947
Omniglot vs Noise28	0.8543	0.7860	0.7861	0.4765
Omniglot vs NotMNIST	0.8096	0.6708	0.6704	0.4059
SVHN vs CIFAR-10	0.6780	0.8685	0.8685	0.9986
SVHN vs CIFAR-100	0.6618	0.8598	0.8598	0.9986
SVHN vs CelebA	0.7175	0.8217	0.8217	0.9995
SVHN vs Constant	0.6166	0.8724	0.8724	1.0000
SVHN vs LSUN	0.6691	0.8586	0.8586	0.9976
SVHN vs Noise	0.6193	0.8545	0.8545	1.0000
SVHN vs TinyImagenet	0.6725	0.8696	0.8696	0.9992
SVHN vs iSUN	0.6840	0.8825	0.8825	0.9984
TinyImagenet vs CelebA	0.3009	0.2349	0.2350	0.9955
TinyImagenet vs Constant	0.9069	0.8948	0.8948	0.3188
TinyImagenet vs LSUN	0.6124	0.6085	0.6085	0.9928
TinyImagenet vs Noise	0.9455	0.9696	0.9696	0.6570
TinyImagenet vs SVHN	0.1953	0.1718	0.1719	0.9972
TinyImagenet vs iSUN	0.6412	0.6570	0.6570	0.9805
Average	0.5591	0.6345	0.6345	0.9496

Table 96: The detailed performance for indicator Deconf-C of g in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4918	0.5562	0.3291	0.9535
CIFAR-10 vs Constant	0.6956	0.7560	0.6412	0.8156
CIFAR-10 vs LSUN	0.6249	0.7209	0.5871	0.9005
CIFAR-10 vs Noise	0.5903	0.7061	0.5654	0.9364
CIFAR-10 vs SVHN	0.6232	0.5668	0.3541	0.9095
CIFAR-10 vs iSUN	0.6202	0.7368	0.6108	0.9078
CIFAR-100 vs CelebA	0.5283	0.4440	0.3590	0.9552
CIFAR-100 vs Constant	0.5472	0.6087	0.5582	0.9552
CIFAR-100 vs LSUN	0.5745	0.6287	0.5842	0.9466
CIFAR-100 vs Noise	0.4675	0.5523	0.4787	0.9666
CIFAR-100 vs SVHN	0.6483	0.4928	0.4363	0.8884
CIFAR-100 vs iSUN	0.5686	0.6467	0.6032	0.9477
CelebA vs CIFAR-10	0.5132	0.6911	0.6730	1.0000
CelebA vs CIFAR-100	0.5080	0.6662	0.6670	0.9999
CelebA vs Constant	0.6499	0.7911	0.7465	0.9986
CelebA vs LSUN	0.4979	0.6680	0.6687	0.9998
CelebA vs Noise	0.5530	0.8444	0.7119	1.0000
CelebA vs SVHN	0.5589	0.4544	0.4628	1.0000
CelebA vs TinyImagenet	0.5637	0.7578	0.7048	0.9994
CelebA vs iSUN	0.5278	0.7574	0.7094	0.9999
Constant vs CIFAR-10	0.3610	0.4382	0.4383	0.9986
Constant vs CIFAR-100	0.3598	0.4385	0.4386	0.9981
Constant vs CelebA	0.3559	0.3284	0.3285	1.0000
Constant vs LSUN	0.3201	0.4211	0.4212	0.9991
Constant vs Noise	0.8032	0.8834	0.8834	1.0000
Constant vs SVHN	0.5031	0.3301	0.3302	0.9999
Constant vs TinyImagenet	0.3801	0.4760	0.4761	0.9986
Constant vs iSUN	0.3523	0.4731	0.4732	0.9993
Constant28 vs FashionMNIST	0.3017	0.4435	0.4450	0.9792
Constant28 vs KMNIST	0.1989	0.3829	0.3847	0.9995
Constant28 vs MNIST	0.1238	0.3622	0.3637	1.0000
Constant28 vs Noise28	0.5150	0.7155	0.7159	1.0000
Constant28 vs NotMNIST	0.4357	0.5366	0.5378	0.9232
Constant28 vs Omniglot	0.0749	0.3687	0.3707	1.0000
FashionMNIST vs Constant28	0.7407	0.7882	0.6820	0.7417
FashionMNIST vs KMNIST	0.7482	0.7885	0.6767	0.5757
FashionMNIST vs MNIST	0.7095	0.7664	0.6410	0.6375
FashionMNIST vs Noise28	0.4632	0.6662	0.4768	0.9009
FashionMNIST vs NotMNIST	0.6939	0.7579	0.6264	0.6411
FashionMNIST vs Omniglot	0.7051	0.7948	0.6845	0.6380
KMNIST vs Constant28	0.9904	0.9937	0.9937	0.0000
KMNIST vs FashionMNIST	0.7706	0.8337	0.6942	0.4918
KMNIST vs MNIST	0.7337	0.8156	0.6591	0.5538
KMNIST vs Noise28	0.8798	0.9001	0.8212	0.2729
KMNIST vs NotMNIST	0.7398	0.8183	0.6643	0.5390
KMNIST vs Omniglot	0.7410	0.8436	0.7114	0.5420
MNIST vs Constant28	0.9583	0.9617	0.9271	0.0744
MNIST vs FashionMNIST	0.8081	0.8589	0.7253	0.3673
MNIST vs KMNIST	0.7277	0.8202	0.6491	0.5261
MNIST vs Noise28	0.9924	0.9935	0.9893	0.0084
MNIST vs NotMNIST	0.6958	0.8071	0.6231	0.5895
MNIST vs Omniglot	0.7157	0.8396	0.6869	0.5499
Noise vs CIFAR-10	0.5817	0.6327	0.5833	0.9618
Noise vs CIFAR-100	0.5851	0.6362	0.5883	0.9645
Noise vs CelebA	0.5320	0.4519	0.3656	0.9772
Noise vs Constant	0.6662	0.7223	0.7053	0.9712
Noise vs LSUN	0.5451	0.6041	0.5449	0.9607
Noise vs SVHN	0.6268	0.4842	0.4207	0.9713
Noise vs TinyImagenet	0.5827	0.6375	0.5890	0.9691

Noise vs iSUN	0.5579	0.6368	0.5841	0.9622
Noise28 vs Constant28	0.6127	0.7075	0.7071	0.9837
Noise28 vs FashionMNIST	0.5655	0.6144	0.5625	0.9677
Noise28 vs KMNIST	0.5508	0.6023	0.5465	0.9503
Noise28 vs MNIST	0.5537	0.6069	0.5539	0.9583
Noise28 vs NotMNIST	0.5328	0.5887	0.5285	0.9542
Noise28 vs Omniglot	0.5909	0.6816	0.6451	0.9592
NotMNIST vs Constant28	0.6868	0.7960	0.6195	0.6270
NotMNIST vs FashionMNIST	0.7436	0.8211	0.6680	0.5307
NotMNIST vs KMNIST	0.8083	0.8549	0.7332	0.4097
NotMNIST vs MNIST	0.7671	0.8328	0.6907	0.4966
NotMNIST vs Noise28	0.8624	0.8886	0.7982	0.3048
NotMNIST vs Omniglot	0.8423	0.8945	0.8082	0.3460
Omniglot vs Constant28	0.6746	0.7336	0.7336	0.9896
Omniglot vs FashionMNIST	0.4856	0.4349	0.4312	0.9677
Omniglot vs KMNIST	0.4776	0.4211	0.4169	0.9269
Omniglot vs MNIST	0.5506	0.4834	0.4805	0.8800
Omniglot vs Noise28	0.5922	0.5949	0.5949	0.9683
Omniglot vs NotMNIST	0.4729	0.4379	0.4350	0.9727
SVHN vs CIFAR-10	0.7245	0.9066	0.8297	0.6101
SVHN vs CIFAR-100	0.7305	0.9083	0.8330	0.6059
SVHN vs CelebA	0.7074	0.8343	0.6962	0.6412
SVHN vs Constant	0.6955	0.8984	0.8133	0.6266
SVHN vs LSUN	0.7155	0.9041	0.8248	0.6284
SVHN vs Noise	0.7064	0.9015	0.8199	0.6403
SVHN vs TinyImagenet	0.7318	0.9101	0.8363	0.6008
SVHN vs iSUN	0.7246	0.9151	0.8452	0.6171
TinyImagenet vs CelebA	0.6155	0.5600	0.4163	0.9187
TinyImagenet vs Constant	0.2950	0.5600	0.3920	0.9931
TinyImagenet vs LSUN	0.4659	0.6132	0.4747	0.9581
TinyImagenet vs Noise	0.2814	0.5567	0.3870	0.9969
TinyImagenet vs SVHN	0.6110	0.5118	0.3499	0.9162
TinyImagenet vs iSUN	0.4528	0.6292	0.4948	0.9658
Average	0.5952	0.6750	0.6015	0.8074

Table 97: The detailed performance for indicator Deconf-C of f in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4475	0.3539	0.3539	0.9630
CIFAR-10 vs Constant	0.9026	0.9189	0.9189	0.4642
CIFAR-10 vs LSUN	0.7279	0.7259	0.7260	0.8039
CIFAR-10 vs Noise	0.6134	0.6442	0.6442	0.9205
CIFAR-10 vs SVHN	0.6930	0.5398	0.5398	0.9241
CIFAR-10 vs iSUN	0.7134	0.7344	0.7344	0.8234
CIFAR-100 vs CelebA	0.4610	0.3780	0.3781	0.9734
CIFAR-100 vs Constant	0.7187	0.7340	0.7340	0.8607
CIFAR-100 vs LSUN	0.6991	0.7347	0.7348	0.9051
CIFAR-100 vs Noise	0.7952	0.8433	0.8433	0.9044
CIFAR-100 vs SVHN	0.6341	0.5025	0.5025	0.9563
CIFAR-100 vs iSUN	0.6698	0.7166	0.7166	0.9222
CelebA vs CIFAR-10	0.5391	0.7444	0.6957	1.0000
CelebA vs CIFAR-100	0.5336	0.7403	0.6917	1.0000
CelebA vs Constant	0.5025	0.7252	0.6783	1.0000
CelebA vs LSUN	0.5725	0.7633	0.7126	1.0000
CelebA vs Noise	0.6126	0.8205	0.7690	1.0000
CelebA vs SVHN	0.4792	0.5083	0.4290	1.0000
CelebA vs TinyImagenet	0.4902	0.7223	0.6767	1.0000
CelebA vs iSUN	0.5407	0.7659	0.7208	1.0000
Constant vs CIFAR-10	0.3396	0.4267	0.4268	0.9992
Constant vs CIFAR-100	0.3635	0.4469	0.4469	0.9969
Constant vs CelebA	0.3710	0.3294	0.3294	1.0000
Constant vs LSUN	0.3102	0.4094	0.4095	0.9993
Constant vs Noise	0.7489	0.8525	0.8525	1.0000
Constant vs SVHN	0.4265	0.2853	0.2854	1.0000
Constant vs TinyImagenet	0.3824	0.4781	0.4782	0.9980
Constant vs iSUN	0.3348	0.4576	0.4576	0.9993
Constant28 vs FashionMNIST	0.2694	0.4314	0.4328	0.9851
Constant28 vs KMNIST	0.1870	0.3776	0.3795	0.9997
Constant28 vs MNIST	0.1191	0.3602	0.3616	1.0000
Constant28 vs Noise28	0.5159	0.7156	0.7160	1.0000
Constant28 vs NotMNIST	0.4115	0.5211	0.5223	0.9292
Constant28 vs Omniglot	0.0738	0.3640	0.3672	1.0000
FashionMNIST vs Constant28	0.9884	0.9920	0.9920	0.0000
FashionMNIST vs KMNIST	0.9653	0.9685	0.9685	0.2016
FashionMNIST vs MNIST	0.9239	0.9230	0.9230	0.3742
FashionMNIST vs Noise28	0.9014	0.9157	0.9157	0.5583
FashionMNIST vs NotMNIST	0.9360	0.9353	0.9353	0.3183
FashionMNIST vs Omniglot	0.9321	0.9462	0.9462	0.3615
KMNIST vs Constant28	0.9999	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9562	0.9657	0.9657	0.3079
KMNIST vs MNIST	0.9297	0.9432	0.9432	0.4603
KMNIST vs Noise28	0.9893	0.9912	0.9912	0.0536
KMNIST vs NotMNIST	0.9387	0.9490	0.9490	0.3899
KMNIST vs Omniglot	0.9375	0.9547	0.9547	0.3922
MNIST vs Constant28	0.9993	0.9994	0.9994	0.0000
MNIST vs FashionMNIST	0.9891	0.9896	0.9896	0.0436
MNIST vs KMNIST	0.9638	0.9626	0.9626	0.1509
MNIST vs Noise28	0.9997	0.9998	0.9998	0.0000
MNIST vs NotMNIST	0.9479	0.9478	0.9478	0.2254
MNIST vs Omniglot	0.9497	0.9538	0.9538	0.2005
Noise vs CIFAR-10	0.6019	0.5964	0.5964	0.9071
Noise vs CIFAR-100	0.6262	0.6232	0.6233	0.8871
Noise vs CelebA	0.6268	0.4611	0.4611	0.8931
Noise vs Constant	0.9872	0.9889	0.9889	0.0851
Noise vs LSUN	0.5655	0.5579	0.5579	0.9145
Noise vs SVHN	0.7194	0.5243	0.5243	0.8539
Noise vs TinyImagenet	0.6182	0.6147	0.6148	0.8874

Noise vs iSUN	0.5706	0.5916	0.5917	0.9157
Noise28 vs Constant28	0.9066	0.9254	0.9254	0.4609
Noise28 vs FashionMNIST	0.7197	0.6908	0.6908	0.7259
Noise28 vs KMNIST	0.6722	0.6485	0.6485	0.7862
Noise28 vs MNIST	0.6739	0.6567	0.6567	0.7793
Noise28 vs NotMNIST	0.7127	0.6888	0.6889	0.7356
Noise28 vs Omniglot	0.7391	0.7596	0.7596	0.6802
NotMNIST vs Constant28	0.9579	0.9700	0.9700	0.4180
NotMNIST vs FashionMNIST	0.9179	0.9295	0.9295	0.4810
NotMNIST vs KMNIST	0.9419	0.9517	0.9518	0.3786
NotMNIST vs MNIST	0.9083	0.9038	0.9038	0.4786
NotMNIST vs Noise28	0.9670	0.9747	0.9747	0.2145
NotMNIST vs Omniglot	0.9497	0.9635	0.9635	0.3164
Omniglot vs Constant28	0.9163	0.9438	0.9438	0.9205
Omniglot vs FashionMNIST	0.5172	0.4534	0.4535	0.9547
Omniglot vs KMNIST	0.5325	0.4551	0.4552	0.9172
Omniglot vs MNIST	0.5815	0.5248	0.5249	0.9053
Omniglot vs Noise28	0.8471	0.8465	0.8465	0.7171
Omniglot vs NotMNIST	0.7018	0.6035	0.6036	0.8404
SVHN vs CIFAR-10	0.9343	0.9727	0.9727	0.3333
SVHN vs CIFAR-100	0.9301	0.9707	0.9707	0.3489
SVHN vs CelebA	0.9598	0.9728	0.9728	0.2462
SVHN vs Constant	0.9391	0.9766	0.9766	0.3313
SVHN vs LSUN	0.9300	0.9703	0.9703	0.3506
SVHN vs Noise	0.8936	0.9556	0.9556	0.5100
SVHN vs TinyImagenet	0.9330	0.9728	0.9728	0.3389
SVHN vs iSUN	0.9304	0.9735	0.9735	0.3406
TinyImagenet vs CelebA	0.4240	0.3335	0.3335	0.9909
TinyImagenet vs Constant	0.5047	0.5237	0.5238	0.8547
TinyImagenet vs LSUN	0.5658	0.5863	0.5864	0.9614
TinyImagenet vs Noise	0.4592	0.5989	0.5989	0.9997
TinyImagenet vs SVHN	0.4941	0.3139	0.3139	0.9811
TinyImagenet vs iSUN	0.5495	0.5961	0.5961	0.9608
Average	0.6997	0.7280	0.7236	0.6844

Table 98: The detailed performance for indicator Deconf-C* of h with epsilon 0.0025 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4227	0.3553	0.3553	0.9632
CIFAR-10 vs Constant	0.9494	0.9569	0.9569	0.3234
CIFAR-10 vs LSUN	0.7268	0.7209	0.7209	0.7864
CIFAR-10 vs Noise	0.6195	0.6496	0.6496	0.9071
CIFAR-10 vs SVHN	0.6854	0.5170	0.5170	0.9270
CIFAR-10 vs iSUN	0.7112	0.7301	0.7301	0.8110
CIFAR-100 vs CelebA	0.4611	0.3806	0.3807	0.9732
CIFAR-100 vs Constant	0.7839	0.7875	0.7875	0.7640
CIFAR-100 vs LSUN	0.7093	0.7424	0.7425	0.8963
CIFAR-100 vs Noise	0.8335	0.8720	0.8720	0.8402
CIFAR-100 vs SVHN	0.6098	0.4729	0.4729	0.9559
CIFAR-100 vs iSUN	0.6758	0.7193	0.7194	0.9160
CelebA vs CIFAR-10	0.5392	0.7452	0.6960	1.0000
CelebA vs CIFAR-100	0.5337	0.7413	0.6922	1.0000
CelebA vs Constant	0.5054	0.7273	0.6797	1.0000
CelebA vs LSUN	0.5720	0.7631	0.7121	1.0000
CelebA vs Noise	0.6029	0.8167	0.7662	1.0000
CelebA vs SVHN	0.4800	0.5101	0.4293	1.0000
CelebA vs TinyImagenet	0.4898	0.7229	0.6766	1.0000
CelebA vs iSUN	0.5407	0.7666	0.7210	1.0000
Constant vs CIFAR-10	0.3377	0.4251	0.4251	0.9992
Constant vs CIFAR-100	0.3618	0.4450	0.4451	0.9969
Constant vs CelebA	0.3700	0.3276	0.3277	1.0000
Constant vs LSUN	0.3084	0.4077	0.4077	0.9994
Constant vs Noise	0.7452	0.8486	0.8486	1.0000
Constant vs SVHN	0.4235	0.2827	0.2828	1.0000
Constant vs TinyImagenet	0.3809	0.4761	0.4762	0.9980
Constant vs iSUN	0.3329	0.4556	0.4557	0.9993
Constant28 vs FashionMNIST	0.2682	0.4311	0.4325	0.9857
Constant28 vs KMNIST	0.1866	0.3775	0.3793	0.9997
Constant28 vs MNIST	0.1190	0.3601	0.3616	1.0000
Constant28 vs Noise28	0.5154	0.7154	0.7157	1.0000
Constant28 vs NotMNIST	0.4104	0.5207	0.5219	0.9306
Constant28 vs Omniglot	0.0738	0.3640	0.3672	1.0000
FashionMNIST vs Constant28	0.9939	0.9958	0.9958	0.0000
FashionMNIST vs KMNIST	0.9708	0.9725	0.9725	0.1549
FashionMNIST vs MNIST	0.9326	0.9279	0.9279	0.3017
FashionMNIST vs Noise28	0.9096	0.9198	0.9198	0.4929
FashionMNIST vs NotMNIST	0.9451	0.9419	0.9419	0.2552
FashionMNIST vs Omniglot	0.9399	0.9503	0.9503	0.3005
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9561	0.9657	0.9657	0.3083
KMNIST vs MNIST	0.9297	0.9430	0.9430	0.4577
KMNIST vs Noise28	0.9893	0.9911	0.9911	0.0552
KMNIST vs NotMNIST	0.9402	0.9500	0.9500	0.3803
KMNIST vs Omniglot	0.9373	0.9545	0.9545	0.3923
MNIST vs Constant28	0.9994	0.9995	0.9995	0.0000
MNIST vs FashionMNIST	0.9888	0.9892	0.9892	0.0446
MNIST vs KMNIST	0.9626	0.9610	0.9610	0.1531
MNIST vs Noise28	0.9998	0.9998	0.9998	0.0000
MNIST vs NotMNIST	0.9480	0.9474	0.9474	0.2203
MNIST vs Omniglot	0.9483	0.9522	0.9522	0.2037
Noise vs CIFAR-10	0.5888	0.5917	0.5918	0.9113
Noise vs CIFAR-100	0.6153	0.6185	0.6186	0.8923
Noise vs CelebA	0.6188	0.4617	0.4618	0.8998
Noise vs Constant	0.9987	0.9989	0.9989	0.0000
Noise vs LSUN	0.5567	0.5547	0.5548	0.9217
Noise vs SVHN	0.7175	0.5184	0.5184	0.8248
Noise vs TinyImagenet	0.6005	0.6056	0.6056	0.8989

Noise vs iSUN	0.5577	0.5866	0.5867	0.9237
Noise28 vs Constant28	0.9689	0.9755	0.9755	0.3059
Noise28 vs FashionMNIST	0.7583	0.7309	0.7309	0.6837
Noise28 vs KMNIST	0.7260	0.7012	0.7013	0.7341
Noise28 vs MNIST	0.7378	0.7198	0.7198	0.7094
Noise28 vs NotMNIST	0.7694	0.7441	0.7441	0.6589
Noise28 vs Omniglot	0.7965	0.8135	0.8135	0.6061
NotMNIST vs Constant28	0.9617	0.9724	0.9724	0.3774
NotMNIST vs FashionMNIST	0.9120	0.9242	0.9242	0.5034
NotMNIST vs KMNIST	0.9398	0.9493	0.9494	0.3837
NotMNIST vs MNIST	0.9042	0.8975	0.8975	0.4839
NotMNIST vs Noise28	0.9620	0.9709	0.9709	0.2504
NotMNIST vs Omniglot	0.9480	0.9617	0.9618	0.3203
Omniglot vs Constant28	0.9530	0.9689	0.9689	0.2432
Omniglot vs FashionMNIST	0.5512	0.4740	0.4741	0.9379
Omniglot vs KMNIST	0.5471	0.4651	0.4652	0.9067
Omniglot vs MNIST	0.6000	0.5387	0.5387	0.8950
Omniglot vs Noise28	0.8785	0.8767	0.8767	0.5996
Omniglot vs NotMNIST	0.7398	0.6356	0.6357	0.7532
SVHN vs CIFAR-10	0.9308	0.9707	0.9707	0.3230
SVHN vs CIFAR-100	0.9248	0.9673	0.9673	0.3402
SVHN vs CelebA	0.9623	0.9741	0.9741	0.2015
SVHN vs Constant	0.9471	0.9797	0.9797	0.3006
SVHN vs LSUN	0.9281	0.9689	0.9689	0.3298
SVHN vs Noise	0.8695	0.9449	0.9449	0.5660
SVHN vs TinyImagenet	0.9273	0.9696	0.9696	0.3375
SVHN vs iSUN	0.9261	0.9713	0.9713	0.3313
TinyImagenet vs CelebA	0.4319	0.3402	0.3403	0.9894
TinyImagenet vs Constant	0.5568	0.5694	0.5694	0.8222
TinyImagenet vs LSUN	0.5849	0.6027	0.6028	0.9558
TinyImagenet vs Noise	0.5001	0.6309	0.6309	0.9995
TinyImagenet vs SVHN	0.4970	0.3129	0.3129	0.9772
TinyImagenet vs iSUN	0.5647	0.6085	0.6086	0.9561
Average	0.7069	0.7344	0.7299	0.6603

Table 99: The detailed performance for indicator Deconf-C* with h epsilon 0.005 of in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4201	0.3822	0.3822	0.9597
CIFAR-10 vs Constant	0.9809	0.9828	0.9828	0.1323
CIFAR-10 vs LSUN	0.6826	0.6830	0.6830	0.8146
CIFAR-10 vs Noise	0.5747	0.6299	0.6299	0.9325
CIFAR-10 vs SVHN	0.6916	0.5228	0.5228	0.9117
CIFAR-10 vs iSUN	0.6716	0.6999	0.6999	0.8353
CIFAR-100 vs CelebA	0.4621	0.3846	0.3847	0.9758
CIFAR-100 vs Constant	0.8622	0.8594	0.8594	0.5246
CIFAR-100 vs LSUN	0.7180	0.7488	0.7488	0.8907
CIFAR-100 vs Noise	0.8785	0.9070	0.9070	0.7175
CIFAR-100 vs SVHN	0.5884	0.4381	0.4381	0.9475
CIFAR-100 vs iSUN	0.6787	0.7189	0.7189	0.9143
CelebA vs CIFAR-10	0.5394	0.7460	0.6961	1.0000
CelebA vs CIFAR-100	0.5339	0.7421	0.6923	1.0000
CelebA vs Constant	0.5103	0.7315	0.6828	1.0000
CelebA vs LSUN	0.5713	0.7632	0.7117	1.0000
CelebA vs Noise	0.5840	0.8097	0.7601	1.0000
CelebA vs SVHN	0.4805	0.5121	0.4295	1.0000
CelebA vs TinyImagenet	0.4905	0.7243	0.6769	1.0000
CelebA vs iSUN	0.5384	0.7658	0.7196	1.0000
Constant vs CIFAR-10	0.3342	0.4219	0.4219	0.9992
Constant vs CIFAR-100	0.3586	0.4414	0.4415	0.9969
Constant vs CelebA	0.3680	0.3242	0.3243	1.0000
Constant vs LSUN	0.3049	0.4044	0.4044	0.9994
Constant vs Noise	0.7365	0.8395	0.8395	1.0000
Constant vs SVHN	0.4177	0.2778	0.2779	1.0000
Constant vs TinyImagenet	0.3779	0.4723	0.4723	0.9981
Constant vs iSUN	0.3291	0.4518	0.4519	0.9993
Constant28 vs FashionMNIST	0.2657	0.4304	0.4318	0.9862
Constant28 vs KMNIST	0.1859	0.3772	0.3791	0.9997
Constant28 vs MNIST	0.1188	0.3601	0.3615	1.0000
Constant28 vs Noise28	0.5146	0.7149	0.7152	1.0000
Constant28 vs NotMNIST	0.4083	0.5198	0.5211	0.9323
Constant28 vs Omniglot	0.0737	0.3640	0.3671	1.0000
FashionMNIST vs Constant28	0.9976	0.9983	0.9983	0.0000
FashionMNIST vs KMNIST	0.9743	0.9744	0.9744	0.1200
FashionMNIST vs MNIST	0.9379	0.9290	0.9290	0.2474
FashionMNIST vs Noise28	0.9108	0.9174	0.9174	0.4391
FashionMNIST vs NotMNIST	0.9526	0.9470	0.9470	0.2010
FashionMNIST vs Omniglot	0.9439	0.9513	0.9513	0.2492
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9562	0.9658	0.9658	0.3032
KMNIST vs MNIST	0.9297	0.9426	0.9426	0.4516
KMNIST vs Noise28	0.9891	0.9910	0.9910	0.0550
KMNIST vs NotMNIST	0.9429	0.9519	0.9519	0.3561
KMNIST vs Omniglot	0.9368	0.9539	0.9539	0.3882
MNIST vs Constant28	0.9997	0.9997	0.9997	0.0000
MNIST vs FashionMNIST	0.9880	0.9884	0.9884	0.0486
MNIST vs KMNIST	0.9601	0.9577	0.9577	0.1615
MNIST vs Noise28	0.9998	0.9998	0.9998	0.0000
MNIST vs NotMNIST	0.9481	0.9464	0.9464	0.2175
MNIST vs Omniglot	0.9452	0.9489	0.9489	0.2136
Noise vs CIFAR-10	0.5684	0.5738	0.5739	0.9311
Noise vs CIFAR-100	0.5920	0.6004	0.6004	0.9205
Noise vs CelebA	0.5734	0.4184	0.4185	0.9366
Noise vs Constant	0.9988	0.9991	0.9991	0.0000
Noise vs LSUN	0.5418	0.5441	0.5442	0.9395
Noise vs SVHN	0.6776	0.4740	0.4741	0.8911
Noise vs TinyImagenet	0.5760	0.5851	0.5852	0.9280

Noise vs iSUN	0.5447	0.5755	0.5756	0.9396
Noise28 vs Constant28	0.9955	0.9964	0.9964	0.0000
Noise28 vs FashionMNIST	0.7956	0.7739	0.7739	0.6422
Noise28 vs KMNIST	0.7785	0.7604	0.7604	0.6768
Noise28 vs MNIST	0.8031	0.7926	0.7926	0.6364
Noise28 vs NotMNIST	0.8220	0.8028	0.8028	0.5798
Noise28 vs Omniglot	0.8533	0.8710	0.8710	0.5240
NotMNIST vs Constant28	0.9685	0.9768	0.9768	0.3272
NotMNIST vs FashionMNIST	0.9005	0.9139	0.9140	0.5356
NotMNIST vs KMNIST	0.9346	0.9436	0.9437	0.3925
NotMNIST vs MNIST	0.8949	0.8839	0.8840	0.4935
NotMNIST vs Noise28	0.9502	0.9614	0.9614	0.3265
NotMNIST vs Omniglot	0.9436	0.9575	0.9575	0.3224
Omniglot vs Constant28	0.9783	0.9865	0.9865	0.0000
Omniglot vs FashionMNIST	0.6087	0.5115	0.5116	0.8952
Omniglot vs KMNIST	0.5711	0.4829	0.4830	0.8864
Omniglot vs MNIST	0.6313	0.5626	0.5627	0.8713
Omniglot vs Noise28	0.9171	0.9165	0.9165	0.4117
Omniglot vs NotMNIST	0.7908	0.6864	0.6865	0.6033
SVHN vs CIFAR-10	0.9111	0.9616	0.9616	0.4118
SVHN vs CIFAR-100	0.9020	0.9560	0.9560	0.4362
SVHN vs CelebA	0.9562	0.9696	0.9696	0.2459
SVHN vs Constant	0.9483	0.9799	0.9799	0.2965
SVHN vs LSUN	0.9098	0.9602	0.9602	0.4122
SVHN vs Noise	0.8113	0.9189	0.9189	0.7246
SVHN vs TinyImagenet	0.9046	0.9589	0.9589	0.4350
SVHN vs iSUN	0.9048	0.9622	0.9622	0.4261
TinyImagenet vs CelebA	0.4448	0.3514	0.3514	0.9876
TinyImagenet vs Constant	0.6505	0.6575	0.6575	0.7722
TinyImagenet vs LSUN	0.6147	0.6296	0.6297	0.9462
TinyImagenet vs Noise	0.5713	0.6867	0.6867	0.9988
TinyImagenet vs SVHN	0.5097	0.3168	0.3169	0.9693
TinyImagenet vs iSUN	0.5886	0.6289	0.6289	0.9511
Average	0.7109	0.7392	0.7347	0.6472

Table 100: The detailed performance for indicator Deconf-C* of h with epsilon 0.01 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4841	0.4440	0.4441	0.9286
CIFAR-10 vs Constant	0.9887	0.9891	0.9891	0.0319
CIFAR-10 vs LSUN	0.5615	0.5903	0.5904	0.8827
CIFAR-10 vs Noise	0.4226	0.5547	0.5547	0.9841
CIFAR-10 vs SVHN	0.7046	0.5652	0.5652	0.8875
CIFAR-10 vs iSUN	0.5662	0.6243	0.6243	0.8962
CIFAR-100 vs CelebA	0.4646	0.3867	0.3867	0.9764
CIFAR-100 vs Constant	0.9219	0.9229	0.9229	0.2702
CIFAR-100 vs LSUN	0.7106	0.7401	0.7401	0.9022
CIFAR-100 vs Noise	0.9098	0.9316	0.9316	0.5740
CIFAR-100 vs SVHN	0.5894	0.4202	0.4202	0.9320
CIFAR-100 vs iSUN	0.6668	0.7064	0.7065	0.9225
CelebA vs CIFAR-10	0.5394	0.7488	0.6970	1.0000
CelebA vs CIFAR-100	0.5361	0.7456	0.6938	1.0000
CelebA vs Constant	0.5214	0.7415	0.6905	1.0000
CelebA vs LSUN	0.5714	0.7653	0.7124	1.0000
CelebA vs Noise	0.5540	0.8025	0.7547	1.0000
CelebA vs SVHN	0.4814	0.5177	0.4301	1.0000
CelebA vs TinyImagenet	0.4905	0.7274	0.6775	1.0000
CelebA vs iSUN	0.5351	0.7671	0.7194	1.0000
Constant vs CIFAR-10	0.3273	0.4159	0.4159	0.9992
Constant vs CIFAR-100	0.3523	0.4346	0.4347	0.9972
Constant vs CelebA	0.3642	0.3178	0.3178	1.0000
Constant vs LSUN	0.2980	0.3982	0.3982	0.9995
Constant vs Noise	0.7124	0.8169	0.8169	1.0000
Constant vs SVHN	0.4066	0.2688	0.2689	1.0000
Constant vs TinyImagenet	0.3720	0.4649	0.4649	0.9983
Constant vs iSUN	0.3218	0.4447	0.4448	0.9993
Constant28 vs FashionMNIST	0.2609	0.4292	0.4306	0.9871
Constant28 vs KMNIST	0.1845	0.3768	0.3787	0.9997
Constant28 vs MNIST	0.1184	0.3599	0.3614	1.0000
Constant28 vs Noise28	0.5128	0.7139	0.7143	1.0000
Constant28 vs NotMNIST	0.4041	0.5182	0.5195	0.9328
Constant28 vs Omniglot	0.0736	0.3639	0.3671	1.0000
FashionMNIST vs Constant28	0.9987	0.9991	0.9991	0.0000
FashionMNIST vs KMNIST	0.9685	0.9667	0.9667	0.1279
FashionMNIST vs MNIST	0.9280	0.9136	0.9136	0.2388
FashionMNIST vs Noise28	0.8786	0.8853	0.8853	0.4851
FashionMNIST vs NotMNIST	0.9492	0.9411	0.9411	0.1866
FashionMNIST vs Omniglot	0.9319	0.9392	0.9392	0.2571
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9567	0.9661	0.9661	0.2918
KMNIST vs MNIST	0.9294	0.9414	0.9414	0.4397
KMNIST vs Noise28	0.9887	0.9907	0.9907	0.0562
KMNIST vs NotMNIST	0.9479	0.9554	0.9554	0.3202
KMNIST vs Omniglot	0.9357	0.9527	0.9527	0.3866
MNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
MNIST vs FashionMNIST	0.9861	0.9863	0.9863	0.0580
MNIST vs KMNIST	0.9540	0.9500	0.9500	0.1783
MNIST vs Noise28	0.9999	0.9999	0.9999	0.0000
MNIST vs NotMNIST	0.9472	0.9434	0.9434	0.2105
MNIST vs Omniglot	0.9384	0.9416	0.9417	0.2344
Noise vs CIFAR-10	0.5233	0.5165	0.5166	0.9214
Noise vs CIFAR-100	0.5344	0.5295	0.5295	0.9207
Noise vs CelebA	0.5148	0.3373	0.3374	0.9385
Noise vs Constant	0.9650	0.9754	0.9754	0.2404
Noise vs LSUN	0.5208	0.5094	0.5095	0.9267
Noise vs SVHN	0.5283	0.3256	0.3256	0.9552
Noise vs TinyImagenet	0.5318	0.5250	0.5251	0.9171

Noise vs iSUN	0.5259	0.5418	0.5419	0.9216
Noise28 vs Constant28	0.9930	0.9947	0.9947	0.0000
Noise28 vs FashionMNIST	0.7300	0.7268	0.7268	0.8423
Noise28 vs KMNIST	0.7116	0.7192	0.7192	0.8780
Noise28 vs MNIST	0.7477	0.7632	0.7633	0.8425
Noise28 vs NotMNIST	0.7613	0.7624	0.7624	0.7764
Noise28 vs Omniglot	0.8011	0.8451	0.8451	0.7703
NotMNIST vs Constant28	0.9791	0.9842	0.9842	0.2079
NotMNIST vs FashionMNIST	0.8795	0.8963	0.8963	0.5825
NotMNIST vs KMNIST	0.9208	0.9291	0.9291	0.4208
NotMNIST vs MNIST	0.8731	0.8546	0.8547	0.5184
NotMNIST vs Noise28	0.9193	0.9340	0.9340	0.4965
NotMNIST vs Omniglot	0.9312	0.9464	0.9465	0.3498
Omniglot vs Constant28	0.9856	0.9915	0.9915	0.0000
Omniglot vs FashionMNIST	0.6789	0.5680	0.5681	0.8064
Omniglot vs KMNIST	0.5991	0.5095	0.5096	0.8727
Omniglot vs MNIST	0.6678	0.5930	0.5931	0.8402
Omniglot vs Noise28	0.9448	0.9484	0.9484	0.2828
Omniglot vs NotMNIST	0.8357	0.7489	0.7490	0.4557
SVHN vs CIFAR-10	0.8619	0.9393	0.9393	0.6314
SVHN vs CIFAR-100	0.8495	0.9314	0.9314	0.6510
SVHN vs CelebA	0.9299	0.9525	0.9525	0.4550
SVHN vs Constant	0.9269	0.9695	0.9695	0.3576
SVHN vs LSUN	0.8559	0.9348	0.9348	0.6440
SVHN vs Noise	0.7295	0.8774	0.8774	0.8424
SVHN vs TinyImagenet	0.8535	0.9362	0.9362	0.6450
SVHN vs iSUN	0.8504	0.9394	0.9394	0.6627
TinyImagenet vs CelebA	0.4599	0.3641	0.3641	0.9868
TinyImagenet vs Constant	0.7828	0.7886	0.7886	0.6865
TinyImagenet vs LSUN	0.6474	0.6611	0.6611	0.9340
TinyImagenet vs Noise	0.6646	0.7613	0.7613	0.9966
TinyImagenet vs SVHN	0.5404	0.3309	0.3310	0.9527
TinyImagenet vs iSUN	0.6151	0.6535	0.6536	0.9454
Average	0.6993	0.7316	0.7269	0.6701

Table 101: The detailed performance for indicator Deconf-C* of h with epsilon 0.02 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5647	0.4980	0.4980	0.8861
CIFAR-10 vs Constant	0.9780	0.9802	0.9802	0.0812
CIFAR-10 vs LSUN	0.4534	0.5163	0.5163	0.9588
CIFAR-10 vs Noise	0.3036	0.4922	0.4922	0.9950
CIFAR-10 vs SVHN	0.6977	0.5851	0.5852	0.9082
CIFAR-10 vs iSUN	0.4716	0.5595	0.5595	0.9618
CIFAR-100 vs CelebA	0.4645	0.3721	0.3722	0.9746
CIFAR-100 vs Constant	0.9485	0.9537	0.9537	0.1635
CIFAR-100 vs LSUN	0.6685	0.6950	0.6950	0.9351
CIFAR-100 vs Noise	0.9089	0.9287	0.9287	0.5243
CIFAR-100 vs SVHN	0.6409	0.4541	0.4541	0.9075
CIFAR-100 vs iSUN	0.6288	0.6716	0.6716	0.9455
CelebA vs CIFAR-10	0.5384	0.7507	0.6958	1.0000
CelebA vs CIFAR-100	0.5345	0.7469	0.6917	1.0000
CelebA vs Constant	0.5451	0.5899	0.7047	1.0000
CelebA vs LSUN	0.5701	0.7670	0.7119	1.0000
CelebA vs Noise	0.5224	0.7995	0.7509	1.0000
CelebA vs SVHN	0.4837	0.5259	0.4311	1.0000
CelebA vs TinyImagenet	0.4884	0.7297	0.6756	1.0000
CelebA vs iSUN	0.5311	0.7671	0.7164	1.0000
Constant vs CIFAR-10	0.3147	0.4053	0.4053	0.9992
Constant vs CIFAR-100	0.3405	0.4224	0.4225	0.9972
Constant vs CelebA	0.3568	0.3060	0.3060	1.0000
Constant vs LSUN	0.2848	0.3874	0.3874	0.9995
Constant vs Noise	0.6473	0.7653	0.7653	1.0000
Constant vs SVHN	0.3871	0.2538	0.2538	1.0000
Constant vs TinyImagenet	0.3612	0.4515	0.4516	0.9983
Constant vs iSUN	0.3082	0.4320	0.4321	0.9993
Constant28 vs FashionMNIST	0.2525	0.4270	0.4284	0.9885
Constant28 vs KMNIST	0.1819	0.3761	0.3779	0.9997
Constant28 vs MNIST	0.1177	0.3597	0.3611	1.0000
Constant28 vs Noise28	0.5097	0.7120	0.7123	1.0000
Constant28 vs NotMNIST	0.3962	0.5151	0.5164	0.9351
Constant28 vs Omniglot	0.0734	0.3638	0.3669	1.0000
FashionMNIST vs Constant28	0.9899	0.9939	0.9939	0.0000
FashionMNIST vs KMNIST	0.9081	0.9120	0.9120	0.3837
FashionMNIST vs MNIST	0.8529	0.8420	0.8420	0.5103
FashionMNIST vs Noise28	0.7206	0.7636	0.7636	0.8489
FashionMNIST vs NotMNIST	0.8965	0.8927	0.8927	0.3702
FashionMNIST vs Omniglot	0.8503	0.8804	0.8804	0.5936
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9587	0.9673	0.9673	0.2782
KMNIST vs MNIST	0.9277	0.9379	0.9379	0.4386
KMNIST vs Noise28	0.9875	0.9899	0.9899	0.0620
KMNIST vs NotMNIST	0.9549	0.9604	0.9604	0.2712
KMNIST vs Omniglot	0.9324	0.9492	0.9492	0.3947
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9809	0.9805	0.9805	0.0931
MNIST vs KMNIST	0.9376	0.9306	0.9306	0.2507
MNIST vs Noise28	0.9999	0.9999	0.9999	0.0000
MNIST vs NotMNIST	0.9415	0.9337	0.9338	0.2328
MNIST vs Omniglot	0.9221	0.9256	0.9256	0.3063
Noise vs CIFAR-10	0.5322	0.5277	0.5278	0.9089
Noise vs CIFAR-100	0.5330	0.5265	0.5266	0.9074
Noise vs CelebA	0.5181	0.3432	0.3433	0.9387
Noise vs Constant	0.8688	0.8982	0.8982	0.6607
Noise vs LSUN	0.5296	0.5214	0.5216	0.9229
Noise vs SVHN	0.4805	0.2764	0.2765	0.9123
Noise vs TinyImagenet	0.5395	0.5330	0.5331	0.9049

Noise vs iSUN	0.5367	0.5519	0.5520	0.9136
Noise28 vs Constant28	0.9356	0.9544	0.9544	0.4487
Noise28 vs FashionMNIST	0.5285	0.5680	0.5681	0.9743
Noise28 vs KMNIST	0.5011	0.5570	0.5570	0.9857
Noise28 vs MNIST	0.5175	0.5945	0.5945	0.9916
Noise28 vs NotMNIST	0.5310	0.5819	0.5820	0.9684
Noise28 vs Omniglot	0.5487	0.6760	0.6760	0.9882
NotMNIST vs Constant28	0.9896	0.9920	0.9919	0.0309
NotMNIST vs FashionMNIST	0.8514	0.8758	0.8758	0.6996
NotMNIST vs KMNIST	0.8841	0.8922	0.8923	0.6017
NotMNIST vs MNIST	0.8244	0.8008	0.8008	0.6655
NotMNIST vs Noise28	0.8352	0.8542	0.8542	0.7908
NotMNIST vs Omniglot	0.8951	0.9161	0.9161	0.5435
Omniglot vs Constant28	0.9915	0.9949	0.9949	0.0000
Omniglot vs FashionMNIST	0.7379	0.6365	0.6366	0.6881
Omniglot vs KMNIST	0.6146	0.5363	0.5364	0.8658
Omniglot vs MNIST	0.6887	0.6117	0.6118	0.8098
Omniglot vs Noise28	0.9550	0.9605	0.9605	0.2348
Omniglot vs NotMNIST	0.8647	0.8042	0.8043	0.3976
SVHN vs CIFAR-10	0.7705	0.8973	0.8973	0.8209
SVHN vs CIFAR-100	0.7588	0.8897	0.8897	0.8228
SVHN vs CelebA	0.8675	0.9122	0.9122	0.6733
SVHN vs Constant	0.8663	0.9356	0.9356	0.4232
SVHN vs LSUN	0.7525	0.8849	0.8849	0.8302
SVHN vs Noise	0.6730	0.8462	0.8462	0.8717
SVHN vs TinyImagenet	0.7664	0.8972	0.8972	0.8151
SVHN vs iSUN	0.7549	0.8979	0.8979	0.8394
TinyImagenet vs CelebA	0.4594	0.3598	0.3598	0.9866
TinyImagenet vs Constant	0.8903	0.8963	0.8963	0.5296
TinyImagenet vs LSUN	0.6515	0.6661	0.6662	0.9376
TinyImagenet vs Noise	0.7227	0.8084	0.8084	0.9962
TinyImagenet vs SVHN	0.5888	0.3535	0.3536	0.9205
TinyImagenet vs iSUN	0.6201	0.6602	0.6603	0.9429
Average	0.6697	0.7099	0.7068	0.7213

Table 102: The detailed performance for indicator Deconf-C* of h with epsilon 0.04 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6184	0.5362	0.5363	0.8961
CIFAR-10 vs Constant	0.9483	0.9506	0.9506	0.2146
CIFAR-10 vs LSUN	0.4116	0.4884	0.4884	0.9878
CIFAR-10 vs Noise	0.2774	0.4698	0.4698	0.9979
CIFAR-10 vs SVHN	0.6979	0.5928	0.5928	0.9114
CIFAR-10 vs iSUN	0.4314	0.5341	0.5341	0.9870
CIFAR-100 vs CelebA	0.4471	0.3359	0.3359	0.9677
CIFAR-100 vs Constant	0.9489	0.9540	0.9540	0.1547
CIFAR-100 vs LSUN	0.5632	0.5879	0.5880	0.9712
CIFAR-100 vs Noise	0.8323	0.8435	0.8435	0.7177
CIFAR-100 vs SVHN	0.7483	0.5633	0.5633	0.7853
CIFAR-100 vs iSUN	0.5469	0.5960	0.5960	0.9743
CelebA vs CIFAR-10	0.5467	0.7612	0.6990	1.0000
CelebA vs CIFAR-100	0.5443	0.7583	0.6957	1.0000
CelebA vs Constant	0.5862	0.7886	0.7294	1.0000
CelebA vs LSUN	0.5674	0.7705	0.7089	1.0000
CelebA vs Noise	0.5325	0.8031	0.7481	1.0000
CelebA vs SVHN	0.4946	0.5466	0.4360	1.0000
CelebA vs TinyImagenet	0.4949	0.7399	0.6764	1.0000
CelebA vs iSUN	0.5319	0.7735	0.7156	1.0000
Constant vs CIFAR-10	0.2930	0.3889	0.3889	0.9994
Constant vs CIFAR-100	0.3198	0.4033	0.4033	0.9976
Constant vs CelebA	0.3422	0.2866	0.2867	1.0000
Constant vs LSUN	0.2607	0.3710	0.3710	0.9996
Constant vs Noise	0.5606	0.6971	0.6971	1.0000
Constant vs SVHN	0.3582	0.2330	0.2331	1.0000
Constant vs TinyImagenet	0.3420	0.4300	0.4301	0.9988
Constant vs iSUN	0.2840	0.4125	0.4126	0.9993
Constant28 vs FashionMNIST	0.2398	0.4240	0.4254	0.9890
Constant28 vs KMNIST	0.1774	0.3746	0.3765	0.9996
Constant28 vs MNIST	0.1167	0.3593	0.3608	1.0000
Constant28 vs Noise28	0.5033	0.7066	0.7070	1.0000
Constant28 vs NotMNIST	0.3812	0.5095	0.5108	0.9402
Constant28 vs Omniglot	0.0731	0.3636	0.3666	1.0000
FashionMNIST vs Constant28	0.9662	0.9798	0.9798	0.1592
FashionMNIST vs KMNIST	0.7417	0.7685	0.7685	0.8599
FashionMNIST vs MNIST	0.6848	0.7014	0.7014	0.9364
FashionMNIST vs Noise28	0.4833	0.6149	0.6149	0.9853
FashionMNIST vs NotMNIST	0.7571	0.7771	0.7771	0.8275
FashionMNIST vs Omniglot	0.6796	0.7635	0.7636	0.9545
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9601	0.9667	0.9668	0.2389
KMNIST vs MNIST	0.9172	0.9248	0.9248	0.4328
KMNIST vs Noise28	0.9835	0.9871	0.9871	0.0835
KMNIST vs NotMNIST	0.9597	0.9631	0.9631	0.2241
KMNIST vs Omniglot	0.9183	0.9361	0.9361	0.4192
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9635	0.9624	0.9624	0.2004
MNIST vs KMNIST	0.8919	0.8836	0.8836	0.4440
MNIST vs Noise28	0.9998	0.9998	0.9998	0.0000
MNIST vs NotMNIST	0.9207	0.9093	0.9093	0.3199
MNIST vs Omniglot	0.8819	0.8914	0.8914	0.4860
Noise vs CIFAR-10	0.5444	0.5569	0.5571	0.9162
Noise vs CIFAR-100	0.5424	0.5502	0.5503	0.9164
Noise vs CelebA	0.5220	0.3635	0.3636	0.9481
Noise vs Constant	0.6565	0.7228	0.7228	0.8974
Noise vs LSUN	0.5307	0.5350	0.5351	0.9354
Noise vs SVHN	0.5127	0.3003	0.3004	0.8927
Noise vs TinyImagenet	0.5469	0.5614	0.5615	0.9131

Noise vs iSUN	0.5423	0.5687	0.5689	0.9266
Noise28 vs Constant28	0.7858	0.8550	0.8550	0.9578
Noise28 vs FashionMNIST	0.4699	0.5101	0.5101	0.9876
Noise28 vs KMNIST	0.4637	0.4966	0.4967	0.9795
Noise28 vs MNIST	0.4636	0.5234	0.5235	0.9855
Noise28 vs NotMNIST	0.4384	0.4888	0.4889	0.9912
Noise28 vs Omniglot	0.4534	0.5811	0.5812	0.9897
NotMNIST vs Constant28	0.9956	0.9965	0.9965	0.0000
NotMNIST vs FashionMNIST	0.8366	0.8690	0.8690	0.7538
NotMNIST vs KMNIST	0.8160	0.8262	0.8262	0.7338
NotMNIST vs MNIST	0.7541	0.7418	0.7419	0.7648
NotMNIST vs Noise28	0.7295	0.7514	0.7514	0.8248
NotMNIST vs Omniglot	0.8216	0.8592	0.8593	0.7027
Omniglot vs Constant28	0.9932	0.9957	0.9957	0.0000
Omniglot vs FashionMNIST	0.7649	0.6909	0.6910	0.6709
Omniglot vs KMNIST	0.5933	0.5344	0.5345	0.8846
Omniglot vs MNIST	0.6748	0.5981	0.5982	0.8151
Omniglot vs Noise28	0.9406	0.9476	0.9476	0.3226
Omniglot vs NotMNIST	0.8630	0.8137	0.8138	0.4337
SVHN vs CIFAR-10	0.6208	0.8263	0.8264	0.9750
SVHN vs CIFAR-100	0.6140	0.8216	0.8216	0.9733
SVHN vs CelebA	0.7389	0.8256	0.8256	0.9645
SVHN vs Constant	0.7746	0.8824	0.8824	0.5518
SVHN vs LSUN	0.5983	0.8089	0.8090	0.9767
SVHN vs Noise	0.5980	0.8144	0.8144	0.9663
SVHN vs TinyImagenet	0.6286	0.8340	0.8340	0.9695
SVHN vs iSUN	0.6099	0.8342	0.8342	0.9757
TinyImagenet vs CelebA	0.4118	0.3133	0.3133	0.9875
TinyImagenet vs Constant	0.9181	0.9297	0.9297	0.4636
TinyImagenet vs LSUN	0.5572	0.5800	0.5801	0.9772
TinyImagenet vs Noise	0.6214	0.7360	0.7360	1.0000
TinyImagenet vs SVHN	0.6798	0.4319	0.4320	0.8662
TinyImagenet vs iSUN	0.5489	0.6014	0.6015	0.9720
Average	0.6294	0.6833	0.6776	0.7807

Table 103: The detailed performance for indicator Deconf-C* of h with epsilon 0.08 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4841	0.4440	0.4441	0.9286
CIFAR-10 vs Constant	0.9887	0.9891	0.9891	0.0319
CIFAR-10 vs LSUN	0.5615	0.5903	0.5904	0.8827
CIFAR-10 vs Noise	0.4226	0.5547	0.5547	0.9841
CIFAR-10 vs SVHN	0.7046	0.5652	0.5652	0.8875
CIFAR-10 vs iSUN	0.5662	0.6243	0.6243	0.8962
CIFAR-100 vs CelebA	0.4471	0.3359	0.3359	0.9677
CIFAR-100 vs Constant	0.9489	0.9540	0.9540	0.1547
CIFAR-100 vs LSUN	0.5632	0.5879	0.5880	0.9712
CIFAR-100 vs Noise	0.8323	0.8435	0.8435	0.7177
CIFAR-100 vs SVHN	0.7483	0.5633	0.5633	0.7853
CIFAR-100 vs iSUN	0.5469	0.5960	0.5960	0.9743
CelebA vs CIFAR-10	0.5391	0.7444	0.6957	1.0000
CelebA vs CIFAR-100	0.5336	0.7403	0.6917	1.0000
CelebA vs Constant	0.5025	0.7252	0.6783	1.0000
CelebA vs LSUN	0.5725	0.7633	0.7126	1.0000
CelebA vs Noise	0.6126	0.8205	0.7690	1.0000
CelebA vs SVHN	0.4792	0.5083	0.4290	1.0000
CelebA vs TinyImagenet	0.4902	0.7223	0.6767	1.0000
CelebA vs iSUN	0.5407	0.7659	0.7208	1.0000
Constant vs CIFAR-10	0.2930	0.3889	0.3889	0.9994
Constant vs CIFAR-100	0.3198	0.4033	0.4033	0.9976
Constant vs CelebA	0.3422	0.2866	0.2867	1.0000
Constant vs LSUN	0.2607	0.3710	0.3710	0.9996
Constant vs Noise	0.5606	0.6971	0.6971	1.0000
Constant vs SVHN	0.3582	0.2330	0.2331	1.0000
Constant vs TinyImagenet	0.3420	0.4300	0.4301	0.9988
Constant vs iSUN	0.2840	0.4125	0.4126	0.9993
Constant28 vs FashionMNIST	0.2398	0.4240	0.4254	0.9890
Constant28 vs KMNIST	0.1774	0.3746	0.3765	0.9996
Constant28 vs MNIST	0.1167	0.3593	0.3608	1.0000
Constant28 vs Noise28	0.5033	0.7066	0.7070	1.0000
Constant28 vs NotMNIST	0.3812	0.5095	0.5108	0.9402
Constant28 vs Omniglot	0.0731	0.3636	0.3666	1.0000
FashionMNIST vs Constant28	0.9987	0.9991	0.9991	0.0000
FashionMNIST vs KMNIST	0.9685	0.9667	0.9667	0.1279
FashionMNIST vs MNIST	0.9280	0.9136	0.9136	0.2388
FashionMNIST vs Noise28	0.8786	0.8853	0.8853	0.4851
FashionMNIST vs NotMNIST	0.9492	0.9411	0.9411	0.1866
FashionMNIST vs Omniglot	0.9319	0.9392	0.9392	0.2571
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9601	0.9667	0.9668	0.2389
KMNIST vs MNIST	0.9172	0.9248	0.9248	0.4328
KMNIST vs Noise28	0.9835	0.9871	0.9871	0.0835
KMNIST vs NotMNIST	0.9597	0.9631	0.9631	0.2241
KMNIST vs Omniglot	0.9183	0.9361	0.9361	0.4192
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9635	0.9624	0.9624	0.2004
MNIST vs KMNIST	0.8919	0.8836	0.8836	0.4440
MNIST vs Noise28	0.9998	0.9998	0.9998	0.0000
MNIST vs NotMNIST	0.9207	0.9093	0.9093	0.3199
MNIST vs Omniglot	0.8819	0.8914	0.8914	0.4860
Noise vs CIFAR-10	0.5684	0.5738	0.5739	0.9311
Noise vs CIFAR-100	0.5920	0.6004	0.6004	0.9205
Noise vs CelebA	0.5734	0.4184	0.4185	0.9366
Noise vs Constant	0.9988	0.9991	0.9991	0.0000
Noise vs LSUN	0.5418	0.5441	0.5442	0.9395
Noise vs SVHN	0.6776	0.4740	0.4741	0.8911
Noise vs TinyImagenet	0.5760	0.5851	0.5852	0.9280

Noise vs iSUN	0.5447	0.5755	0.5756	0.9396
Noise28 vs Constant28	0.9930	0.9947	0.9947	0.0000
Noise28 vs FashionMNIST	0.7300	0.7268	0.7268	0.8423
Noise28 vs KMNIST	0.7116	0.7192	0.7192	0.8780
Noise28 vs MNIST	0.7477	0.7632	0.7633	0.8425
Noise28 vs NotMNIST	0.7613	0.7624	0.7624	0.7764
Noise28 vs Omniglot	0.8011	0.8451	0.8451	0.7703
NotMNIST vs Constant28	0.9956	0.9965	0.9965	0.0000
NotMNIST vs FashionMNIST	0.8366	0.8690	0.8690	0.7538
NotMNIST vs KMNIST	0.8160	0.8262	0.8262	0.7338
NotMNIST vs MNIST	0.7541	0.7418	0.7419	0.7648
NotMNIST vs Noise28	0.7295	0.7514	0.7514	0.8248
NotMNIST vs Omniglot	0.8216	0.8592	0.8592	0.7027
Omniglot vs Constant28	0.9932	0.9957	0.9957	0.0000
Omniglot vs FashionMNIST	0.7649	0.6909	0.6910	0.6709
Omniglot vs KMNIST	0.5933	0.5344	0.5345	0.8846
Omniglot vs MNIST	0.6748	0.5981	0.5982	0.8151
Omniglot vs Noise28	0.9406	0.9476	0.9476	0.3226
Omniglot vs NotMNIST	0.8630	0.8137	0.8138	0.4337
SVHN vs CIFAR-10	0.8619	0.9393	0.9393	0.6314
SVHN vs CIFAR-100	0.8495	0.9314	0.9314	0.6510
SVHN vs CelebA	0.9299	0.9525	0.9525	0.4550
SVHN vs Constant	0.9269	0.9695	0.9695	0.3576
SVHN vs LSUN	0.8559	0.9348	0.9348	0.6440
SVHN vs Noise	0.7295	0.8774	0.8774	0.8424
SVHN vs TinyImagenet	0.8535	0.9362	0.9362	0.6450
SVHN vs iSUN	0.8504	0.9394	0.9394	0.6627
TinyImagenet vs CelebA	0.4118	0.3133	0.3133	0.9875
TinyImagenet vs Constant	0.9181	0.9297	0.9297	0.4636
TinyImagenet vs LSUN	0.5572	0.5800	0.5801	0.9772
TinyImagenet vs Noise	0.6214	0.7360	0.7360	1.0000
TinyImagenet vs SVHN	0.6798	0.4319	0.4320	0.8662
TinyImagenet vs iSUN	0.5489	0.6014	0.6015	0.9720
Average	0.6911	0.7255	0.7211	0.6838

Table 104: The detailed performance for indicator Deconf-C* of h with best epsilon in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4945	0.4353	0.4353	0.9990
CIFAR-10 vs Constant	0.6372	0.7512	0.7512	1.0000
CIFAR-10 vs LSUN	0.6049	0.6399	0.6399	0.9954
CIFAR-10 vs Noise	0.2693	0.3951	0.3952	1.0000
CIFAR-10 vs SVHN	0.5240	0.4371	0.4371	1.0000
CIFAR-10 vs iSUN	0.5629	0.6173	0.6174	0.9951
CIFAR-100 vs CelebA	0.6469	0.4954	0.4954	0.8549
CIFAR-100 vs Constant	0.5551	0.6459	0.6459	0.9940
CIFAR-100 vs LSUN	0.6550	0.6653	0.6653	0.9667
CIFAR-100 vs Noise	0.8881	0.9044	0.9044	0.6346
CIFAR-100 vs SVHN	0.1947	0.1727	0.1728	0.9887
CIFAR-100 vs iSUN	0.6214	0.6559	0.6559	0.9709
CelebA vs CIFAR-10	0.5126	0.6836	0.6819	0.9609
CelebA vs CIFAR-100	0.5081	0.6707	0.6707	0.9334
CelebA vs Constant	0.3706	0.5707	0.5779	0.9879
CelebA vs LSUN	0.5584	0.7141	0.7119	0.9695
CelebA vs Noise	0.5557	0.8172	0.8070	1.0000
CelebA vs SVHN	0.4345	0.3741	0.3794	0.9423
CelebA vs TinyImagenet	0.4441	0.6360	0.6381	0.9800
CelebA vs iSUN	0.5121	0.7190	0.7164	0.9857
Constant vs CIFAR-10	0.4538	0.5732	0.5732	0.9988
Constant vs CIFAR-100	0.4160	0.5135	0.5135	0.9952
Constant vs CelebA	0.3966	0.4138	0.4138	1.0000
Constant vs LSUN	0.4373	0.5635	0.5636	0.9994
Constant vs Noise	0.8182	0.8986	0.8986	1.0000
Constant vs SVHN	0.5545	0.4360	0.4361	0.9985
Constant vs TinyImagenet	0.4126	0.5211	0.5211	0.9976
Constant vs iSUN	0.4550	0.5968	0.5968	0.9991
Constant28 vs FashionMNIST	0.5343	0.6730	0.6735	1.0000
Constant28 vs KMNIST	0.6602	0.7792	0.7795	0.9971
Constant28 vs MNIST	0.6344	0.7783	0.7786	1.0000
Constant28 vs Noise28	0.4858	0.6973	0.6977	1.0000
Constant28 vs NotMNIST	0.5234	0.5773	0.5785	0.9946
Constant28 vs Omniglot	0.6115	0.7910	0.7913	1.0000
FashionMNIST vs Constant28	0.7380	0.8287	0.8287	1.0000
FashionMNIST vs KMNIST	0.7615	0.8202	0.8202	0.9987
FashionMNIST vs MNIST	0.7355	0.8004	0.8004	0.9998
FashionMNIST vs Noise28	0.9027	0.9440	0.9440	0.9952
FashionMNIST vs NotMNIST	0.7944	0.8290	0.8290	0.9826
FashionMNIST vs Omniglot	0.7720	0.8556	0.8556	0.9954
KMNIST vs Constant28	0.6974	0.8199	0.8200	1.0000
KMNIST vs FashionMNIST	0.5927	0.7274	0.7274	1.0000
KMNIST vs MNIST	0.5637	0.6564	0.6564	1.0000
KMNIST vs Noise28	0.5964	0.7364	0.7364	1.0000
KMNIST vs NotMNIST	0.6361	0.7050	0.7050	0.9998
KMNIST vs Omniglot	0.5842	0.7436	0.7436	1.0000
MNIST vs Constant28	0.6420	0.7952	0.7952	1.0000
MNIST vs FashionMNIST	0.6520	0.7610	0.7610	1.0000
MNIST vs KMNIST	0.6466	0.7366	0.7366	1.0000
MNIST vs Noise28	0.6089	0.7671	0.7671	1.0000
MNIST vs NotMNIST	0.7022	0.7641	0.7641	1.0000
MNIST vs Omniglot	0.6047	0.7411	0.7412	1.0000
Noise vs CIFAR-10	0.2947	0.4192	0.4193	0.9979
Noise vs CIFAR-100	0.3033	0.4284	0.4284	0.9983
Noise vs CelebA	0.4549	0.3557	0.3558	0.9947
Noise vs Constant	0.3879	0.5469	0.5469	1.0000
Noise vs LSUN	0.3531	0.4418	0.4419	0.9936
Noise vs SVHN	0.2626	0.2379	0.2379	0.9993
Noise vs TinyImagenet	0.2968	0.4384	0.4385	0.9989

Noise vs iSUN	0.3335	0.4636	0.4637	0.9946
Noise28 vs Constant28	0.4567	0.5028	0.5028	0.8846
Noise28 vs FashionMNIST	0.4298	0.4827	0.4828	0.9477
Noise28 vs KMNIST	0.4657	0.4774	0.4775	0.9334
Noise28 vs MNIST	0.4657	0.4850	0.4852	0.9265
Noise28 vs NotMNIST	0.5826	0.5384	0.5385	0.8047
Noise28 vs Omniglot	0.3767	0.5072	0.5072	0.9724
NotMNIST vs Constant28	0.6163	0.7480	0.7480	1.0000
NotMNIST vs FashionMNIST	0.6082	0.6678	0.6679	1.0000
NotMNIST vs KMNIST	0.4998	0.5146	0.5148	1.0000
NotMNIST vs MNIST	0.4983	0.5544	0.5545	1.0000
NotMNIST vs Noise28	0.5845	0.6853	0.6854	1.0000
NotMNIST vs Omniglot	0.4944	0.5875	0.5877	1.0000
Omniglot vs Constant28	0.7445	0.6556	0.6557	0.4379
Omniglot vs FashionMNIST	0.4983	0.4245	0.4247	0.7758
Omniglot vs KMNIST	0.5713	0.4600	0.4601	0.8062
Omniglot vs MNIST	0.5837	0.4593	0.4594	0.7964
Omniglot vs Noise28	0.8434	0.7686	0.7686	0.4921
Omniglot vs NotMNIST	0.8059	0.6656	0.6658	0.4075
SVHN vs CIFAR-10	0.6814	0.8701	0.8701	0.9982
SVHN vs CIFAR-100	0.6657	0.8617	0.8617	0.9985
SVHN vs CelebA	0.7213	0.8243	0.8243	0.9995
SVHN vs Constant	0.6621	0.8898	0.8898	1.0000
SVHN vs LSUN	0.6721	0.8598	0.8598	0.9976
SVHN vs Noise	0.6196	0.8549	0.8549	1.0000
SVHN vs TinyImagenet	0.6762	0.8712	0.8712	0.9991
SVHN vs iSUN	0.6866	0.8836	0.8836	0.9984
TinyImagenet vs CelebA	0.2942	0.2330	0.2331	0.9955
TinyImagenet vs Constant	0.9144	0.9064	0.9064	0.3082
TinyImagenet vs LSUN	0.6167	0.6103	0.6104	0.9908
TinyImagenet vs Noise	0.9497	0.9719	0.9719	0.4784
TinyImagenet vs SVHN	0.1961	0.1723	0.1723	0.9973
TinyImagenet vs iSUN	0.6454	0.6590	0.6591	0.9765
Average	0.5651	0.6395	0.6395	0.9458

Table 105: The detailed performance for indicator Deconf-C* of g with epsilon 0.0025 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4820	0.4315	0.4316	0.9990
CIFAR-10 vs Constant	0.6881	0.7888	0.7888	1.0000
CIFAR-10 vs LSUN	0.6062	0.6394	0.6395	0.9926
CIFAR-10 vs Noise	0.2653	0.3943	0.3944	0.9999
CIFAR-10 vs SVHN	0.5222	0.4335	0.4335	1.0000
CIFAR-10 vs iSUN	0.5631	0.6164	0.6165	0.9931
CIFAR-100 vs CelebA	0.6381	0.4908	0.4909	0.8682
CIFAR-100 vs Constant	0.6101	0.6967	0.6967	0.9839
CIFAR-100 vs LSUN	0.6548	0.6647	0.6647	0.9614
CIFAR-100 vs Noise	0.8823	0.8976	0.8976	0.6341
CIFAR-100 vs SVHN	0.1982	0.1732	0.1733	0.9901
CIFAR-100 vs iSUN	0.6205	0.6554	0.6554	0.9677
CelebA vs CIFAR-10	0.5125	0.6834	0.6818	0.9575
CelebA vs CIFAR-100	0.5078	0.6704	0.6705	0.9293
CelebA vs Constant	0.3754	0.5734	0.5804	0.9866
CelebA vs LSUN	0.5583	0.7141	0.7118	0.9677
CelebA vs Noise	0.5569	0.8180	0.8076	1.0000
CelebA vs SVHN	0.4345	0.3741	0.3794	0.9383
CelebA vs TinyImagenet	0.4439	0.6358	0.6379	0.9788
CelebA vs iSUN	0.5123	0.7194	0.7167	0.9834
Constant vs CIFAR-10	0.4529	0.5724	0.5725	0.9989
Constant vs CIFAR-100	0.4151	0.5127	0.5128	0.9952
Constant vs CelebA	0.3958	0.4131	0.4131	1.0000
Constant vs LSUN	0.4364	0.5628	0.5628	0.9994
Constant vs Noise	0.8164	0.8975	0.8975	1.0000
Constant vs SVHN	0.5536	0.4352	0.4353	0.9985
Constant vs TinyImagenet	0.4117	0.5203	0.5204	0.9976
Constant vs iSUN	0.4541	0.5960	0.5961	0.9991
Constant28 vs FashionMNIST	0.5344	0.6731	0.6736	1.0000
Constant28 vs KMNIST	0.6603	0.7793	0.7796	0.9969
Constant28 vs MNIST	0.6347	0.7785	0.7788	1.0000
Constant28 vs Noise28	0.4858	0.6973	0.6977	1.0000
Constant28 vs NotMNIST	0.5234	0.5773	0.5785	0.9942
Constant28 vs Omniglot	0.6119	0.7913	0.7916	1.0000
FashionMNIST vs Constant28	0.7514	0.8385	0.8385	1.0000
FashionMNIST vs KMNIST	0.7626	0.8222	0.8222	0.9986
FashionMNIST vs MNIST	0.7403	0.8057	0.8057	0.9998
FashionMNIST vs Noise28	0.9016	0.9426	0.9426	0.9949
FashionMNIST vs NotMNIST	0.7957	0.8316	0.8316	0.9819
FashionMNIST vs Omniglot	0.7746	0.8584	0.8584	0.9953
KMNIST vs Constant28	0.7032	0.8236	0.8236	1.0000
KMNIST vs FashionMNIST	0.5923	0.7276	0.7276	1.0000
KMNIST vs MNIST	0.5630	0.6563	0.6563	1.0000
KMNIST vs Noise28	0.5911	0.7335	0.7335	1.0000
KMNIST vs NotMNIST	0.6359	0.7051	0.7052	0.9998
KMNIST vs Omniglot	0.5846	0.7440	0.7440	1.0000
MNIST vs Constant28	0.6474	0.7986	0.7986	1.0000
MNIST vs FashionMNIST	0.6487	0.7588	0.7588	1.0000
MNIST vs KMNIST	0.6441	0.7349	0.7349	1.0000
MNIST vs Noise28	0.6088	0.7671	0.7671	1.0000
MNIST vs NotMNIST	0.7011	0.7634	0.7634	1.0000
MNIST vs Omniglot	0.6032	0.7399	0.7399	1.0000
Noise vs CIFAR-10	0.3085	0.4289	0.4290	0.9977
Noise vs CIFAR-100	0.3180	0.4385	0.4385	0.9980
Noise vs CelebA	0.4625	0.3586	0.3586	0.9929
Noise vs Constant	0.5012	0.6323	0.6323	1.0000
Noise vs LSUN	0.3626	0.4483	0.4484	0.9939
Noise vs SVHN	0.2812	0.2493	0.2494	0.9993
Noise vs TinyImagenet	0.3129	0.4494	0.4495	0.9990

Noise vs iSUN	0.3450	0.4716	0.4717	0.9952
Noise28 vs Constant28	0.5047	0.5418	0.5418	0.8423
Noise28 vs FashionMNIST	0.4407	0.4969	0.4969	0.9474
Noise28 vs KMNIST	0.4734	0.4859	0.4861	0.9295
Noise28 vs MNIST	0.4757	0.4962	0.4963	0.9241
Noise28 vs NotMNIST	0.5908	0.5470	0.5471	0.7965
Noise28 vs Omniglot	0.3938	0.5239	0.5240	0.9703
NotMNIST vs Constant28	0.6279	0.7573	0.7573	1.0000
NotMNIST vs FashionMNIST	0.5985	0.6602	0.6602	1.0000
NotMNIST vs KMNIST	0.4941	0.5100	0.5102	1.0000
NotMNIST vs MNIST	0.4936	0.5504	0.5505	1.0000
NotMNIST vs Noise28	0.5723	0.6745	0.6745	1.0000
NotMNIST vs Omniglot	0.4890	0.5834	0.5835	1.0000
Omniglot vs Constant28	0.7594	0.6803	0.6804	0.4297
Omniglot vs FashionMNIST	0.4922	0.4222	0.4224	0.7795
Omniglot vs KMNIST	0.5630	0.4541	0.4542	0.8113
Omniglot vs MNIST	0.5752	0.4527	0.4529	0.7987
Omniglot vs Noise28	0.8316	0.7490	0.7491	0.5119
Omniglot vs NotMNIST	0.8025	0.6614	0.6616	0.4109
SVHN vs CIFAR-10	0.6834	0.8709	0.8709	0.9980
SVHN vs CIFAR-100	0.6682	0.8627	0.8627	0.9985
SVHN vs CelebA	0.7235	0.8256	0.8256	0.9995
SVHN vs Constant	0.6990	0.9035	0.9035	1.0000
SVHN vs LSUN	0.6733	0.8600	0.8600	0.9975
SVHN vs Noise	0.6185	0.8543	0.8544	1.0000
SVHN vs TinyImagenet	0.6785	0.8720	0.8720	0.9991
SVHN vs iSUN	0.6875	0.8838	0.8838	0.9984
TinyImagenet vs CelebA	0.2877	0.2311	0.2312	0.9954
TinyImagenet vs Constant	0.9212	0.9162	0.9162	0.2958
TinyImagenet vs LSUN	0.6199	0.6111	0.6111	0.9887
TinyImagenet vs Noise	0.9533	0.9739	0.9739	0.3086
TinyImagenet vs SVHN	0.2003	0.1734	0.1735	0.9972
TinyImagenet vs iSUN	0.6488	0.6604	0.6605	0.9714
Average	0.5696	0.6430	0.6430	0.9430

Table 106: The detailed performance for indicator Deconf-C* of g with epsilon 0.005 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4644	0.4254	0.4254	0.9974
CIFAR-10 vs Constant	0.7624	0.8414	0.8414	0.9893
CIFAR-10 vs LSUN	0.6013	0.6320	0.6321	0.9785
CIFAR-10 vs Noise	0.2500	0.3886	0.3887	0.9999
CIFAR-10 vs SVHN	0.5351	0.4433	0.4433	0.9993
CIFAR-10 vs iSUN	0.5572	0.6093	0.6093	0.9834
CIFAR-100 vs CelebA	0.6289	0.4861	0.4862	0.9080
CIFAR-100 vs Constant	0.6939	0.7677	0.7677	0.9691
CIFAR-100 vs LSUN	0.6501	0.6590	0.6590	0.9576
CIFAR-100 vs Noise	0.8694	0.8830	0.8830	0.6841
CIFAR-100 vs SVHN	0.2125	0.1756	0.1756	0.9938
CIFAR-100 vs iSUN	0.6149	0.6503	0.6503	0.9643
CelebA vs CIFAR-10	0.5118	0.6824	0.6813	0.9573
CelebA vs CIFAR-100	0.5075	0.6700	0.6705	0.9299
CelebA vs Constant	0.3850	0.5788	0.5855	0.9833
CelebA vs LSUN	0.5577	0.7135	0.7114	0.9677
CelebA vs Noise	0.5597	0.8195	0.8082	1.0000
CelebA vs SVHN	0.4340	0.3737	0.3792	0.9376
CelebA vs TinyImagenet	0.4431	0.6350	0.6375	0.9785
CelebA vs iSUN	0.5118	0.7186	0.7164	0.9838
Constant vs CIFAR-10	0.4511	0.5709	0.5709	0.9991
Constant vs CIFAR-100	0.4134	0.5114	0.5114	0.9953
Constant vs CelebA	0.3944	0.4116	0.4117	1.0000
Constant vs LSUN	0.4346	0.5613	0.5614	0.9995
Constant vs Noise	0.8128	0.8955	0.8955	1.0000
Constant vs SVHN	0.5517	0.4337	0.4337	0.9985
Constant vs TinyImagenet	0.4099	0.5189	0.5189	0.9976
Constant vs iSUN	0.4523	0.5945	0.5946	0.9993
Constant28 vs FashionMNIST	0.5347	0.6733	0.6738	1.0000
Constant28 vs KMNIST	0.6605	0.7795	0.7798	0.9968
Constant28 vs MNIST	0.6353	0.7789	0.7792	1.0000
Constant28 vs Noise28	0.4856	0.6972	0.6976	1.0000
Constant28 vs NotMNIST	0.5233	0.5773	0.5785	0.9939
Constant28 vs Omniglot	0.6128	0.7918	0.7921	1.0000
FashionMNIST vs Constant28	0.7745	0.8552	0.8552	1.0000
FashionMNIST vs KMNIST	0.7641	0.8251	0.8252	0.9985
FashionMNIST vs MNIST	0.7484	0.8143	0.8143	0.9997
FashionMNIST vs Noise28	0.8987	0.9393	0.9393	0.9948
FashionMNIST vs NotMNIST	0.7979	0.8358	0.8358	0.9813
FashionMNIST vs Omniglot	0.7790	0.8629	0.8629	0.9953
KMNIST vs Constant28	0.7142	0.8304	0.8304	1.0000
KMNIST vs FashionMNIST	0.5918	0.7282	0.7282	1.0000
KMNIST vs MNIST	0.5617	0.6560	0.6560	1.0000
KMNIST vs Noise28	0.5813	0.7281	0.7281	1.0000
KMNIST vs NotMNIST	0.6356	0.7055	0.7056	0.9998
KMNIST vs Omniglot	0.5854	0.7448	0.7448	1.0000
MNIST vs Constant28	0.6577	0.8051	0.8051	1.0000
MNIST vs FashionMNIST	0.6425	0.7546	0.7546	1.0000
MNIST vs KMNIST	0.6392	0.7316	0.7316	1.0000
MNIST vs Noise28	0.6087	0.7671	0.7671	1.0000
MNIST vs NotMNIST	0.6988	0.7621	0.7621	1.0000
MNIST vs Omniglot	0.6001	0.7375	0.7375	1.0000
Noise vs CIFAR-10	0.3272	0.4418	0.4419	0.9975
Noise vs CIFAR-100	0.3367	0.4505	0.4506	0.9980
Noise vs CelebA	0.4593	0.3539	0.3540	0.9899
Noise vs Constant	0.6587	0.7478	0.7478	0.9946
Noise vs LSUN	0.3744	0.4555	0.4556	0.9932
Noise vs SVHN	0.3028	0.2642	0.2642	0.9993
Noise vs TinyImagenet	0.3317	0.4615	0.4616	0.9986

Noise vs iSUN	0.3598	0.4808	0.4808	0.9943
Noise28 vs Constant28	0.5713	0.5950	0.5950	0.7547
Noise28 vs FashionMNIST	0.4468	0.5079	0.5080	0.9435
Noise28 vs KMNIST	0.4723	0.4896	0.4897	0.9299
Noise28 vs MNIST	0.4758	0.5016	0.5017	0.9208
Noise28 vs NotMNIST	0.5940	0.5514	0.5516	0.7840
Noise28 vs Omniglot	0.4038	0.5368	0.5368	0.9667
NotMNIST vs Constant28	0.6485	0.7738	0.7738	1.0000
NotMNIST vs FashionMNIST	0.5807	0.6461	0.6461	1.0000
NotMNIST vs KMNIST	0.4828	0.5011	0.5012	1.0000
NotMNIST vs MNIST	0.4843	0.5422	0.5423	1.0000
NotMNIST vs Noise28	0.5478	0.6526	0.6526	1.0000
NotMNIST vs Omniglot	0.4783	0.5750	0.5752	1.0000
Omniglot vs Constant28	0.7882	0.7276	0.7277	0.4062
Omniglot vs FashionMNIST	0.4804	0.4170	0.4172	0.7822
Omniglot vs KMNIST	0.5469	0.4434	0.4435	0.8189
Omniglot vs MNIST	0.5589	0.4413	0.4414	0.8042
Omniglot vs Noise28	0.8054	0.7102	0.7102	0.5444
Omniglot vs NotMNIST	0.7963	0.6535	0.6536	0.4153
SVHN vs CIFAR-10	0.6841	0.8705	0.8705	0.9977
SVHN vs CIFAR-100	0.6699	0.8627	0.8627	0.9984
SVHN vs CelebA	0.7247	0.8250	0.8250	0.9993
SVHN vs Constant	0.7503	0.9219	0.9219	1.0000
SVHN vs LSUN	0.6717	0.8582	0.8582	0.9973
SVHN vs Noise	0.6134	0.8512	0.8512	1.0000
SVHN vs TinyImagenet	0.6801	0.8718	0.8718	0.9990
SVHN vs iSUN	0.6859	0.8822	0.8822	0.9983
TinyImagenet vs CelebA	0.2750	0.2276	0.2277	0.9957
TinyImagenet vs Constant	0.9328	0.9319	0.9319	0.2802
TinyImagenet vs LSUN	0.6233	0.6101	0.6102	0.9837
TinyImagenet vs Noise	0.9589	0.9771	0.9771	0.1497
TinyImagenet vs SVHN	0.2156	0.1774	0.1775	0.9972
TinyImagenet vs iSUN	0.6531	0.6612	0.6613	0.9638
Average	0.5745	0.6466	0.6466	0.9403

Table 107: The detailed performance for indicator Deconf-C* of g with epsilon 0.01 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4430	0.4164	0.4165	0.9959
CIFAR-10 vs Constant	0.8446	0.8960	0.8960	0.8395
CIFAR-10 vs LSUN	0.5781	0.6062	0.6063	0.9471
CIFAR-10 vs Noise	0.2107	0.3719	0.3720	0.9998
CIFAR-10 vs SVHN	0.5741	0.4773	0.4773	0.9971
CIFAR-10 vs iSUN	0.5355	0.5865	0.5865	0.9602
CIFAR-100 vs CelebA	0.6334	0.4909	0.4909	0.9275
CIFAR-100 vs Constant	0.7902	0.8398	0.8398	0.9417
CIFAR-100 vs LSUN	0.6321	0.6412	0.6412	0.9444
CIFAR-100 vs Noise	0.8468	0.8552	0.8552	0.7150
CIFAR-100 vs SVHN	0.2485	0.1825	0.1826	0.9970
CIFAR-100 vs iSUN	0.5978	0.6350	0.6350	0.9566
CelebA vs CIFAR-10	0.5119	0.6822	0.6813	0.9610
CelebA vs CIFAR-100	0.5083	0.6704	0.6708	0.9353
CelebA vs Constant	0.4041	0.5905	0.5960	0.9831
CelebA vs LSUN	0.5574	0.7130	0.7108	0.9715
CelebA vs Noise	0.5641	0.8209	0.8088	1.0000
CelebA vs SVHN	0.4342	0.3739	0.3792	0.9424
CelebA vs TinyImagenet	0.4433	0.6347	0.6370	0.9805
CelebA vs iSUN	0.5124	0.7184	0.7160	0.9866
Constant vs CIFAR-10	0.4476	0.5680	0.5680	0.9993
Constant vs CIFAR-100	0.4101	0.5087	0.5088	0.9956
Constant vs CelebA	0.3916	0.4088	0.4089	1.0000
Constant vs LSUN	0.4313	0.5585	0.5585	0.9996
Constant vs Noise	0.8057	0.8914	0.8914	1.0000
Constant vs SVHN	0.5482	0.4308	0.4309	0.9987
Constant vs TinyImagenet	0.4065	0.5161	0.5161	0.9976
Constant vs iSUN	0.4487	0.5916	0.5916	0.9993
Constant28 vs FashionMNIST	0.5354	0.6737	0.6743	0.9999
Constant28 vs KMNIST	0.6609	0.7799	0.7802	0.9961
Constant28 vs MNIST	0.6366	0.7797	0.7800	1.0000
Constant28 vs Noise28	0.4854	0.6971	0.6974	1.0000
Constant28 vs NotMNIST	0.5232	0.5758	0.5785	0.9918
Constant28 vs Omniglot	0.6148	0.7931	0.7934	1.0000
FashionMNIST vs Constant28	0.8100	0.8806	0.8806	1.0000
FashionMNIST vs KMNIST	0.7661	0.8284	0.8284	0.9983
FashionMNIST vs MNIST	0.7615	0.8269	0.8269	0.9992
FashionMNIST vs Noise28	0.8917	0.9320	0.9320	0.9938
FashionMNIST vs NotMNIST	0.8010	0.8415	0.8416	0.9787
FashionMNIST vs Omniglot	0.7873	0.8699	0.8699	0.9948
KMNIST vs Constant28	0.7352	0.8433	0.8433	1.0000
KMNIST vs FashionMNIST	0.5917	0.7295	0.7295	1.0000
KMNIST vs MNIST	0.5594	0.6555	0.6555	1.0000
KMNIST vs Noise28	0.5653	0.7191	0.7191	1.0000
KMNIST vs NotMNIST	0.6354	0.7064	0.7064	0.9997
KMNIST vs Omniglot	0.5867	0.7460	0.7460	1.0000
MNIST vs Constant28	0.6769	0.8170	0.8170	1.0000
MNIST vs FashionMNIST	0.6319	0.7470	0.7471	1.0000
MNIST vs KMNIST	0.6299	0.7249	0.7250	1.0000
MNIST vs Noise28	0.6086	0.7671	0.7671	1.0000
MNIST vs NotMNIST	0.6945	0.7595	0.7595	1.0000
MNIST vs Omniglot	0.5943	0.7324	0.7324	1.0000
Noise vs CIFAR-10	0.3559	0.4573	0.4573	0.9942
Noise vs CIFAR-100	0.3621	0.4639	0.4640	0.9955
Noise vs CelebA	0.4287	0.3398	0.3399	0.9872
Noise vs Constant	0.7751	0.8348	0.8348	0.9552
Noise vs LSUN	0.3945	0.4637	0.4638	0.9899
Noise vs SVHN	0.3300	0.2842	0.2843	0.9980
Noise vs TinyImagenet	0.3555	0.4737	0.4737	0.9962

Noise vs iSUN	0.3815	0.4905	0.4906	0.9897
Noise28 vs Constant28	0.6258	0.6430	0.6430	0.6549
Noise28 vs FashionMNIST	0.4404	0.5148	0.5149	0.9527
Noise28 vs KMNIST	0.4366	0.4783	0.4784	0.9435
Noise28 vs MNIST	0.4371	0.4897	0.4898	0.9372
Noise28 vs NotMNIST	0.5666	0.5411	0.5412	0.7914
Noise28 vs Omniglot	0.3752	0.5324	0.5325	0.9753
NotMNIST vs Constant28	0.6819	0.8002	0.8002	1.0000
NotMNIST vs FashionMNIST	0.5515	0.6232	0.6233	1.0000
NotMNIST vs KMNIST	0.4615	0.4845	0.4847	1.0000
NotMNIST vs MNIST	0.4661	0.5264	0.5265	1.0000
NotMNIST vs Noise28	0.5013	0.6104	0.6104	1.0000
NotMNIST vs Omniglot	0.4586	0.5596	0.5598	1.0000
Omniglot vs Constant28	0.8425	0.8117	0.8117	0.3630
Omniglot vs FashionMNIST	0.4598	0.4071	0.4072	0.7915
Omniglot vs KMNIST	0.5194	0.4264	0.4266	0.8352
Omniglot vs MNIST	0.5339	0.4255	0.4256	0.8157
Omniglot vs Noise28	0.7496	0.6410	0.6410	0.6231
Omniglot vs NotMNIST	0.7837	0.6377	0.6379	0.4284
SVHN vs CIFAR-10	0.6773	0.8649	0.8649	0.9969
SVHN vs CIFAR-100	0.6652	0.8579	0.8579	0.9980
SVHN vs CelebA	0.7187	0.8166	0.8166	0.9990
SVHN vs Constant	0.8159	0.9437	0.9437	1.0000
SVHN vs LSUN	0.6587	0.8488	0.8488	0.9963
SVHN vs Noise	0.5972	0.8402	0.8402	1.0000
SVHN vs TinyImagenet	0.6760	0.8671	0.8671	0.9987
SVHN vs iSUN	0.6742	0.8746	0.8746	0.9975
TinyImagenet vs CelebA	0.2527	0.2218	0.2219	0.9965
TinyImagenet vs Constant	0.9496	0.9522	0.9522	0.2537
TinyImagenet vs LSUN	0.6198	0.6001	0.6002	0.9742
TinyImagenet vs Noise	0.9661	0.9810	0.9810	0.0435
TinyImagenet vs SVHN	0.2607	0.1903	0.1904	0.9972
TinyImagenet vs iSUN	0.6536	0.6566	0.6566	0.9478
Average	0.5761	0.6476	0.6476	0.9363

Table 108: The detailed performance for indicator Deconf-C* of g with epsilon 0.02 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4210	0.4053	0.4054	0.9958
CIFAR-10 vs Constant	0.9097	0.9378	0.9378	0.6319
CIFAR-10 vs LSUN	0.5273	0.5530	0.5530	0.9445
CIFAR-10 vs Noise	0.1460	0.3433	0.3434	0.9999
CIFAR-10 vs SVHN	0.6327	0.5283	0.5283	0.9951
CIFAR-10 vs iSUN	0.4916	0.5411	0.5412	0.9575
CIFAR-100 vs CelebA	0.6617	0.5065	0.5065	0.8698
CIFAR-100 vs Constant	0.8571	0.8862	0.8862	0.8894
CIFAR-100 vs LSUN	0.5874	0.5999	0.6000	0.9366
CIFAR-100 vs Noise	0.8195	0.8128	0.8128	0.7286
CIFAR-100 vs SVHN	0.3114	0.1973	0.1974	0.9963
CIFAR-100 vs iSUN	0.5609	0.6044	0.6045	0.9509
CelebA vs CIFAR-10	0.5134	0.6838	0.6830	0.9623
CelebA vs CIFAR-100	0.5079	0.6697	0.6703	0.9363
CelebA vs Constant	0.4394	0.6128	0.6168	0.9729
CelebA vs LSUN	0.5572	0.7124	0.7107	0.9725
CelebA vs Noise	0.5629	0.8174	0.8028	1.0000
CelebA vs SVHN	0.4361	0.3749	0.3799	0.9447
CelebA vs TinyImagenet	0.4437	0.6356	0.6379	0.9810
CelebA vs iSUN	0.5117	0.7180	0.7156	0.9875
Constant vs CIFAR-10	0.4410	0.5626	0.5626	0.9995
Constant vs CIFAR-100	0.4041	0.5038	0.5038	0.9962
Constant vs CelebA	0.3863	0.4036	0.4036	1.0000
Constant vs LSUN	0.4250	0.5532	0.5532	0.9997
Constant vs Noise	0.7921	0.8838	0.8838	1.0000
Constant vs SVHN	0.5421	0.4259	0.4259	0.9990
Constant vs TinyImagenet	0.4001	0.5108	0.5109	0.9980
Constant vs iSUN	0.4419	0.5861	0.5861	0.9994
Constant28 vs FashionMNIST	0.5369	0.6746	0.6752	1.0000
Constant28 vs KMNIST	0.6618	0.7808	0.7811	0.9970
Constant28 vs MNIST	0.6396	0.7816	0.7819	1.0000
Constant28 vs Noise28	0.4849	0.6967	0.6971	1.0000
Constant28 vs NotMNIST	0.5229	0.5758	0.5785	0.9933
Constant28 vs Omniglot	0.6190	0.7956	0.7959	1.0000
FashionMNIST vs Constant28	0.8564	0.9134	0.9134	1.0000
FashionMNIST vs KMNIST	0.7687	0.8301	0.8301	0.9974
FashionMNIST vs MNIST	0.7804	0.8425	0.8425	0.9970
FashionMNIST vs Noise28	0.8799	0.9202	0.9202	0.9922
FashionMNIST vs NotMNIST	0.8066	0.8485	0.8485	0.9719
FashionMNIST vs Omniglot	0.8035	0.8807	0.8807	0.9939
KMNIST vs Constant28	0.7726	0.8661	0.8661	1.0000
KMNIST vs FashionMNIST	0.5940	0.7324	0.7324	1.0000
KMNIST vs MNIST	0.5561	0.6543	0.6543	1.0000
KMNIST vs Noise28	0.5424	0.7046	0.7046	1.0000
KMNIST vs NotMNIST	0.6356	0.7079	0.7079	0.9993
KMNIST vs Omniglot	0.5890	0.7474	0.7474	1.0000
MNIST vs Constant28	0.7129	0.8388	0.8388	1.0000
MNIST vs FashionMNIST	0.6162	0.7345	0.7345	1.0000
MNIST vs KMNIST	0.6133	0.7122	0.7122	1.0000
MNIST vs Noise28	0.6082	0.7667	0.7667	1.0000
MNIST vs NotMNIST	0.6870	0.7544	0.7544	1.0000
MNIST vs Omniglot	0.5836	0.7223	0.7224	1.0000
Noise vs CIFAR-10	0.3965	0.4802	0.4802	0.9876
Noise vs CIFAR-100	0.3987	0.4849	0.4849	0.9895
Noise vs CelebA	0.4092	0.3381	0.3381	0.9941
Noise vs Constant	0.7218	0.8195	0.8195	1.0000
Noise vs LSUN	0.4314	0.4812	0.4813	0.9836
Noise vs SVHN	0.3721	0.3147	0.3147	0.9968
Noise vs TinyImagenet	0.3916	0.4929	0.4929	0.9902

Noise vs iSUN	0.4164	0.5069	0.5070	0.9822
Noise28 vs Constant28	0.6651	0.7113	0.7114	0.7029
Noise28 vs FashionMNIST	0.4824	0.5644	0.5644	0.9762
Noise28 vs KMNIST	0.4334	0.4959	0.4959	0.9733
Noise28 vs MNIST	0.4269	0.5078	0.5079	0.9808
Noise28 vs NotMNIST	0.5400	0.5477	0.5477	0.8742
Noise28 vs Omniglot	0.3917	0.5668	0.5668	0.9947
NotMNIST vs Constant28	0.7292	0.8358	0.8358	1.0000
NotMNIST vs FashionMNIST	0.5161	0.5943	0.5944	1.0000
NotMNIST vs KMNIST	0.4246	0.4572	0.4574	1.0000
NotMNIST vs MNIST	0.4343	0.4991	0.4992	1.0000
NotMNIST vs Noise28	0.4214	0.5366	0.5366	1.0000
NotMNIST vs Omniglot	0.4260	0.5338	0.5339	1.0000
Omniglot vs Constant28	0.9275	0.9231	0.9231	0.3076
Omniglot vs FashionMNIST	0.4301	0.3934	0.3935	0.8120
Omniglot vs KMNIST	0.4711	0.4013	0.4014	0.8714
Omniglot vs MNIST	0.4977	0.4058	0.4059	0.8434
Omniglot vs Noise28	0.6229	0.5245	0.5247	0.7732
Omniglot vs NotMNIST	0.7540	0.6048	0.6050	0.4651
SVHN vs CIFAR-10	0.6463	0.8445	0.8445	0.9909
SVHN vs CIFAR-100	0.6385	0.8393	0.8393	0.9929
SVHN vs CelebA	0.6871	0.7860	0.7860	0.9907
SVHN vs Constant	0.8832	0.9645	0.9645	1.0000
SVHN vs LSUN	0.6134	0.8198	0.8198	0.9901
SVHN vs Noise	0.5565	0.8122	0.8122	1.0000
SVHN vs TinyImagenet	0.6513	0.8499	0.8499	0.9934
SVHN vs iSUN	0.6342	0.8508	0.8508	0.9899
TinyImagenet vs CelebA	0.2223	0.2149	0.2149	0.9975
TinyImagenet vs Constant	0.9676	0.9714	0.9714	0.2191
TinyImagenet vs LSUN	0.5862	0.5626	0.5627	0.9665
TinyImagenet vs Noise	0.9726	0.9843	0.9843	0.0192
TinyImagenet vs SVHN	0.3637	0.2276	0.2277	0.9972
TinyImagenet vs iSUN	0.6330	0.6321	0.6322	0.9360
Average	0.5738	0.6460	0.6460	0.9366

Table 109: The detailed performance for indicator Deconf-C* of g with epsilon 0.04 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4081	0.3921	0.3922	0.9964
CIFAR-10 vs Constant	0.9369	0.9552	0.9552	0.5259
CIFAR-10 vs LSUN	0.4548	0.4798	0.4799	0.9661
CIFAR-10 vs Noise	0.0774	0.3172	0.3173	1.0000
CIFAR-10 vs SVHN	0.7025	0.5847	0.5847	0.9907
CIFAR-10 vs iSUN	0.4330	0.4832	0.4833	0.9713
CIFAR-100 vs CelebA	0.6943	0.5265	0.5265	0.7731
CIFAR-100 vs Constant	0.8666	0.8984	0.8984	0.9194
CIFAR-100 vs LSUN	0.5139	0.5373	0.5374	0.9356
CIFAR-100 vs Noise	0.7960	0.7592	0.7592	0.7313
CIFAR-100 vs SVHN	0.3982	0.2248	0.2249	0.9932
CIFAR-100 vs iSUN	0.5054	0.5579	0.5580	0.9475
CelebA vs CIFAR-10	0.5189	0.6873	0.6856	0.9580
CelebA vs CIFAR-100	0.5130	0.6734	0.6737	0.9300
CelebA vs Constant	0.5129	0.6611	0.6636	0.9550
CelebA vs LSUN	0.5585	0.7122	0.7109	0.9702
CelebA vs Noise	0.5479	0.8157	0.7924	1.0000
CelebA vs SVHN	0.4445	0.3800	0.3846	0.9412
CelebA vs TinyImagenet	0.4480	0.6375	0.6402	0.9784
CelebA vs iSUN	0.5149	0.7198	0.7166	0.9861
Constant vs CIFAR-10	0.4296	0.5532	0.5532	0.9999
Constant vs CIFAR-100	0.3935	0.4952	0.4953	0.9969
Constant vs CelebA	0.3767	0.3943	0.3944	1.0000
Constant vs LSUN	0.4138	0.5439	0.5439	0.9997
Constant vs Noise	0.7694	0.8714	0.8714	1.0000
Constant vs SVHN	0.5323	0.4182	0.4182	0.9993
Constant vs TinyImagenet	0.3889	0.5018	0.5019	0.9987
Constant vs iSUN	0.4300	0.5763	0.5764	0.9997
Constant28 vs FashionMNIST	0.5401	0.6765	0.6771	1.0000
Constant28 vs KMNIST	0.6635	0.7830	0.7833	0.9978
Constant28 vs MNIST	0.6456	0.7860	0.7863	1.0000
Constant28 vs Noise28	0.4838	0.6959	0.6963	1.0000
Constant28 vs NotMNIST	0.5220	0.5758	0.5785	0.9945
Constant28 vs Omniglot	0.6282	0.8016	0.8019	1.0000
FashionMNIST vs Constant28	0.9129	0.9504	0.9504	1.0000
FashionMNIST vs KMNIST	0.7623	0.8188	0.8188	0.9946
FashionMNIST vs MNIST	0.7971	0.8531	0.8531	0.9879
FashionMNIST vs Noise28	0.8751	0.9093	0.9093	0.9879
FashionMNIST vs NotMNIST	0.8123	0.8505	0.8505	0.9509
FashionMNIST vs Omniglot	0.8231	0.8895	0.8895	0.9893
KMNIST vs Constant28	0.8339	0.9035	0.9035	1.0000
KMNIST vs FashionMNIST	0.6055	0.7397	0.7397	1.0000
KMNIST vs MNIST	0.5547	0.6532	0.6532	1.0000
KMNIST vs Noise28	0.5105	0.6820	0.6820	1.0000
KMNIST vs NotMNIST	0.6392	0.7111	0.7111	0.9977
KMNIST vs Omniglot	0.5934	0.7485	0.7485	1.0000
MNIST vs Constant28	0.7821	0.8796	0.8796	1.0000
MNIST vs FashionMNIST	0.6013	0.7171	0.7171	1.0000
MNIST vs KMNIST	0.5889	0.6894	0.6894	1.0000
MNIST vs Noise28	0.6078	0.7650	0.7650	1.0000
MNIST vs NotMNIST	0.6769	0.7453	0.7453	1.0000
MNIST vs Omniglot	0.5678	0.7036	0.7036	1.0000
Noise vs CIFAR-10	0.4191	0.5043	0.5044	0.9876
Noise vs CIFAR-100	0.4211	0.5090	0.5090	0.9895
Noise vs CelebA	0.4107	0.3539	0.3539	0.9954
Noise vs Constant	0.6294	0.7752	0.7752	1.0000
Noise vs LSUN	0.4544	0.5014	0.5014	0.9791
Noise vs SVHN	0.4005	0.3520	0.3521	0.9973
Noise vs TinyImagenet	0.4141	0.5161	0.5161	0.9880

Noise vs iSUN	0.4388	0.5247	0.5247	0.9789
Noise28 vs Constant28	0.6774	0.7638	0.7638	0.8807
Noise28 vs FashionMNIST	0.5318	0.6138	0.6138	0.9887
Noise28 vs KMNIST	0.4912	0.5388	0.5389	0.9802
Noise28 vs MNIST	0.4823	0.5572	0.5572	0.9918
Noise28 vs NotMNIST	0.5504	0.5730	0.5731	0.9367
Noise28 vs Omniglot	0.4784	0.6322	0.6322	0.9979
NotMNIST vs Constant28	0.7805	0.8739	0.8739	1.0000
NotMNIST vs FashionMNIST	0.4908	0.5696	0.5696	1.0000
NotMNIST vs KMNIST	0.3705	0.4212	0.4213	1.0000
NotMNIST vs MNIST	0.3889	0.4601	0.4602	1.0000
NotMNIST vs Noise28	0.3156	0.4363	0.4364	1.0000
NotMNIST vs Omniglot	0.3827	0.4995	0.4996	1.0000
Omniglot vs Constant28	0.9900	0.9900	0.9900	0.0575
Omniglot vs FashionMNIST	0.3941	0.3792	0.3793	0.8499
Omniglot vs KMNIST	0.3877	0.3655	0.3656	0.9299
Omniglot vs MNIST	0.4351	0.3769	0.3770	0.8856
Omniglot vs Noise28	0.3640	0.3783	0.3785	0.9501
Omniglot vs NotMNIST	0.6861	0.5454	0.5456	0.5529
SVHN vs CIFAR-10	0.5710	0.7988	0.7988	0.9802
SVHN vs CIFAR-100	0.5704	0.7969	0.7969	0.9802
SVHN vs CelebA	0.6087	0.7188	0.7188	0.9683
SVHN vs Constant	0.9261	0.9767	0.9767	0.6759
SVHN vs LSUN	0.5179	0.7605	0.7605	0.9797
SVHN vs Noise	0.4864	0.7652	0.7652	0.9961
SVHN vs TinyImagenet	0.5871	0.8106	0.8106	0.9768
SVHN vs iSUN	0.5481	0.8011	0.8011	0.9779
TinyImagenet vs CelebA	0.2044	0.2111	0.2111	0.9984
TinyImagenet vs Constant	0.9774	0.9810	0.9810	0.1836
TinyImagenet vs LSUN	0.4831	0.4821	0.4822	0.9793
TinyImagenet vs Noise	0.9671	0.9800	0.9800	0.1110
TinyImagenet vs SVHN	0.5048	0.2947	0.2948	0.9968
TinyImagenet vs iSUN	0.5567	0.5659	0.5660	0.9524
Average	0.5642	0.6396	0.6394	0.9352

Table 110: The detailed performance for indicator Deconf-C* of g with epsilon 0.08 in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.4081	0.3921	0.3922	0.9964
CIFAR-10 vs Constant	0.9369	0.9552	0.9552	0.5259
CIFAR-10 vs LSUN	0.4548	0.4798	0.4799	0.9661
CIFAR-10 vs Noise	0.0774	0.3172	0.3173	1.0000
CIFAR-10 vs SVHN	0.7025	0.5847	0.5847	0.9907
CIFAR-10 vs iSUN	0.4330	0.4832	0.4833	0.9713
CIFAR-100 vs CelebA	0.6943	0.5265	0.5265	0.7731
CIFAR-100 vs Constant	0.8666	0.8984	0.8984	0.9194
CIFAR-100 vs LSUN	0.5139	0.5373	0.5374	0.9356
CIFAR-100 vs Noise	0.7960	0.7592	0.7592	0.7313
CIFAR-100 vs SVHN	0.3982	0.2248	0.2249	0.9932
CIFAR-100 vs iSUN	0.5054	0.5579	0.5580	0.9475
CelebA vs CIFAR-10	0.5189	0.6873	0.6856	0.9580
CelebA vs CIFAR-100	0.5130	0.6734	0.6737	0.9300
CelebA vs Constant	0.5129	0.6611	0.6636	0.9550
CelebA vs LSUN	0.5585	0.7122	0.7109	0.9702
CelebA vs Noise	0.5479	0.8157	0.7924	1.0000
CelebA vs SVHN	0.4445	0.3800	0.3846	0.9412
CelebA vs TinyImagenet	0.4480	0.6375	0.6402	0.9784
CelebA vs iSUN	0.5149	0.7198	0.7166	0.9861
Constant vs CIFAR-10	0.4296	0.5532	0.5532	0.9999
Constant vs CIFAR-100	0.3935	0.4952	0.4953	0.9969
Constant vs CelebA	0.3767	0.3943	0.3944	1.0000
Constant vs LSUN	0.4138	0.5439	0.5439	0.9997
Constant vs Noise	0.7694	0.8714	0.8714	1.0000
Constant vs SVHN	0.5323	0.4182	0.4182	0.9993
Constant vs TinyImagenet	0.3889	0.5018	0.5019	0.9987
Constant vs iSUN	0.4300	0.5763	0.5764	0.9997
Constant28 vs FashionMNIST	0.5401	0.6765	0.6771	1.0000
Constant28 vs KMNIST	0.6635	0.7830	0.7833	0.9978
Constant28 vs MNIST	0.6456	0.7860	0.7863	1.0000
Constant28 vs Noise28	0.4838	0.6959	0.6963	1.0000
Constant28 vs NotMNIST	0.5220	0.5758	0.5785	0.9945
Constant28 vs Omniglot	0.6282	0.8016	0.8019	1.0000
FashionMNIST vs Constant28	0.9129	0.9504	0.9504	1.0000
FashionMNIST vs KMNIST	0.7623	0.8188	0.8188	0.9946
FashionMNIST vs MNIST	0.7971	0.8531	0.8531	0.9879
FashionMNIST vs Noise28	0.8751	0.9093	0.9093	0.9879
FashionMNIST vs NotMNIST	0.8123	0.8505	0.8505	0.9509
FashionMNIST vs Omniglot	0.8231	0.8895	0.8895	0.9893
KMNIST vs Constant28	0.8339	0.9035	0.9035	1.0000
KMNIST vs FashionMNIST	0.6055	0.7397	0.7397	1.0000
KMNIST vs MNIST	0.5547	0.6532	0.6532	1.0000
KMNIST vs Noise28	0.5105	0.6820	0.6820	1.0000
KMNIST vs NotMNIST	0.6392	0.7111	0.7111	0.9977
KMNIST vs Omniglot	0.5934	0.7485	0.7485	1.0000
MNIST vs Constant28	0.7821	0.8796	0.8796	1.0000
MNIST vs FashionMNIST	0.6013	0.7171	0.7171	1.0000
MNIST vs KMNIST	0.5889	0.6894	0.6894	1.0000
MNIST vs Noise28	0.6078	0.7650	0.7650	1.0000
MNIST vs NotMNIST	0.6769	0.7453	0.7453	1.0000
MNIST vs Omniglot	0.5678	0.7036	0.7036	1.0000
Noise vs CIFAR-10	0.4192	0.5043	0.5044	0.9876
Noise vs CIFAR-100	0.4211	0.5090	0.5090	0.9895
Noise vs CelebA	0.4107	0.3539	0.3539	0.9954
Noise vs Constant	0.6294	0.7752	0.7752	1.0000
Noise vs LSUN	0.4544	0.5014	0.5014	0.9791
Noise vs SVHN	0.4005	0.3520	0.3521	0.9973
Noise vs TinyImagenet	0.4141	0.5161	0.5161	0.9880

Noise vs iSUN	0.4388	0.5247	0.5247	0.9789
Noise28 vs Constant28	0.6774	0.7638	0.7638	0.8807
Noise28 vs FashionMNIST	0.5318	0.6138	0.6138	0.9887
Noise28 vs KMNIST	0.4911	0.5388	0.5389	0.9802
Noise28 vs MNIST	0.4823	0.5572	0.5572	0.9918
Noise28 vs NotMNIST	0.5504	0.5730	0.5731	0.9367
Noise28 vs Omniglot	0.4784	0.6321	0.6322	0.9979
NotMNIST vs Constant28	0.7805	0.8739	0.8739	1.0000
NotMNIST vs FashionMNIST	0.4908	0.5696	0.5696	1.0000
NotMNIST vs KMNIST	0.3705	0.4212	0.4213	1.0000
NotMNIST vs MNIST	0.3889	0.4601	0.4602	1.0000
NotMNIST vs Noise28	0.3156	0.4363	0.4364	1.0000
NotMNIST vs Omniglot	0.3827	0.4995	0.4996	1.0000
Omniglot vs Constant28	0.9900	0.9900	0.9900	0.0575
Omniglot vs FashionMNIST	0.3941	0.3792	0.3793	0.8499
Omniglot vs KMNIST	0.3877	0.3655	0.3656	0.9299
Omniglot vs MNIST	0.4351	0.3769	0.3770	0.8856
Omniglot vs Noise28	0.3640	0.3783	0.3785	0.9501
Omniglot vs NotMNIST	0.6861	0.5454	0.5456	0.5529
SVHN vs CIFAR-10	0.5710	0.7988	0.7988	0.9802
SVHN vs CIFAR-100	0.5704	0.7969	0.7969	0.9802
SVHN vs CelebA	0.6087	0.7188	0.7188	0.9683
SVHN vs Constant	0.9261	0.9767	0.9767	0.6759
SVHN vs LSUN	0.5179	0.7605	0.7605	0.9797
SVHN vs Noise	0.4864	0.7652	0.7652	0.9961
SVHN vs TinyImagenet	0.5871	0.8106	0.8106	0.9768
SVHN vs iSUN	0.5481	0.8011	0.8011	0.9779
TinyImagenet vs CelebA	0.2044	0.2111	0.2111	0.9984
TinyImagenet vs Constant	0.9774	0.9810	0.9810	0.1836
TinyImagenet vs LSUN	0.4831	0.4821	0.4822	0.9793
TinyImagenet vs Noise	0.9671	0.9800	0.9800	0.1110
TinyImagenet vs SVHN	0.5048	0.2947	0.2948	0.9968
TinyImagenet vs iSUN	0.5567	0.5659	0.5660	0.9524
Average	0.5642	0.6396	0.6394	0.9352

Table 111: The detailed performance for indicator Deconf-C* of g with best epsilon in generalized ODIN based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9988	0.9985	0.9970	0.0011
CIFAR-10 vs Constant	0.9973	0.9987	0.9973	0.0000
CIFAR-10 vs LSUN	0.9890	0.9894	0.9788	0.0212
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9971	0.9946	0.9893	0.0035
CIFAR-10 vs iSUN	0.9991	0.9994	0.9989	0.0007
CIFAR-100 vs CelebA	0.9987	0.9984	0.9967	0.0012
CIFAR-100 vs Constant	0.9998	0.9999	0.9998	0.0000
CIFAR-100 vs LSUN	0.9988	0.9989	0.9978	0.0020
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9941	0.9870	0.9740	0.0096
CIFAR-100 vs iSUN	0.9990	0.9992	0.9984	0.0015
CelebA vs CIFAR-10	0.9988	0.9995	0.9990	0.0012
CelebA vs CIFAR-100	0.9982	0.9992	0.9984	0.0025
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9997	0.9999	0.9997	0.0004
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9987	0.9985	0.9970	0.0020
CelebA vs TinyImagenet	0.9991	0.9997	0.9993	0.0008
CelebA vs iSUN	0.9996	0.9998	0.9997	0.0006
Constant vs CIFAR-10	0.9997	0.9997	0.9994	0.0006
Constant vs CIFAR-100	0.9968	0.9968	0.9936	0.0064
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	0.9999	0.0001
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9995	0.9988	0.9975	0.0009
Constant vs TinyImagenet	0.9981	0.9981	0.9962	0.0039
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	0.9999	0.9999	0.9997	0.0003
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9921	0.9923	0.9845	0.0157
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.9992	0.9993	0.9987	0.0011
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9987	0.9991	0.9982	0.0011
FashionMNIST vs Omniglot	0.9997	0.9998	0.9996	0.0004
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9994	0.9995	0.9991	0.0008
KMNIST vs MNIST	0.9996	0.9997	0.9993	0.0005
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9979	0.9986	0.9972	0.0014
KMNIST vs Omniglot	0.9958	0.9971	0.9942	0.0059
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9991	0.9994	0.9988	0.0006
MNIST vs KMNIST	0.9996	0.9996	0.9992	0.0006
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9954	0.9965	0.9931	0.0081
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	0.9995	0.9995	0.9990	0.0010
Noise vs SVHN	1.0000	0.9999	0.9998	0.0001
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9963	0.9964	0.9927	0.0073
NotMNIST vs FashionMNIST	0.9988	0.9989	0.9978	0.0021
NotMNIST vs KMNIST	0.9971	0.9981	0.9963	0.0017
NotMNIST vs MNIST	0.9999	0.9999	0.9998	0.0002
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9952	0.9961	0.9923	0.0097
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9994	0.9995	0.9991	0.0004
Omniglot vs KMNIST	0.9962	0.9971	0.9942	0.0024
Omniglot vs MNIST	0.9962	0.9971	0.9942	0.0024
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9985	0.9991	0.9983	0.0001
SVHN vs CIFAR-10	0.9955	0.9987	0.9974	0.0011
SVHN vs CIFAR-100	0.9942	0.9980	0.9961	0.0064
SVHN vs CelebA	0.9995	0.9997	0.9995	0.0001
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	0.9992	0.9997	0.9994	0.0014
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9975	0.9992	0.9984	0.0021
SVHN vs iSUN	0.9997	0.9999	0.9998	0.0004
TinyImagenet vs CelebA	0.9973	0.9978	0.9955	0.0007
TinyImagenet vs Constant	0.9999	1.0000	0.9999	0.0000
TinyImagenet vs LSUN	0.9993	0.9994	0.9987	0.0012
TinyImagenet vs Noise	0.9993	0.9996	0.9992	0.0001
TinyImagenet vs SVHN	0.9954	0.9890	0.9780	0.0082
TinyImagenet vs iSUN	0.9995	0.9996	0.9991	0.0009
Average	0.9988	0.9989	0.9978	0.0016

Table 112: The detailed performance for perfect classifier based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8619	0.8233	0.8233	0.7501
CIFAR-10 vs Constant	0.0998	0.3230	0.3230	0.9673
CIFAR-10 vs LSUN	0.9525	0.9457	0.9457	0.2038
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0298	0.1546	0.1546	1.0000
CIFAR-10 vs iSUN	0.9297	0.9223	0.9223	0.2634
CIFAR-100 vs CelebA	0.8232	0.7899	0.7899	0.8893
CIFAR-100 vs Constant	0.0447	0.3126	0.3126	0.9974
CIFAR-100 vs LSUN	0.9389	0.9356	0.9356	0.2847
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0281	0.1545	0.1545	1.0000
CIFAR-100 vs iSUN	0.9156	0.9122	0.9122	0.3325
CelebA vs CIFAR-10	0.3124	0.5341	0.5341	0.9466
CelebA vs CIFAR-100	0.3511	0.5472	0.5472	0.9078
CelebA vs Constant	0.0165	0.4532	0.4532	0.9986
CelebA vs LSUN	0.8441	0.8713	0.8713	0.4482
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0022	0.2579	0.2579	1.0000
CelebA vs TinyImagenet	0.3660	0.5590	0.5590	0.9066
CelebA vs iSUN	0.8084	0.8460	0.8461	0.4762
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9995	0.9995	0.9995	0.0029
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.4736	0.6048	0.6048	1.0000
FashionMNIST vs KMNIST	0.5626	0.5682	0.5682	0.8851
FashionMNIST vs MNIST	0.1496	0.3307	0.3307	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7810	0.7912	0.7913	0.7492
FashionMNIST vs Omniglot	0.1049	0.3643	0.3643	0.9999
KMNIST vs Constant28	0.9719	0.9368	0.9368	0.0777
KMNIST vs FashionMNIST	0.7729	0.7477	0.7477	0.6325
KMNIST vs MNIST	0.1378	0.3264	0.3265	0.9991
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9280	0.9274	0.9274	0.3327
KMNIST vs Omniglot	0.1069	0.3649	0.3650	0.9999
MNIST vs Constant28	0.9950	0.9734	0.9735	0.0050
MNIST vs FashionMNIST	0.9937	0.9926	0.9926	0.0238
MNIST vs KMNIST	0.9512	0.9446	0.9446	0.1980
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9996	0.9996	0.9996	0.0017
MNIST vs Omniglot	0.4886	0.5202	0.5202	0.8653
Noise vs CIFAR-10	0.0139	0.3095	0.3096	0.9867
Noise vs CIFAR-100	0.0290	0.3125	0.3125	0.9724
Noise vs CelebA	0.0717	0.2001	0.2002	0.9322
Noise vs Constant	0.2952	0.3773	0.3773	0.7095
Noise vs LSUN	0.1137	0.3303	0.3303	0.8926
Noise vs SVHN	0.0393	0.1587	0.1587	0.9628
Noise vs TinyImagenet	0.0322	0.3169	0.3169	0.9699

Noise vs iSUN	0.0976	0.3496	0.3496	0.9092
Noise28 vs Constant28	0.1455	0.3368	0.3368	0.8824
Noise28 vs FashionMNIST	0.8847	0.7579	0.7579	0.1826
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9974	0.9898	0.9899	0.0053
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.7841	0.7562	0.7562	1.0000
NotMNIST vs FashionMNIST	0.6526	0.6378	0.6378	0.9198
NotMNIST vs KMNIST	0.5817	0.5915	0.5916	0.9423
NotMNIST vs MNIST	0.1728	0.3397	0.3398	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.1323	0.3706	0.3706	0.9999
Omniglot vs Constant28	0.9950	0.9684	0.9685	0.0050
Omniglot vs FashionMNIST	0.9858	0.9827	0.9827	0.0878
Omniglot vs KMNIST	0.9717	0.9670	0.9670	0.1654
Omniglot vs MNIST	0.7351	0.6800	0.6801	0.8380
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9997	0.9996	0.9996	0.0015
SVHN vs CIFAR-10	0.9938	0.9974	0.9974	0.0232
SVHN vs CIFAR-100	0.9931	0.9971	0.9971	0.0287
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.4879	0.6523	0.6523	0.6881
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0003
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9958	0.9982	0.9982	0.0142
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0003
TinyImagenet vs CelebA	0.8556	0.8162	0.8162	0.7839
TinyImagenet vs Constant	0.0098	0.3040	0.3040	1.0000
TinyImagenet vs LSUN	0.9259	0.9154	0.9154	0.3162
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0246	0.1521	0.1522	1.0000
TinyImagenet vs iSUN	0.8970	0.8834	0.8835	0.3692
Average	0.6919	0.7520	0.7520	0.4319

Table 113: The detailed performance for indicator $\log p_\theta(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7363	0.5809	0.5810	0.8813
CIFAR-10 vs Constant	0.9066	0.8652	0.8653	0.2808
CIFAR-10 vs LSUN	0.9195	0.8939	0.8939	0.2889
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9382	0.8703	0.8704	0.3206
CIFAR-10 vs iSUN	0.8893	0.8602	0.8603	0.3412
CIFAR-100 vs CelebA	0.6622	0.5022	0.5023	0.9533
CIFAR-100 vs Constant	0.9329	0.9033	0.9033	0.2067
CIFAR-100 vs LSUN	0.8963	0.8689	0.8690	0.3805
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9364	0.8768	0.8768	0.3466
CIFAR-100 vs iSUN	0.8656	0.8362	0.8363	0.4203
CelebA vs CIFAR-10	0.6895	0.7728	0.7728	0.7258
CelebA vs CIFAR-100	0.7096	0.7870	0.7871	0.6856
CelebA vs Constant	0.9786	0.9819	0.9819	0.0599
CelebA vs LSUN	0.8084	0.8561	0.8561	0.5270
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9950	0.9924	0.9924	0.0174
CelebA vs TinyImagenet	0.6878	0.7767	0.7767	0.7347
CelebA vs iSUN	0.7952	0.8583	0.8583	0.5284
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9992	0.9991	0.9991	0.0038
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.1596	0.3351	0.3351	0.9885
FashionMNIST vs KMNIST	0.5226	0.5137	0.5138	0.9053
FashionMNIST vs MNIST	0.7104	0.7219	0.7219	0.8304
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6404	0.6068	0.6069	0.7994
FashionMNIST vs Omniglot	0.8029	0.8051	0.8051	0.6103
KMNIST vs Constant28	0.9738	0.9624	0.9624	0.0745
KMNIST vs FashionMNIST	0.7066	0.6399	0.6400	0.6449
KMNIST vs MNIST	0.6893	0.6824	0.6825	0.8850
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8943	0.8565	0.8566	0.3420
KMNIST vs Omniglot	0.7581	0.7673	0.7673	0.7501
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9872	0.9816	0.9816	0.0517
MNIST vs KMNIST	0.9087	0.8745	0.8745	0.2955
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9993	0.9992	0.9992	0.0025
MNIST vs Omniglot	0.6051	0.6200	0.6202	0.8709
Noise vs CIFAR-10	0.9993	0.9985	0.9985	0.0013
Noise vs CIFAR-100	0.9990	0.9981	0.9981	0.0028
Noise vs CelebA	0.9961	0.9864	0.9864	0.0100
Noise vs Constant	0.9961	0.9933	0.9933	0.0096
Noise vs LSUN	0.9936	0.9882	0.9882	0.0161
Noise vs SVHN	0.9981	0.9907	0.9907	0.0049
Noise vs TinyImagenet	0.9981	0.9968	0.9968	0.0042

Noise vs iSUN	0.9931	0.9897	0.9897	0.0182
Noise28 vs Constant28	0.9734	0.9541	0.9541	0.0659
Noise28 vs FashionMNIST	0.9410	0.9011	0.9011	0.1454
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9981	0.9969	0.9969	0.0048
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.5346	0.6017	0.6018	0.9800
NotMNIST vs FashionMNIST	0.5779	0.5792	0.5793	0.9609
NotMNIST vs KMNIST	0.5338	0.5365	0.5366	0.9770
NotMNIST vs MNIST	0.7355	0.7667	0.7667	0.9102
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.7978	0.8200	0.8201	0.7897
Omniglot vs Constant28	0.9999	0.9999	0.9999	0.0000
Omniglot vs FashionMNIST	0.9751	0.9622	0.9622	0.1165
Omniglot vs KMNIST	0.9486	0.9242	0.9242	0.2040
Omniglot vs MNIST	0.6145	0.5324	0.5325	0.8863
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9995	0.9993	0.9993	0.0021
SVHN vs CIFAR-10	0.9832	0.9905	0.9905	0.0488
SVHN vs CIFAR-100	0.9802	0.9884	0.9884	0.0573
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.8129	0.8807	0.8807	0.4061
SVHN vs LSUN	0.9998	0.9999	0.9999	0.0006
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9895	0.9942	0.9942	0.0313
SVHN vs iSUN	0.9995	0.9997	0.9997	0.0013
TinyImagenet vs CelebA	0.7519	0.6012	0.6012	0.8724
TinyImagenet vs Constant	0.9769	0.9704	0.9704	0.0815
TinyImagenet vs LSUN	0.8882	0.8525	0.8526	0.3803
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9339	0.8740	0.8741	0.3639
TinyImagenet vs iSUN	0.8566	0.8269	0.8269	0.4277
Average	0.8965	0.8907	0.8907	0.2667

Table 114: The detailed performance for indicator $p_S(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7353	0.5859	0.5859	0.8955
CIFAR-10 vs Constant	0.9080	0.8666	0.8666	0.2748
CIFAR-10 vs LSUN	0.9174	0.8928	0.8928	0.3049
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9416	0.8721	0.8721	0.2994
CIFAR-10 vs iSUN	0.8876	0.8593	0.8593	0.3545
CIFAR-100 vs CelebA	0.6667	0.5201	0.5202	0.9652
CIFAR-100 vs Constant	0.9361	0.9054	0.9054	0.1880
CIFAR-100 vs LSUN	0.8927	0.8710	0.8710	0.4174
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9432	0.8779	0.8779	0.2963
CIFAR-100 vs iSUN	0.8626	0.8382	0.8382	0.4506
CelebA vs CIFAR-10	0.6900	0.7719	0.7720	0.7154
CelebA vs CIFAR-100	0.7101	0.7878	0.7878	0.6778
CelebA vs Constant	0.9792	0.9822	0.9822	0.0566
CelebA vs LSUN	0.8070	0.8576	0.8576	0.5462
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9960	0.9933	0.9933	0.0159
CelebA vs TinyImagenet	0.6878	0.7757	0.7758	0.7278
CelebA vs iSUN	0.7941	0.8585	0.8585	0.5432
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9991	0.9989	0.9989	0.0054
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.1638	0.3378	0.3380	0.9880
FashionMNIST vs KMNIST	0.5207	0.5138	0.5140	0.9289
FashionMNIST vs MNIST	0.6964	0.7145	0.7145	0.7782
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6465	0.6087	0.6087	0.8556
FashionMNIST vs Omniglot	0.8015	0.8002	0.8003	0.5420
KMNIST vs Constant28	0.9719	0.9609	0.9609	0.0810
KMNIST vs FashionMNIST	0.7010	0.6363	0.6365	0.6749
KMNIST vs MNIST	0.7011	0.6778	0.6779	0.8004
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8889	0.8566	0.8567	0.3865
KMNIST vs Omniglot	0.7755	0.7688	0.7689	0.6219
MNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
MNIST vs FashionMNIST	0.9880	0.9824	0.9824	0.0399
MNIST vs KMNIST	0.9120	0.8731	0.8732	0.2580
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9991	0.9991	0.9991	0.0022
MNIST vs Omniglot	0.6054	0.6230	0.6231	0.8596
Noise vs CIFAR-10	0.9993	0.9985	0.9985	0.0013
Noise vs CIFAR-100	0.9990	0.9981	0.9981	0.0028
Noise vs CelebA	0.9961	0.9864	0.9864	0.0100
Noise vs Constant	0.9961	0.9932	0.9932	0.0096
Noise vs LSUN	0.9936	0.9881	0.9881	0.0161
Noise vs SVHN	0.9980	0.9907	0.9907	0.0049
Noise vs TinyImagenet	0.9981	0.9968	0.9968	0.0042

Noise vs iSUN	0.9931	0.9896	0.9896	0.0183
Noise28 vs Constant28	0.9735	0.9547	0.9547	0.0662
Noise28 vs FashionMNIST	0.9405	0.9017	0.9017	0.1479
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9981	0.9969	0.9969	0.0051
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.5987	0.6786	0.6786	0.9721
NotMNIST vs FashionMNIST	0.5851	0.5942	0.5944	0.9799
NotMNIST vs KMNIST	0.5323	0.5405	0.5406	0.9877
NotMNIST vs MNIST	0.7205	0.7343	0.7343	0.8148
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.8004	0.8084	0.8085	0.5975
Omniglot vs Constant28	0.9999	0.9999	0.9999	0.0000
Omniglot vs FashionMNIST	0.9720	0.9590	0.9590	0.1403
Omniglot vs KMNIST	0.9442	0.9221	0.9221	0.2383
Omniglot vs MNIST	0.6133	0.5353	0.5354	0.9139
Omniglot vs Noise28	0.9999	1.0000	0.9999	0.0000
Omniglot vs NotMNIST	0.9994	0.9992	0.9992	0.0031
SVHN vs CIFAR-10	0.9785	0.9891	0.9891	0.0728
SVHN vs CIFAR-100	0.9763	0.9874	0.9874	0.0789
SVHN vs CelebA	0.9992	0.9995	0.9995	0.0001
SVHN vs Constant	0.8145	0.8800	0.8800	0.4171
SVHN vs LSUN	0.9995	0.9998	0.9998	0.0009
SVHN vs Noise	0.9999	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9859	0.9933	0.9933	0.0463
SVHN vs iSUN	0.9991	0.9996	0.9996	0.0024
TinyImagenet vs CelebA	0.7486	0.6086	0.6087	0.9054
TinyImagenet vs Constant	0.9801	0.9717	0.9717	0.0705
TinyImagenet vs LSUN	0.8845	0.8541	0.8541	0.4171
TinyImagenet vs Noise	0.9999	1.0000	0.9999	0.0000
TinyImagenet vs SVHN	0.9433	0.8796	0.8796	0.3017
TinyImagenet vs iSUN	0.8535	0.8278	0.8279	0.4548
Average	0.8972	0.8916	0.8916	0.2636

Table 115: The detailed performance for indicator $T_{perm}(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6079	0.5707	0.5707	0.9937
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9209	0.9349	0.9349	0.4929
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.8664	0.7764	0.7764	0.7336
CIFAR-10 vs iSUN	0.9277	0.9463	0.9463	0.4542
CIFAR-100 vs CelebA	0.6025	0.5860	0.5860	0.9978
CIFAR-100 vs Constant	0.9998	0.9999	0.9999	0.0000
CIFAR-100 vs LSUN	0.8941	0.9166	0.9166	0.6816
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.8347	0.7581	0.7581	0.9229
CIFAR-100 vs iSUN	0.9018	0.9302	0.9302	0.6645
CelebA vs CIFAR-10	0.7641	0.8227	0.8228	0.6330
CelebA vs CIFAR-100	0.7232	0.7707	0.7707	0.6343
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9470	0.9674	0.9674	0.2254
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9876	0.9834	0.9834	0.0546
CelebA vs TinyImagenet	0.7433	0.7844	0.7844	0.5884
CelebA vs iSUN	0.9583	0.9771	0.9771	0.1802
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9982	0.9978	0.9978	0.0093
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.7973	0.8262	0.8262	0.7664
FashionMNIST vs MNIST	0.9915	0.9936	0.9936	0.0118
FashionMNIST vs Noise28	0.0112	0.3075	0.3075	0.9999
FashionMNIST vs NotMNIST	0.7280	0.7293	0.7294	0.7099
FashionMNIST vs Omniglot	0.9896	0.9926	0.9926	0.0460
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.2976	0.3717	0.3718	0.9725
KMNIST vs MNIST	0.9609	0.9687	0.9687	0.2764
KMNIST vs Noise28	0.0185	0.3100	0.3100	0.9881
KMNIST vs NotMNIST	0.5454	0.5009	0.5010	0.7324
KMNIST vs Omniglot	0.9617	0.9703	0.9703	0.2062
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.0323	0.3109	0.3109	1.0000
MNIST vs KMNIST	0.0630	0.3150	0.3150	0.9999
MNIST vs Noise28	0.0077	0.3083	0.3083	0.9943
MNIST vs NotMNIST	0.2758	0.3680	0.3680	0.8690
MNIST vs Omniglot	0.5975	0.6150	0.6151	0.9827
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9998	0.9998	0.9998	0.0000
NotMNIST vs FashionMNIST	0.3563	0.4014	0.4015	1.0000
NotMNIST vs KMNIST	0.6132	0.6599	0.6599	0.9998
NotMNIST vs MNIST	0.8601	0.9159	0.9159	0.9292
NotMNIST vs Noise28	0.0037	0.3074	0.3074	0.9989
NotMNIST vs Omniglot	0.8630	0.9262	0.9262	0.9753
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.0324	0.2698	0.2698	0.9991
Omniglot vs KMNIST	0.1074	0.2803	0.2804	0.9878
Omniglot vs MNIST	0.5155	0.5080	0.5080	0.8915
Omniglot vs Noise28	0.0410	0.2741	0.2741	0.9659
Omniglot vs NotMNIST	0.3386	0.3401	0.3401	0.7808
SVHN vs CIFAR-10	0.5942	0.7900	0.7900	0.8129
SVHN vs CIFAR-100	0.6159	0.7960	0.7960	0.7631
SVHN vs CelebA	0.7904	0.8539	0.8539	0.7442
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	0.9987	0.9994	0.9994	0.0060
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.6812	0.8345	0.8345	0.7108
SVHN vs iSUN	0.9979	0.9992	0.9992	0.0093
TinyImagenet vs CelebA	0.6505	0.6404	0.6404	0.9906
TinyImagenet vs Constant	0.9999	0.9999	0.9999	0.0000
TinyImagenet vs LSUN	0.9026	0.9140	0.9140	0.5330
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.8720	0.7810	0.7811	0.6400
TinyImagenet vs iSUN	0.9092	0.9274	0.9274	0.5109
Average	0.8011	0.8373	0.8373	0.3703

Table 116: The detailed performance for indicator $S(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7638	0.7053	0.7053	0.9214
CIFAR-10 vs Constant	0.1966	0.3438	0.3438	0.9544
CIFAR-10 vs LSUN	0.9200	0.9155	0.9155	0.3587
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0282	0.1546	0.1546	1.0000
CIFAR-10 vs iSUN	0.8969	0.8908	0.8908	0.3908
CIFAR-100 vs CelebA	0.6938	0.6498	0.6498	0.9770
CIFAR-100 vs Constant	0.1383	0.3302	0.3302	0.9704
CIFAR-100 vs LSUN	0.8643	0.8753	0.8754	0.6866
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0298	0.1546	0.1546	1.0000
CIFAR-100 vs iSUN	0.8454	0.8585	0.8586	0.6505
CelebA vs CIFAR-10	0.3214	0.5374	0.5374	0.9460
CelebA vs CIFAR-100	0.3676	0.5534	0.5534	0.8939
CelebA vs Constant	0.0283	0.4555	0.4555	0.9926
CelebA vs LSUN	0.8037	0.8376	0.8377	0.5361
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0037	0.2579	0.2580	1.0000
CelebA vs TinyImagenet	0.3947	0.5714	0.5714	0.8926
CelebA vs iSUN	0.7704	0.8177	0.8177	0.5555
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	0.9999	0.9999	0.9999	0.0003
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9989	0.9970	0.9970	0.0063
Constant vs TinyImagenet	0.9999	0.9999	0.9999	0.0003
Constant vs iSUN	1.0000	1.0000	1.0000	0.0002
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9971	0.9967	0.9967	0.0124
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.6336	0.7318	0.7319	1.0000
FashionMNIST vs KMNIST	0.4859	0.4983	0.4984	0.9393
FashionMNIST vs MNIST	0.1219	0.3231	0.3231	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6874	0.7097	0.7098	0.8722
FashionMNIST vs Omniglot	0.0861	0.3606	0.3606	1.0000
KMNIST vs Constant28	0.9910	0.9639	0.9639	0.0120
KMNIST vs FashionMNIST	0.7534	0.7271	0.7271	0.6202
KMNIST vs MNIST	0.0895	0.3162	0.3163	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8778	0.8775	0.8775	0.5048
KMNIST vs Omniglot	0.0967	0.3629	0.3629	0.9999
MNIST vs Constant28	0.9908	0.9622	0.9623	0.0120
MNIST vs FashionMNIST	0.9762	0.9713	0.9713	0.0937
MNIST vs KMNIST	0.9371	0.9263	0.9263	0.2173
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9978	0.9974	0.9974	0.0115
MNIST vs Omniglot	0.5149	0.5320	0.5320	0.8144
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0001	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0012	0.3070	0.3070	0.9998
Noise28 vs KMNIST	0.0046	0.3070	0.3070	1.0000
Noise28 vs MNIST	0.0095	0.3072	0.3072	1.0000
Noise28 vs NotMNIST	0.0035	0.3071	0.3072	0.9999
Noise28 vs Omniglot	0.0211	0.3506	0.3506	1.0000
NotMNIST vs Constant28	0.8776	0.7713	0.7714	0.2285
NotMNIST vs FashionMNIST	0.6355	0.6065	0.6066	0.8788
NotMNIST vs KMNIST	0.5064	0.5073	0.5074	0.9550
NotMNIST vs MNIST	0.1093	0.3205	0.3205	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.1045	0.3642	0.3642	0.9999
Omniglot vs Constant28	0.9894	0.9488	0.9489	0.0120
Omniglot vs FashionMNIST	0.9810	0.9742	0.9742	0.0862
Omniglot vs KMNIST	0.9396	0.9287	0.9287	0.2930
Omniglot vs MNIST	0.7049	0.6528	0.6528	0.8698
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9981	0.9976	0.9976	0.0098
SVHN vs CIFAR-10	0.9935	0.9975	0.9975	0.0242
SVHN vs CIFAR-100	0.9928	0.9971	0.9971	0.0317
SVHN vs CelebA	0.9997	0.9998	0.9998	0.0001
SVHN vs Constant	0.6954	0.7604	0.7604	0.5076
SVHN vs LSUN	0.9998	0.9999	0.9999	0.0005
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9938	0.9975	0.9975	0.0237
SVHN vs iSUN	0.9996	0.9998	0.9998	0.0011
TinyImagenet vs CelebA	0.7785	0.7106	0.7107	0.8876
TinyImagenet vs Constant	0.0285	0.3061	0.3061	0.9990
TinyImagenet vs LSUN	0.8980	0.8811	0.8811	0.3955
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0264	0.1521	0.1521	1.0000
TinyImagenet vs iSUN	0.8665	0.8482	0.8482	0.4469
Average	0.6246	0.7063	0.7063	0.5054

Table 117: The detailed performance for indicator Volume based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6982	0.6019	0.6020	0.9417
CIFAR-10 vs Constant	0.0506	0.3114	0.3114	1.0000
CIFAR-10 vs LSUN	0.7588	0.7197	0.7198	0.6842
CIFAR-10 vs Noise	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs SVHN	0.0287	0.1548	0.1548	1.0000
CIFAR-10 vs iSUN	0.7350	0.7112	0.7113	0.7010
CIFAR-100 vs CelebA	0.5386	0.4016	0.4016	0.9921
CIFAR-100 vs Constant	0.0526	0.3120	0.3120	1.0000
CIFAR-100 vs LSUN	0.6408	0.5793	0.5794	0.8255
CIFAR-100 vs Noise	0.0000	0.3368	0.3368	1.0000
CIFAR-100 vs SVHN	0.0338	0.1555	0.1555	1.0000
CIFAR-100 vs iSUN	0.6352	0.5996	0.5997	0.8069
CelebA vs CIFAR-10	0.3828	0.5695	0.5695	0.9302
CelebA vs CIFAR-100	0.4221	0.5844	0.5844	0.8929
CelebA vs Constant	0.0319	0.4550	0.4550	1.0000
CelebA vs LSUN	0.7281	0.7815	0.7816	0.6025
CelebA vs Noise	0.0000	0.4503	0.4503	1.0000
CelebA vs SVHN	0.0068	0.2586	0.2587	1.0000
CelebA vs TinyImagenet	0.4578	0.6090	0.6090	0.8741
CelebA vs iSUN	0.7114	0.7829	0.7830	0.6058
Constant vs CIFAR-10	0.0000	0.3407	0.3407	1.0000
Constant vs CIFAR-100	0.0000	0.3436	0.3437	1.0000
Constant vs CelebA	0.0000	0.2430	0.2430	1.0000
Constant vs LSUN	0.0000	0.6317	0.6317	1.0000
Constant vs Noise	nan	1.0000	1.0000	nan
Constant vs SVHN	0.0000	0.1545	0.1545	1.0000
Constant vs TinyImagenet	0.0000	0.3375	0.3375	1.0000
Constant vs iSUN	0.0000	0.5832	0.5833	1.0000
Constant28 vs FashionMNIST	0.0000	0.6647	0.6647	1.0000
Constant28 vs KMNIST	0.0000	0.9602	0.9602	1.0000
Constant28 vs MNIST	0.0000	0.9231	0.9232	1.0000
Constant28 vs Noise28	nan	1.0000	1.0000	nan
Constant28 vs NotMNIST	0.0391	0.7177	0.7178	1.0000
Constant28 vs Omniglot	0.0000	0.8676	0.8677	1.0000
FashionMNIST vs Constant28	0.0312	0.3148	0.3148	0.9997
FashionMNIST vs KMNIST	0.3252	0.3847	0.3848	0.9894
FashionMNIST vs MNIST	0.3305	0.4245	0.4246	0.9998
FashionMNIST vs Noise28	0.0002	0.3069	0.3069	1.0000
FashionMNIST vs NotMNIST	0.2882	0.3682	0.3683	0.9752
FashionMNIST vs Omniglot	0.2451	0.4503	0.4504	0.9999
KMNIST vs Constant28	0.8861	0.8439	0.8440	0.2290
KMNIST vs FashionMNIST	0.3600	0.4049	0.4050	0.9520
KMNIST vs MNIST	0.5138	0.5379	0.5380	0.9864
KMNIST vs Noise28	0.0058	0.3069	0.3069	1.0000
KMNIST vs NotMNIST	0.2563	0.3823	0.3824	0.9495
KMNIST vs Omniglot	0.5826	0.6847	0.6848	0.9804
MNIST vs Constant28	0.1136	0.3310	0.3310	0.9083
MNIST vs FashionMNIST	0.0305	0.3103	0.3104	0.9971
MNIST vs KMNIST	0.4083	0.4108	0.4109	0.8571
MNIST vs Noise28	0.0009	0.3069	0.3069	1.0000
MNIST vs NotMNIST	0.1483	0.3347	0.3348	0.9241
MNIST vs Omniglot	0.4803	0.5394	0.5395	0.9312
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0003	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0003	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0313	0.3099	0.3099	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0002	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.5732	0.5177	0.5177	0.7946
NotMNIST vs FashionMNIST	0.3380	0.3884	0.3885	0.9502
NotMNIST vs KMNIST	0.2436	0.3543	0.3544	0.9866
NotMNIST vs MNIST	0.1742	0.3388	0.3389	0.9997
NotMNIST vs Noise28	0.0024	0.3069	0.3069	1.0000
NotMNIST vs Omniglot	0.2659	0.4357	0.4358	0.9993
Omniglot vs Constant28	0.9766	0.9125	0.9126	0.0340
Omniglot vs FashionMNIST	0.3297	0.3377	0.3377	0.7678
Omniglot vs KMNIST	0.2387	0.3103	0.3104	0.9076
Omniglot vs MNIST	0.3957	0.3634	0.3634	0.9370
Omniglot vs Noise28	0.0004	0.2668	0.2669	1.0000
Omniglot vs NotMNIST	0.1182	0.2877	0.2877	0.9117
SVHN vs CIFAR-10	0.9522	0.9384	0.9384	0.0858
SVHN vs CIFAR-100	0.9261	0.9085	0.9085	0.1176
SVHN vs CelebA	0.8936	0.7999	0.7999	0.1471
SVHN vs Constant	0.3281	0.5986	0.5986	0.9655
SVHN vs LSUN	0.3421	0.5967	0.5968	0.7726
SVHN vs Noise	0.0000	0.5453	0.5453	1.0000
SVHN vs TinyImagenet	0.9177	0.9024	0.9024	0.1333
SVHN vs iSUN	0.3795	0.6317	0.6317	0.7348
TinyImagenet vs CelebA	0.5676	0.4386	0.4388	0.9903
TinyImagenet vs Constant	0.0623	0.3113	0.3113	0.9976
TinyImagenet vs LSUN	0.4161	0.4261	0.4262	0.9940
TinyImagenet vs Noise	0.0000	0.3037	0.3037	1.0000
TinyImagenet vs SVHN	0.0135	0.1522	0.1522	1.0000
TinyImagenet vs iSUN	0.3977	0.4431	0.4431	0.9945
Average	nan	0.4675	0.4675	nan

Table 118: The detailed performance for indicator $\|\nabla_x \log p_\theta(x)\|$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9188	0.8961	0.8961	0.5183
CIFAR-10 vs Constant	0.0801	0.3208	0.3208	0.9578
CIFAR-10 vs LSUN	0.9667	0.9608	0.9608	0.1454
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0433	0.1551	0.1552	1.0000
CIFAR-10 vs iSUN	0.9457	0.9395	0.9396	0.2090
CIFAR-100 vs CelebA	0.9038	0.8834	0.8834	0.6427
CIFAR-100 vs Constant	0.0607	0.3161	0.3161	0.9869
CIFAR-100 vs LSUN	0.9664	0.9622	0.9622	0.1435
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0397	0.1549	0.1549	1.0000
CIFAR-100 vs iSUN	0.9447	0.9377	0.9378	0.2106
CelebA vs CIFAR-10	0.3236	0.5391	0.5392	0.9475
CelebA vs CIFAR-100	0.3465	0.5463	0.5464	0.9236
CelebA vs Constant	0.0334	0.4571	0.4571	0.9848
CelebA vs LSUN	0.8693	0.8970	0.8971	0.4059
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0030	0.2579	0.2579	1.0000
CelebA vs TinyImagenet	0.3452	0.5508	0.5508	0.9214
CelebA vs iSUN	0.8346	0.8719	0.8720	0.4341
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9993	0.9993	0.9993	0.0040
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.2110	0.3467	0.3467	0.9961
FashionMNIST vs KMNIST	0.7473	0.7510	0.7510	0.7519
FashionMNIST vs MNIST	0.3123	0.4019	0.4020	0.9976
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.8950	0.8994	0.8994	0.5006
FashionMNIST vs Omniglot	0.2263	0.4004	0.4005	0.9991
KMNIST vs Constant28	0.4563	0.4339	0.4339	0.9908
KMNIST vs FashionMNIST	0.7290	0.6779	0.6780	0.6937
KMNIST vs MNIST	0.2311	0.3530	0.3531	0.9879
KMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9371	0.9337	0.9337	0.2893
KMNIST vs Omniglot	0.1480	0.3743	0.3743	0.9994
MNIST vs Constant28	0.9949	0.9734	0.9734	0.0050
MNIST vs FashionMNIST	0.9965	0.9964	0.9964	0.0148
MNIST vs KMNIST	0.9465	0.9436	0.9436	0.2440
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9997	0.9997	0.9997	0.0009
MNIST vs Omniglot	0.4490	0.5037	0.5038	0.9421
Noise vs CIFAR-10	0.6154	0.5065	0.5065	0.4192
Noise vs CIFAR-100	0.5869	0.4910	0.4910	0.4439
Noise vs CelebA	0.7999	0.4981	0.4981	0.2206
Noise vs Constant	0.8861	0.7412	0.7413	0.1193
Noise vs LSUN	0.7671	0.6132	0.6132	0.2667
Noise vs SVHN	0.7780	0.4177	0.4177	0.2391
Noise vs TinyImagenet	0.6413	0.5258	0.5258	0.3905

Noise vs iSUN	0.7897	0.6561	0.6562	0.2426
Noise28 vs Constant28	0.2333	0.3583	0.3584	0.8047
Noise28 vs FashionMNIST	0.9864	0.9670	0.9670	0.0338
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9993	0.9961	0.9961	0.0011
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.0930	0.3238	0.3238	0.9591
NotMNIST vs FashionMNIST	0.6143	0.6080	0.6081	0.8667
NotMNIST vs KMNIST	0.7122	0.7276	0.7276	0.8468
NotMNIST vs MNIST	0.4085	0.4957	0.4957	0.9877
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.2524	0.4251	0.4252	0.9995
Omniglot vs Constant28	0.8808	0.8751	0.8751	0.6505
Omniglot vs FashionMNIST	0.9391	0.9215	0.9215	0.2432
Omniglot vs KMNIST	0.9668	0.9580	0.9580	0.1702
Omniglot vs MNIST	0.7370	0.6822	0.6822	0.8127
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9980	0.9973	0.9973	0.0113
SVHN vs CIFAR-10	0.9914	0.9960	0.9960	0.0340
SVHN vs CIFAR-100	0.9897	0.9953	0.9953	0.0423
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.2750	0.5763	0.5763	0.8373
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0002
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9955	0.9977	0.9977	0.0162
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0007
TinyImagenet vs CelebA	0.8920	0.8705	0.8705	0.7122
TinyImagenet vs Constant	0.0036	0.3034	0.3034	1.0000
TinyImagenet vs LSUN	0.9372	0.9316	0.9316	0.2986
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0260	0.1522	0.1522	1.0000
TinyImagenet vs iSUN	0.9117	0.9038	0.9038	0.3444
Average	0.7458	0.7733	0.7734	0.3790

Table 119: The detailed performance for indicator $\log p_{\mathcal{N}}(f(x))$
based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8118	0.7480	0.7480	0.8030
CIFAR-10 vs Constant	0.1826	0.3393	0.3394	0.9737
CIFAR-10 vs LSUN	0.9759	0.9681	0.9681	0.0902
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0273	0.1545	0.1545	1.0000
CIFAR-10 vs iSUN	0.9582	0.9460	0.9460	0.1299
CIFAR-100 vs CelebA	0.7919	0.7357	0.7357	0.8633
CIFAR-100 vs Constant	0.1200	0.3252	0.3252	0.9979
CIFAR-100 vs LSUN	0.9750	0.9683	0.9683	0.0959
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0244	0.1544	0.1544	1.0000
CIFAR-100 vs iSUN	0.9571	0.9469	0.9469	0.1382
CelebA vs CIFAR-10	0.3819	0.5651	0.5652	0.9312
CelebA vs CIFAR-100	0.4022	0.5705	0.5706	0.9008
CelebA vs Constant	0.0294	0.4549	0.4549	0.9998
CelebA vs LSUN	0.9526	0.9564	0.9565	0.1339
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0050	0.2581	0.2581	0.9998
CelebA vs TinyImagenet	0.4693	0.6087	0.6087	0.8658
CelebA vs iSUN	0.9265	0.9347	0.9348	0.1790
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0001
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0002
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9999	0.9998	0.9998	0.0010
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0001
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0001
Constant28 vs Omniglot	0.9982	0.9984	0.9984	0.0104
FashionMNIST vs Constant28	0.9293	0.9292	0.9293	0.8534
FashionMNIST vs KMNIST	0.3252	0.3959	0.3960	0.9929
FashionMNIST vs MNIST	0.0582	0.3113	0.3114	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7746	0.7875	0.7876	0.7072
FashionMNIST vs Omniglot	0.0337	0.3523	0.3523	1.0000
KMNIST vs Constant28	0.9929	0.9708	0.9709	0.0120
KMNIST vs FashionMNIST	0.8359	0.8072	0.8072	0.4707
KMNIST vs MNIST	0.1470	0.3289	0.3290	1.0000
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9553	0.9544	0.9544	0.2247
KMNIST vs Omniglot	0.0855	0.3604	0.3604	1.0000
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9855	0.9802	0.9802	0.0463
MNIST vs KMNIST	0.8946	0.8754	0.8754	0.3315
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9995	0.9995	0.9995	0.0025
MNIST vs Omniglot	0.3580	0.4544	0.4545	0.9487
Noise vs CIFAR-10	0.0513	0.3170	0.3170	0.9509
Noise vs CIFAR-100	0.0807	0.3232	0.3232	0.9221
Noise vs CelebA	0.1733	0.2179	0.2180	0.8327
Noise vs Constant	0.6244	0.5123	0.5124	0.3791
Noise vs LSUN	0.1455	0.3376	0.3376	0.8622
Noise vs SVHN	0.2022	0.1835	0.1835	0.8022
Noise vs TinyImagenet	0.0869	0.3283	0.3284	0.9149

Noise vs iSUN	0.1226	0.3553	0.3554	0.8848
Noise28 vs Constant28	0.1058	0.3277	0.3278	0.9232
Noise28 vs FashionMNIST	0.8282	0.6839	0.6839	0.2608
Noise28 vs KMNIST	0.9999	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9959	0.9873	0.9873	0.0080
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9621	0.9085	0.9085	0.0752
NotMNIST vs FashionMNIST	0.6430	0.5784	0.5785	0.7620
NotMNIST vs KMNIST	0.3221	0.3864	0.3864	0.9895
NotMNIST vs MNIST	0.0426	0.3094	0.3094	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.0346	0.3524	0.3524	1.0000
Omniglot vs Constant28	0.9950	0.9684	0.9685	0.0050
Omniglot vs FashionMNIST	0.9886	0.9843	0.9843	0.0480
Omniglot vs KMNIST	0.9432	0.9308	0.9308	0.2665
Omniglot vs MNIST	0.7217	0.6677	0.6677	0.8233
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9997	0.9996	0.9996	0.0014
SVHN vs CIFAR-10	0.9874	0.9948	0.9948	0.0549
SVHN vs CIFAR-100	0.9874	0.9948	0.9948	0.0572
SVHN vs CelebA	0.9989	0.9993	0.9993	0.0004
SVHN vs Constant	0.7777	0.8319	0.8319	0.4924
SVHN vs LSUN	0.9997	0.9999	0.9999	0.0010
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9911	0.9964	0.9964	0.0378
SVHN vs iSUN	0.9992	0.9997	0.9997	0.0021
TinyImagenet vs CelebA	0.7059	0.6253	0.6254	0.9330
TinyImagenet vs Constant	0.0368	0.3069	0.3070	1.0000
TinyImagenet vs LSUN	0.9624	0.9505	0.9505	0.1362
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0178	0.1518	0.1519	1.0000
TinyImagenet vs iSUN	0.9393	0.9210	0.9210	0.1858
Average	0.7047	0.7559	0.7560	0.3948

Table 120: The detailed performance for indicator $\log p_{\theta_0}(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8092	0.7614	0.7614	0.8782
CIFAR-10 vs Constant	0.0801	0.3194	0.3194	0.9663
CIFAR-10 vs LSUN	0.4674	0.4637	0.4638	0.9652
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.4173	0.3559	0.3559	0.9997
CIFAR-10 vs iSUN	0.4383	0.4690	0.4691	0.9590
CIFAR-100 vs CelebA	0.7515	0.7160	0.7160	0.9626
CIFAR-100 vs Constant	0.0174	0.3085	0.3085	0.9982
CIFAR-100 vs LSUN	0.3123	0.4061	0.4062	0.9950
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.2394	0.2167	0.2168	0.9999
CIFAR-100 vs iSUN	0.2781	0.4125	0.4126	0.9962
CelebA vs CIFAR-10	0.2521	0.5116	0.5116	0.9491
CelebA vs CIFAR-100	0.3179	0.5340	0.5340	0.9109
CelebA vs Constant	0.0250	0.4551	0.4552	0.9919
CelebA vs LSUN	0.0355	0.4566	0.4566	0.9951
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1129	0.2698	0.2698	0.9995
CelebA vs TinyImagenet	0.2289	0.5085	0.5085	0.9556
CelebA vs iSUN	0.0305	0.4804	0.4804	0.9954
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9875	0.9458	0.9458	0.0126
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs KMNIST	0.9457	0.9556	0.9556	0.3394
FashionMNIST vs MNIST	0.7842	0.8148	0.8148	0.9218
FashionMNIST vs Noise28	0.9999	0.9990	0.9991	0.0003
FashionMNIST vs NotMNIST	0.6262	0.5561	0.5561	0.8508
FashionMNIST vs Omniglot	0.7496	0.7993	0.7993	0.8928
KMNIST vs Constant28	0.0340	0.3109	0.3109	1.0000
KMNIST vs FashionMNIST	0.4278	0.4340	0.4341	0.9268
KMNIST vs MNIST	0.2039	0.3441	0.3442	0.9891
KMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.6853	0.6953	0.6954	0.9120
KMNIST vs Omniglot	0.2453	0.4055	0.4056	0.9984
MNIST vs Constant28	0.8532	0.7940	0.7941	0.4353
MNIST vs FashionMNIST	0.9536	0.9430	0.9431	0.1932
MNIST vs KMNIST	0.9215	0.9071	0.9072	0.3079
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9684	0.9531	0.9531	0.1080
MNIST vs Omniglot	0.7467	0.7429	0.7430	0.7673
Noise vs CIFAR-10	0.0902	0.3244	0.3244	0.9327
Noise vs CIFAR-100	0.1002	0.3267	0.3267	0.9219
Noise vs CelebA	0.0590	0.1978	0.1978	0.9518
Noise vs Constant	0.1030	0.3281	0.3281	0.8983
Noise vs LSUN	0.1655	0.3401	0.3401	0.8886
Noise vs SVHN	0.0047	0.1543	0.1543	0.9962
Noise vs TinyImagenet	0.1402	0.3393	0.3393	0.8891

Noise vs iSUN	0.2149	0.3763	0.3764	0.8436
Noise28 vs Constant28	0.3383	0.3850	0.3851	0.8128
Noise28 vs FashionMNIST	0.9080	0.8266	0.8267	0.2054
Noise28 vs KMNIST	0.9903	0.9819	0.9819	0.0299
Noise28 vs MNIST	0.9993	0.9974	0.9974	0.0015
Noise28 vs NotMNIST	0.9665	0.9358	0.9359	0.0953
Noise28 vs Omniglot	0.9998	0.9998	0.9998	0.0004
NotMNIST vs Constant28	0.0046	0.3076	0.3076	1.0000
NotMNIST vs FashionMNIST	0.5679	0.5903	0.5904	0.9561
NotMNIST vs KMNIST	0.9147	0.9365	0.9365	0.6017
NotMNIST vs MNIST	0.7856	0.8361	0.8361	0.9671
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.7304	0.8058	0.8058	0.9793
Omniglot vs Constant28	0.8149	0.7413	0.7414	0.4779
Omniglot vs FashionMNIST	0.9051	0.8768	0.8768	0.3450
Omniglot vs KMNIST	0.9556	0.9437	0.9437	0.2126
Omniglot vs MNIST	0.6972	0.6388	0.6388	0.8557
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9943	0.9923	0.9923	0.0270
SVHN vs CIFAR-10	0.6625	0.7899	0.7899	0.6309
SVHN vs CIFAR-100	0.7063	0.8065	0.8065	0.5551
SVHN vs CelebA	0.9940	0.9949	0.9949	0.0289
SVHN vs Constant	0.1679	0.5464	0.5464	0.8502
SVHN vs LSUN	0.9887	0.9923	0.9923	0.0384
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.7182	0.8428	0.8429	0.6176
SVHN vs iSUN	0.9797	0.9894	0.9894	0.0641
TinyImagenet vs CelebA	0.9166	0.8777	0.8778	0.4652
TinyImagenet vs Constant	0.0376	0.3055	0.3056	0.9999
TinyImagenet vs LSUN	0.4210	0.4296	0.4297	0.9323
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.5257	0.4652	0.4653	0.9990
TinyImagenet vs iSUN	0.3927	0.4399	0.4400	0.9313
Average	0.6403	0.7089	0.7089	0.5345

Table 121: The detailed performance for indicator $LLR(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8253	0.7715	0.7715	0.8509
CIFAR-10 vs Constant	0.1950	0.3413	0.3413	0.9649
CIFAR-10 vs LSUN	0.6519	0.5940	0.5941	0.8666
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.6699	0.6200	0.6200	0.9999
CIFAR-10 vs iSUN	0.6121	0.5787	0.5788	0.8586
CIFAR-100 vs CelebA	0.7601	0.7204	0.7204	0.9564
CIFAR-100 vs Constant	0.0218	0.3086	0.3086	0.9980
CIFAR-100 vs LSUN	0.3870	0.4434	0.4435	0.9913
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.3186	0.2747	0.2747	1.0000
CIFAR-100 vs iSUN	0.3532	0.4473	0.4474	0.9924
CelebA vs CIFAR-10	0.3095	0.5338	0.5338	0.9465
CelebA vs CIFAR-100	0.3747	0.5589	0.5589	0.9064
CelebA vs Constant	0.0751	0.4642	0.4642	0.9930
CelebA vs LSUN	0.0896	0.4682	0.4682	0.9806
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.4982	0.4381	0.4382	0.9945
CelebA vs TinyImagenet	0.2845	0.5275	0.5275	0.9422
CelebA vs iSUN	0.0761	0.4901	0.4901	0.9815
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9877	0.9480	0.9481	0.0124
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.0046	0.3077	0.3077	1.0000
FashionMNIST vs KMNIST	0.9172	0.9383	0.9383	0.5883
FashionMNIST vs MNIST	0.8739	0.9229	0.9229	0.9870
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6496	0.5703	0.5703	0.8133
FashionMNIST vs Omniglot	0.9041	0.9507	0.9507	0.9678
KMNIST vs Constant28	0.3408	0.3935	0.3936	1.0000
KMNIST vs FashionMNIST	0.5498	0.4905	0.4906	0.8842
KMNIST vs MNIST	0.3199	0.4303	0.4304	0.9936
KMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8202	0.7735	0.7736	0.7275
KMNIST vs Omniglot	0.4472	0.6333	0.6333	0.9991
MNIST vs Constant28	0.9995	0.9995	0.9995	0.0035
MNIST vs FashionMNIST	0.9903	0.9875	0.9875	0.0368
MNIST vs KMNIST	0.9426	0.9183	0.9184	0.1926
MNIST vs Noise28	0.9998	0.9983	0.9983	0.0002
MNIST vs NotMNIST	0.9982	0.9968	0.9968	0.0044
MNIST vs Omniglot	0.7746	0.8385	0.8386	0.7943
Noise vs CIFAR-10	0.9942	0.9717	0.9718	0.0067
Noise vs CIFAR-100	0.9878	0.9487	0.9487	0.0142
Noise vs CelebA	0.9737	0.8486	0.8487	0.0329
Noise vs Constant	0.9211	0.7952	0.7952	0.0845
Noise vs LSUN	0.9863	0.9549	0.9549	0.0248
Noise vs SVHN	0.9634	0.7695	0.7695	0.0396
Noise vs TinyImagenet	0.9859	0.9427	0.9428	0.0158

Noise vs iSUN	0.9864	0.9586	0.9586	0.0259
Noise28 vs Constant28	0.9901	0.9888	0.9888	0.0458
Noise28 vs FashionMNIST	0.9597	0.9364	0.9365	0.1196
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9982	0.9968	0.9968	0.0042
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.0103	0.3085	0.3085	1.0000
NotMNIST vs FashionMNIST	0.6101	0.5675	0.5675	0.9564
NotMNIST vs KMNIST	0.9084	0.9409	0.9409	0.7823
NotMNIST vs MNIST	0.8829	0.9334	0.9334	0.9950
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.8878	0.9441	0.9441	0.9983
Omniglot vs Constant28	0.9943	0.9917	0.9917	0.0106
Omniglot vs FashionMNIST	0.9656	0.9499	0.9500	0.1658
Omniglot vs KMNIST	0.9664	0.9491	0.9492	0.1686
Omniglot vs MNIST	0.7000	0.6049	0.6051	0.8491
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9990	0.9985	0.9985	0.0041
SVHN vs CIFAR-10	0.8996	0.9423	0.9423	0.2789
SVHN vs CIFAR-100	0.9032	0.9372	0.9372	0.2457
SVHN vs CelebA	0.9998	0.9999	0.9999	0.0001
SVHN vs Constant	0.1901	0.5518	0.5518	0.8294
SVHN vs LSUN	0.9989	0.9979	0.9979	0.0021
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9577	0.9777	0.9777	0.1545
SVHN vs iSUN	0.9987	0.9994	0.9994	0.0037
TinyImagenet vs CelebA	0.9124	0.8752	0.8753	0.5249
TinyImagenet vs Constant	0.2113	0.3454	0.3455	0.9999
TinyImagenet vs LSUN	0.5706	0.5191	0.5192	0.8505
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.7338	0.6956	0.6957	0.9995
TinyImagenet vs iSUN	0.5328	0.5167	0.5168	0.8486
Average	0.7783	0.8080	0.8080	0.4164

Table 122: The detailed performance for indicator $LLR(x) + 0.1p_S(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5042	0.8919	0.8919	0.9525
CIFAR-10 vs Constant	0.5023	0.8346	0.8346	0.9502
CIFAR-10 vs LSUN	0.5000	0.5000	0.5001	0.9506
CIFAR-10 vs Noise	0.5014	0.8326	0.8326	0.9526
CIFAR-10 vs SVHN	0.3801	0.6819	0.6820	0.9877
CIFAR-10 vs iSUN	0.5000	0.5000	0.5002	0.9499
CIFAR-100 vs CelebA	0.5044	0.8920	0.8920	0.9515
CIFAR-100 vs Constant	0.5034	0.8347	0.8347	0.9466
CIFAR-100 vs LSUN	0.4999	0.4998	0.5000	0.9500
CIFAR-100 vs Noise	0.5013	0.8329	0.8329	0.9480
CIFAR-100 vs SVHN	0.3820	0.6833	0.6833	0.9881
CIFAR-100 vs iSUN	0.4999	0.4999	0.5001	0.9505
CelebA vs CIFAR-10	0.5006	0.8334	0.8334	0.9497
CelebA vs CIFAR-100	0.5054	0.8364	0.8364	0.9499
CelebA vs Constant	0.5040	0.8350	0.8350	0.9459
CelebA vs LSUN	0.5000	0.5001	0.5002	0.9500
CelebA vs Noise	0.5007	0.8343	0.8343	0.9498
CelebA vs SVHN	0.3889	0.6872	0.6872	0.9881
CelebA vs TinyImagenet	0.5206	0.9147	0.9147	0.9434
CelebA vs iSUN	0.5000	0.5000	0.5001	0.9500
Constant vs CIFAR-10	0.5008	0.8339	0.8339	0.9504
Constant vs CIFAR-100	0.5102	0.8381	0.8381	0.9500
Constant vs CelebA	0.4978	0.8908	0.8908	0.9514
Constant vs LSUN	0.5000	0.5000	0.5001	0.9502
Constant vs Noise	0.4974	0.8328	0.8329	0.9536
Constant vs SVHN	0.5031	0.7401	0.7401	0.9382
Constant vs TinyImagenet	0.5027	0.9099	0.9099	0.9501
Constant vs iSUN	0.5000	0.5001	0.5002	0.9497
Constant28 vs FashionMNIST	0.4941	0.8553	0.8553	0.9511
Constant28 vs KMNIST	0.5531	0.8772	0.8772	0.9316
Constant28 vs MNIST	0.4991	0.8575	0.8575	0.9510
Constant28 vs Noise28	0.4936	0.8289	0.8290	0.9501
Constant28 vs NotMNIST	0.4876	0.8552	0.8552	0.9643
Constant28 vs Omniglot	0.5012	0.7533	0.7534	0.9538
FashionMNIST vs Constant28	0.4956	0.8303	0.8304	0.9499
FashionMNIST vs KMNIST	0.5207	0.8618	0.8618	0.9233
FashionMNIST vs MNIST	0.4982	0.8561	0.8561	0.9528
FashionMNIST vs Noise28	0.4977	0.8315	0.8315	0.9470
FashionMNIST vs NotMNIST	0.4811	0.8532	0.8532	0.9727
FashionMNIST vs Omniglot	0.4948	0.7492	0.7493	0.9465
KMNIST vs Constant28	0.4943	0.8306	0.8306	0.9542
KMNIST vs FashionMNIST	0.5048	0.8583	0.8583	0.9468
KMNIST vs MNIST	0.4972	0.8562	0.8562	0.9509
KMNIST vs Noise28	0.4976	0.8310	0.8310	0.9511
KMNIST vs NotMNIST	0.4834	0.8541	0.8541	0.9714
KMNIST vs Omniglot	0.4950	0.7490	0.7490	0.9491
MNIST vs Constant28	0.4944	0.8301	0.8301	0.9523
MNIST vs FashionMNIST	0.5032	0.8580	0.8580	0.9476
MNIST vs KMNIST	0.5436	0.8696	0.8696	0.9097
MNIST vs Noise28	0.4953	0.8299	0.8299	0.9546
MNIST vs NotMNIST	0.4885	0.8553	0.8553	0.9706
MNIST vs Omniglot	0.4934	0.7476	0.7476	0.9485
Noise vs CIFAR-10	0.4946	0.8317	0.8318	0.9537
Noise vs CIFAR-100	0.5028	0.8344	0.8344	0.9475
Noise vs CelebA	0.5138	0.8955	0.8955	0.9459
Noise vs Constant	0.4954	0.8310	0.8310	0.9513
Noise vs LSUN	0.4999	0.4997	0.4998	0.9499
Noise vs SVHN	0.5095	0.7363	0.7363	0.9142
Noise vs TinyImagenet	0.4988	0.9088	0.9089	0.9463

Noise vs iSUN	0.4999	0.5000	0.5001	0.9498
Noise28 vs Constant28	0.4997	0.8317	0.8317	0.9480
Noise28 vs FashionMNIST	0.4952	0.8540	0.8541	0.9494
Noise28 vs KMNIST	0.5412	0.8730	0.8730	0.9369
Noise28 vs MNIST	0.4874	0.8545	0.8545	0.9553
Noise28 vs NotMNIST	0.5090	0.8652	0.8652	0.9504
Noise28 vs Omniglot	0.5067	0.7537	0.7537	0.9473
NotMNIST vs Constant28	0.4985	0.8323	0.8323	0.9468
NotMNIST vs FashionMNIST	0.5045	0.8580	0.8580	0.9476
NotMNIST vs KMNIST	0.5339	0.8669	0.8669	0.9173
NotMNIST vs MNIST	0.4992	0.8566	0.8566	0.9524
NotMNIST vs Noise28	0.4964	0.8301	0.8302	0.9517
NotMNIST vs Omniglot	0.4969	0.7498	0.7498	0.9467
Omniglot vs Constant28	0.4961	0.8312	0.8312	0.9523
Omniglot vs FashionMNIST	0.5039	0.8577	0.8578	0.9478
Omniglot vs KMNIST	0.5355	0.8676	0.8676	0.9334
Omniglot vs MNIST	0.4990	0.8570	0.8570	0.9517
Omniglot vs Noise28	0.5010	0.8331	0.8331	0.9466
Omniglot vs NotMNIST	0.4963	0.8564	0.8564	0.9540
SVHN vs CIFAR-10	0.5006	0.8339	0.8339	0.9476
SVHN vs CIFAR-100	0.5080	0.8371	0.8371	0.9479
SVHN vs CelebA	0.5030	0.8917	0.8917	0.9494
SVHN vs Constant	0.5035	0.8347	0.8347	0.9469
SVHN vs LSUN	0.5002	0.5001	0.5002	0.9497
SVHN vs Noise	0.4996	0.8329	0.8329	0.9518
SVHN vs TinyImagenet	0.5220	0.9151	0.9151	0.9414
SVHN vs iSUN	0.5000	0.5000	0.5002	0.9501
TinyImagenet vs CelebA	0.5054	0.8921	0.8921	0.9510
TinyImagenet vs Constant	0.5026	0.8355	0.8355	0.9478
TinyImagenet vs LSUN	0.5000	0.5000	0.5001	0.9499
TinyImagenet vs Noise	0.5034	0.8361	0.8361	0.9487
TinyImagenet vs SVHN	0.3822	0.6839	0.6839	0.9876
TinyImagenet vs iSUN	0.5000	0.5000	0.5001	0.9496
Average	0.4974	0.7827	0.7827	0.9501

Table 123: The detailed performance for indicator $\log p_\theta(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7363	0.5818	0.5819	0.8814
CIFAR-10 vs Constant	0.9066	0.8661	0.8661	0.2804
CIFAR-10 vs LSUN	0.9195	0.8926	0.8926	0.2911
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9383	0.8712	0.8712	0.3176
CIFAR-10 vs iSUN	0.8893	0.8588	0.8589	0.3385
CIFAR-100 vs CelebA	0.6622	0.5027	0.5027	0.9532
CIFAR-100 vs Constant	0.9328	0.9029	0.9030	0.2058
CIFAR-100 vs LSUN	0.8962	0.8693	0.8693	0.3785
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9364	0.8771	0.8771	0.3483
CIFAR-100 vs iSUN	0.8653	0.8347	0.8348	0.4215
CelebA vs CIFAR-10	0.6895	0.7728	0.7729	0.7265
CelebA vs CIFAR-100	0.7095	0.7865	0.7865	0.6867
CelebA vs Constant	0.9786	0.9821	0.9821	0.0599
CelebA vs LSUN	0.8083	0.8560	0.8560	0.5256
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9950	0.9923	0.9923	0.0175
CelebA vs TinyImagenet	0.6875	0.7762	0.7763	0.7341
CelebA vs iSUN	0.7952	0.8578	0.8578	0.5278
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9994	0.9993	0.9993	0.0038
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.1601	0.3351	0.3352	0.9883
FashionMNIST vs KMNIST	0.5225	0.5129	0.5130	0.9069
FashionMNIST vs MNIST	0.7109	0.7229	0.7229	0.8304
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6411	0.6082	0.6083	0.8017
FashionMNIST vs Omniglot	0.8026	0.8038	0.8039	0.6161
KMNIST vs Constant28	0.9735	0.9625	0.9625	0.0743
KMNIST vs FashionMNIST	0.7054	0.6362	0.6363	0.6468
KMNIST vs MNIST	0.6895	0.6855	0.6856	0.8815
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.8948	0.8570	0.8571	0.3410
KMNIST vs Omniglot	0.7581	0.7662	0.7662	0.7545
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9871	0.9810	0.9810	0.0497
MNIST vs KMNIST	0.9087	0.8727	0.8728	0.2927
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9993	0.9992	0.9992	0.0029
MNIST vs Omniglot	0.6046	0.6210	0.6211	0.8727
Noise vs CIFAR-10	0.9994	0.9988	0.9988	0.0015
Noise vs CIFAR-100	0.9991	0.9978	0.9978	0.0020
Noise vs CelebA	0.9963	0.9865	0.9865	0.0091
Noise vs Constant	0.9971	0.9947	0.9947	0.0073
Noise vs LSUN	0.9936	0.9887	0.9887	0.0164
Noise vs SVHN	0.9976	0.9889	0.9889	0.0060
Noise vs TinyImagenet	0.9985	0.9962	0.9963	0.0039

Noise vs iSUN	0.9922	0.9874	0.9874	0.0185
Noise28 vs Constant28	0.9738	0.9551	0.9551	0.0662
Noise28 vs FashionMNIST	0.9422	0.9049	0.9049	0.1439
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9981	0.9965	0.9965	0.0042
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.5348	0.6058	0.6058	0.9801
NotMNIST vs FashionMNIST	0.5775	0.5771	0.5772	0.9609
NotMNIST vs KMNIST	0.5330	0.5340	0.5341	0.9764
NotMNIST vs MNIST	0.7352	0.7641	0.7642	0.9100
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.7970	0.8197	0.8197	0.7914
Omniglot vs Constant28	1.0000	0.9999	0.9999	0.0000
Omniglot vs FashionMNIST	0.9752	0.9619	0.9619	0.1169
Omniglot vs KMNIST	0.9483	0.9235	0.9235	0.2023
Omniglot vs MNIST	0.6131	0.5339	0.5340	0.8833
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9995	0.9994	0.9994	0.0026
SVHN vs CIFAR-10	0.9832	0.9903	0.9903	0.0488
SVHN vs CIFAR-100	0.9802	0.9881	0.9881	0.0569
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.8129	0.8813	0.8813	0.4062
SVHN vs LSUN	0.9998	0.9999	0.9999	0.0006
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9895	0.9942	0.9942	0.0320
SVHN vs iSUN	0.9995	0.9997	0.9997	0.0013
TinyImagenet vs CelebA	0.7519	0.6009	0.6010	0.8712
TinyImagenet vs Constant	0.9769	0.9706	0.9706	0.0820
TinyImagenet vs LSUN	0.8882	0.8525	0.8525	0.3806
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9339	0.8740	0.8740	0.3622
TinyImagenet vs iSUN	0.8566	0.8287	0.8288	0.4277
Average	0.8965	0.8906	0.8907	0.2666

Table 124: The detailed performance for indicator $p_S(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6876	0.6218	0.6218	0.9544
CIFAR-10 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.5998	0.6233	0.6233	0.9469
CIFAR-10 vs Noise	0.9862	0.9930	0.9930	0.0000
CIFAR-10 vs SVHN	0.0062	0.1539	0.1539	1.0000
CIFAR-10 vs iSUN	0.5668	0.6107	0.6107	0.9470
CIFAR-100 vs CelebA	0.6489	0.6029	0.6029	0.9850
CIFAR-100 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.5450	0.5924	0.5925	0.9742
CIFAR-100 vs Noise	0.9703	0.9849	0.9849	0.0000
CIFAR-100 vs SVHN	0.0069	0.1539	0.1539	1.0000
CIFAR-100 vs iSUN	0.5167	0.5866	0.5866	0.9796
CelebA vs CIFAR-10	0.1380	0.4781	0.4781	0.9861
CelebA vs CIFAR-100	0.1767	0.4886	0.4887	0.9681
CelebA vs Constant	0.0000	0.4503	0.4503	1.0000
CelebA vs LSUN	0.3305	0.5424	0.5425	0.9447
CelebA vs Noise	0.9282	0.9753	0.9753	1.0000
CelebA vs SVHN	0.0001	0.2578	0.2578	1.0000
CelebA vs TinyImagenet	0.1444	0.4840	0.4840	0.9799
CelebA vs iSUN	0.3089	0.5592	0.5593	0.9523
Constant vs CIFAR-10	0.9001	0.9310	0.9310	0.7899
Constant vs CIFAR-100	0.9553	0.9662	0.9662	0.2985
Constant vs CelebA	0.9835	0.9822	0.9822	0.0393
Constant vs LSUN	0.6734	0.7729	0.7729	0.9933
Constant vs Noise	0.7055	0.8400	0.8400	1.0000
Constant vs SVHN	0.5120	0.5207	0.5207	1.0000
Constant vs TinyImagenet	0.9902	0.9918	0.9918	0.0339
Constant vs iSUN	0.7739	0.8495	0.8495	0.9584
Constant28 vs FashionMNIST	0.5261	0.4683	0.4683	0.6661
Constant28 vs KMNIST	0.0283	0.3157	0.3157	0.9992
Constant28 vs MNIST	0.0050	0.3118	0.3119	1.0000
Constant28 vs Noise28	0.8550	0.9207	0.9207	1.0000
Constant28 vs NotMNIST	0.2161	0.3649	0.3649	0.8999
Constant28 vs Omniglot	0.0050	0.3545	0.3545	1.0000
FashionMNIST vs Constant28	0.0000	0.3068	0.3068	1.0000
FashionMNIST vs KMNIST	0.2275	0.3532	0.3532	0.9991
FashionMNIST vs MNIST	0.0064	0.3070	0.3070	1.0000
FashionMNIST vs Noise28	0.1143	0.3739	0.3739	1.0000
FashionMNIST vs NotMNIST	0.3472	0.4044	0.4045	0.9616
FashionMNIST vs Omniglot	0.0142	0.3503	0.3503	1.0000
KMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
KMNIST vs FashionMNIST	0.4377	0.4481	0.4482	0.9803
KMNIST vs MNIST	0.0488	0.3104	0.3104	0.9999
KMNIST vs Noise28	0.0000	0.3069	0.3069	1.0000
KMNIST vs NotMNIST	0.4181	0.4360	0.4361	0.9541
KMNIST vs Omniglot	0.0281	0.3518	0.3519	1.0000
MNIST vs Constant28	0.0000	0.3068	0.3068	1.0000
MNIST vs FashionMNIST	0.8511	0.8199	0.8199	0.3613
MNIST vs KMNIST	0.8623	0.8493	0.8493	0.4489
MNIST vs Noise28	0.0000	0.3069	0.3069	1.0000
MNIST vs NotMNIST	0.8277	0.7749	0.7749	0.4149
MNIST vs Omniglot	0.2648	0.4140	0.4141	0.9859
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3044	0.3044	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.2799	0.2799	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.0005	0.3069	0.3069	1.0000
NotMNIST vs FashionMNIST	0.2193	0.3477	0.3477	0.9917
NotMNIST vs KMNIST	0.0718	0.3143	0.3143	0.9997
NotMNIST vs MNIST	0.0003	0.3069	0.3069	1.0000
NotMNIST vs Noise28	0.0026	0.3078	0.3078	1.0000
NotMNIST vs Omniglot	0.0003	0.3495	0.3495	1.0000
Omniglot vs Constant28	0.0000	0.2668	0.2669	1.0000
Omniglot vs FashionMNIST	0.8946	0.8765	0.8765	0.4014
Omniglot vs KMNIST	0.8928	0.8792	0.8792	0.4686
Omniglot vs MNIST	0.5110	0.4955	0.4956	0.9941
Omniglot vs Noise28	0.0000	0.2668	0.2669	1.0000
Omniglot vs NotMNIST	0.8676	0.8295	0.8295	0.4816
SVHN vs CIFAR-10	0.9702	0.9854	0.9854	0.1191
SVHN vs CIFAR-100	0.9719	0.9868	0.9868	0.1145
SVHN vs CelebA	0.9978	0.9985	0.9985	0.0039
SVHN vs Constant	0.0000	0.5076	0.5076	1.0000
SVHN vs LSUN	0.9926	0.9969	0.9969	0.0248
SVHN vs Noise	0.9611	0.9890	0.9890	0.0000
SVHN vs TinyImagenet	0.9754	0.9876	0.9876	0.0989
SVHN vs iSUN	0.9885	0.9958	0.9958	0.0471
TinyImagenet vs CelebA	0.6340	0.5672	0.5672	0.9840
TinyImagenet vs Constant	0.0000	0.3032	0.3032	1.0000
TinyImagenet vs LSUN	0.6550	0.6837	0.6838	0.9591
TinyImagenet vs Noise	0.9676	0.9833	0.9833	0.0000
TinyImagenet vs SVHN	0.0042	0.1515	0.1515	1.0000
TinyImagenet vs iSUN	0.6317	0.6709	0.6710	0.9486
Average	0.3625	0.5273	0.5273	0.8156

Table 125: The detailed performance for indicator $\log p_\omega(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9965	0.9942	0.9942	0.0053
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9984	0.9966	0.9966	0.0036
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9996	0.9983	0.9983	0.0016
CIFAR-10 vs iSUN	0.9980	0.9981	0.9981	0.0083
CIFAR-100 vs CelebA	0.9947	0.9914	0.9914	0.0116
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9979	0.9971	0.9972	0.0038
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9995	0.9982	0.9982	0.0017
CIFAR-100 vs iSUN	0.9974	0.9977	0.9977	0.0089
CelebA vs CIFAR-10	0.9964	0.9978	0.9978	0.0137
CelebA vs CIFAR-100	0.9948	0.9956	0.9956	0.0221
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9992	0.9995	0.9995	0.0024
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	0.9998	0.9998	0.0001
CelebA vs TinyImagenet	0.9995	0.9993	0.9993	0.0007
CelebA vs iSUN	0.9943	0.9959	0.9959	0.0194
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9999	0.9999	0.9999	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.9972	0.9951	0.9951	0.0086
FashionMNIST vs MNIST	0.9998	0.9997	0.9997	0.0006
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9984	0.9969	0.9969	0.0047
FashionMNIST vs Omniglot	0.9999	0.9999	0.9999	0.0004
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9971	0.9979	0.9979	0.0004
KMNIST vs MNIST	0.9673	0.9702	0.9702	0.1676
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9991	0.9990	0.9990	0.0010
KMNIST vs Omniglot	0.9967	0.9978	0.9978	0.0053
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9999	0.9999	0.9999	0.0000
MNIST vs KMNIST	0.9673	0.9538	0.9539	0.1298
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9819	0.9868	0.9868	0.0957
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	0.9999	0.9996	0.9996	0.0001
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.9983	0.9988	0.9988	0.0001
NotMNIST vs KMNIST	0.9990	0.9979	0.9979	0.0019
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0001
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9999	0.9999	0.9999	0.0002
Omniglot vs KMNIST	0.9968	0.9896	0.9897	0.0075
Omniglot vs MNIST	0.9820	0.9726	0.9726	0.0747
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9996	0.9999	0.9999	0.0000
SVHN vs CIFAR-100	0.9995	0.9998	0.9998	0.0005
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9997	0.9995	0.9996	0.0001
SVHN vs iSUN	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs CelebA	0.9995	0.9983	0.9983	0.0004
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	0.9952	0.9937	0.9937	0.0194
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9997	0.9988	0.9988	0.0006
TinyImagenet vs iSUN	0.9898	0.9874	0.9874	0.0356
Average	0.9981	0.9977	0.9977	0.0072

Table 126: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9908	0.9867	0.9867	0.0303
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9987	0.9973	0.9973	0.0032
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9994	0.9975	0.9975	0.0023
CIFAR-10 vs iSUN	0.9981	0.9982	0.9982	0.0076
CIFAR-100 vs CelebA	0.9931	0.9895	0.9895	0.0175
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9981	0.9975	0.9975	0.0029
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9994	0.9979	0.9979	0.0020
CIFAR-100 vs iSUN	0.9976	0.9979	0.9979	0.0081
CelebA vs CIFAR-10	0.9966	0.9981	0.9981	0.0119
CelebA vs CIFAR-100	0.9954	0.9963	0.9963	0.0171
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9994	0.9997	0.9997	0.0015
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	0.9998	0.9998	0.0001
CelebA vs TinyImagenet	0.9994	0.9993	0.9994	0.0007
CelebA vs iSUN	0.9961	0.9974	0.9974	0.0133
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9999	0.9999	0.9999	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.9928	0.9913	0.9913	0.0237
FashionMNIST vs MNIST	0.9997	0.9996	0.9996	0.0002
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9966	0.9962	0.9962	0.0107
FashionMNIST vs Omniglot	0.9992	0.9994	0.9994	0.0007
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9942	0.9956	0.9956	0.0054
KMNIST vs MNIST	0.9723	0.9765	0.9765	0.1139
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9987	0.9989	0.9989	0.0025
KMNIST vs Omniglot	0.9945	0.9962	0.9962	0.0191
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9996	0.9996	0.9996	0.0023
MNIST vs KMNIST	0.9741	0.9704	0.9704	0.1441
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0001
MNIST vs Omniglot	0.9334	0.9593	0.9593	0.5686
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.9898	0.9933	0.9933	0.0030
NotMNIST vs KMNIST	0.9970	0.9966	0.9966	0.0027
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0001
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9990	0.9988	0.9988	0.0046
Omniglot vs KMNIST	0.9936	0.9904	0.9905	0.0330
Omniglot vs MNIST	0.9314	0.9205	0.9205	0.3686
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9994	0.9998	0.9998	0.0000
SVHN vs CIFAR-100	0.9992	0.9997	0.9997	0.0011
SVHN vs CelebA	0.9999	1.0000	1.0000	0.0000
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9995	0.9995	0.9995	0.0001
SVHN vs iSUN	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs CelebA	0.9983	0.9969	0.9969	0.0037
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	0.9961	0.9950	0.9950	0.0165
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9995	0.9983	0.9983	0.0011
TinyImagenet vs iSUN	0.9912	0.9891	0.9891	0.0308
Average	0.9969	0.9969	0.9969	0.0160

Table 127: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x) + 0.1p_S(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6897	0.6222	0.6222	0.9539
CIFAR-10 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.5882	0.6165	0.6166	0.9455
CIFAR-10 vs Noise	0.9776	0.9886	0.9886	0.0000
CIFAR-10 vs SVHN	0.0057	0.1539	0.1539	1.0000
CIFAR-10 vs iSUN	0.5608	0.6071	0.6071	0.9527
CIFAR-100 vs CelebA	0.6487	0.6015	0.6015	0.9848
CIFAR-100 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.5439	0.5963	0.5964	0.9833
CIFAR-100 vs Noise	0.7390	0.8592	0.8592	1.0000
CIFAR-100 vs SVHN	0.0064	0.1538	0.1539	1.0000
CIFAR-100 vs iSUN	0.5144	0.5817	0.5818	0.9754
CelebA vs CIFAR-10	0.1308	0.4763	0.4763	0.9863
CelebA vs CIFAR-100	0.1808	0.4898	0.4898	0.9667
CelebA vs Constant	0.0000	0.4503	0.4503	1.0000
CelebA vs LSUN	0.3243	0.5401	0.5401	0.9464
CelebA vs Noise	0.9950	0.9983	0.9983	0.0000
CelebA vs SVHN	0.0001	0.2577	0.2578	1.0000
CelebA vs TinyImagenet	0.1602	0.4882	0.4883	0.9758
CelebA vs iSUN	0.2677	0.5446	0.5446	0.9694
Constant vs CIFAR-10	0.9227	0.9450	0.9450	0.5962
Constant vs CIFAR-100	0.9743	0.9785	0.9785	0.1550
Constant vs CelebA	0.9758	0.9745	0.9745	0.1062
Constant vs LSUN	0.7334	0.8159	0.8159	0.9978
Constant vs Noise	0.9367	0.9675	0.9675	1.0000
Constant vs SVHN	0.5532	0.5493	0.5493	0.9999
Constant vs TinyImagenet	0.9790	0.9847	0.9847	0.0826
Constant vs iSUN	0.7456	0.8372	0.8372	0.9992
Constant28 vs FashionMNIST	0.3885	0.4173	0.4174	0.9569
Constant28 vs KMNIST	0.0242	0.3135	0.3135	0.9982
Constant28 vs MNIST	0.0051	0.3119	0.3119	1.0000
Constant28 vs Noise28	0.9005	0.9465	0.9465	1.0000
Constant28 vs NotMNIST	0.4524	0.4586	0.4587	0.7592
Constant28 vs Omniglot	0.0076	0.3545	0.3546	1.0000
FashionMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs KMNIST	0.2240	0.3523	0.3524	0.9992
FashionMNIST vs MNIST	0.0059	0.3070	0.3070	1.0000
FashionMNIST vs Noise28	0.1365	0.3894	0.3895	1.0000
FashionMNIST vs NotMNIST	0.3352	0.3959	0.3960	0.9604
FashionMNIST vs Omniglot	0.0113	0.3501	0.3501	1.0000
KMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
KMNIST vs FashionMNIST	0.3710	0.4109	0.4110	0.9878
KMNIST vs MNIST	0.0507	0.3107	0.3107	1.0000
KMNIST vs Noise28	0.0000	0.3069	0.3069	1.0000
KMNIST vs NotMNIST	0.3710	0.4098	0.4099	0.9571
KMNIST vs Omniglot	0.0253	0.3516	0.3516	1.0000
MNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
MNIST vs FashionMNIST	0.8585	0.8292	0.8292	0.3470
MNIST vs KMNIST	0.8750	0.8615	0.8615	0.4010
MNIST vs Noise28	0.0000	0.3069	0.3069	1.0000
MNIST vs NotMNIST	0.8371	0.7871	0.7871	0.3898
MNIST vs Omniglot	0.2520	0.4070	0.4071	0.9871
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.0001	0.3069	0.3069	1.0000
NotMNIST vs FashionMNIST	0.2332	0.3519	0.3520	0.9903
NotMNIST vs KMNIST	0.1037	0.3199	0.3199	0.9991
NotMNIST vs MNIST	0.0004	0.3069	0.3069	0.9999
NotMNIST vs Noise28	0.0012	0.3075	0.3075	1.0000
NotMNIST vs Omniglot	0.0002	0.3495	0.3495	1.0000
Omniglot vs Constant28	0.0000	0.2668	0.2669	1.0000
Omniglot vs FashionMNIST	0.8752	0.8547	0.8547	0.4528
Omniglot vs KMNIST	0.9027	0.8916	0.8916	0.4401
Omniglot vs MNIST	0.5143	0.5017	0.5018	0.9918
Omniglot vs Noise28	0.0000	0.2668	0.2669	1.0000
Omniglot vs NotMNIST	0.8673	0.8371	0.8371	0.5011
SVHN vs CIFAR-10	0.9709	0.9858	0.9858	0.1167
SVHN vs CIFAR-100	0.9731	0.9873	0.9873	0.1093
SVHN vs CelebA	0.9977	0.9985	0.9985	0.0044
SVHN vs Constant	0.0000	0.5076	0.5076	1.0000
SVHN vs LSUN	0.9920	0.9965	0.9965	0.0272
SVHN vs Noise	0.5117	0.8319	0.8319	1.0000
SVHN vs TinyImagenet	0.9743	0.9872	0.9872	0.1053
SVHN vs iSUN	0.9879	0.9956	0.9956	0.0503
TinyImagenet vs CelebA	0.6385	0.5695	0.5695	0.9812
TinyImagenet vs Constant	0.0000	0.3032	0.3032	1.0000
TinyImagenet vs LSUN	0.6537	0.6791	0.6791	0.9491
TinyImagenet vs Noise	0.9790	0.9892	0.9892	0.0000
TinyImagenet vs SVHN	0.0040	0.1515	0.1515	1.0000
TinyImagenet vs iSUN	0.6286	0.6678	0.6678	0.9492
Average	0.3597	0.5271	0.5272	0.8260

Table 128: The detailed performance for indicator $\log p_{\omega}(x)$ when only 20% data in out-of-distribution can be used for training. based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9963	0.9930	0.9930	0.0072
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9989	0.9986	0.9986	0.0033
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9997	0.9987	0.9987	0.0014
CIFAR-10 vs iSUN	0.9983	0.9984	0.9984	0.0065
CIFAR-100 vs CelebA	0.9930	0.9902	0.9902	0.0175
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9978	0.9979	0.9979	0.0057
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9993	0.9984	0.9984	0.0015
CIFAR-100 vs iSUN	0.9969	0.9962	0.9962	0.0082
CelebA vs CIFAR-10	0.9973	0.9983	0.9983	0.0094
CelebA vs CIFAR-100	0.9949	0.9966	0.9966	0.0223
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9987	0.9986	0.9986	0.0034
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	1.0000	1.0000	0.0000
CelebA vs TinyImagenet	0.9984	0.9978	0.9978	0.0032
CelebA vs iSUN	0.9989	0.9994	0.9994	0.0043
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9998	0.9998	0.9998	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.9997	0.9998	0.9998	0.0004
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0004
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9983	0.9950	0.9951	0.0039
FashionMNIST vs Omniglot	0.9998	0.9999	0.9999	0.0006
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9991	0.9988	0.9988	0.0001
KMNIST vs MNIST	0.9757	0.9785	0.9785	0.1015
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9981	0.9959	0.9959	0.0034
KMNIST vs Omniglot	0.9975	0.9979	0.9979	0.0093
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9998	0.9999	0.9999	0.0000
MNIST vs KMNIST	0.9760	0.9779	0.9779	0.1183
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9997	0.9984	0.9985	0.0002
MNIST vs Omniglot	0.9607	0.9604	0.9604	0.1766
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.9993	0.9994	0.9994	0.0002
NotMNIST vs KMNIST	0.9996	0.9996	0.9996	0.0004
NotMNIST vs MNIST	0.9999	0.9992	0.9992	0.0002
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9999	0.9999	0.9999	0.0002
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9996	0.9974	0.9974	0.0004
Omniglot vs KMNIST	0.9976	0.9953	0.9954	0.0077
Omniglot vs MNIST	0.9789	0.9603	0.9604	0.0823
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9997	0.9999	0.9999	0.0000
SVHN vs CIFAR-100	0.9995	0.9998	0.9998	0.0001
SVHN vs CelebA	0.9999	0.9995	0.9996	0.0001
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9998	0.9999	0.9999	0.0000
SVHN vs iSUN	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs CelebA	0.9993	0.9951	0.9951	0.0007
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	0.9960	0.9948	0.9948	0.0152
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9997	0.9991	0.9991	0.0006
TinyImagenet vs iSUN	0.9908	0.9885	0.9885	0.0338
Average	0.9982	0.9977	0.9977	0.0071

Table 129: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x)$ when only 20% data in mixture distribution can be used for training, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9907	0.9856	0.9856	0.0325
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9991	0.9988	0.9988	0.0026
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9994	0.9980	0.9980	0.0023
CIFAR-10 vs iSUN	0.9984	0.9985	0.9985	0.0057
CIFAR-100 vs CelebA	0.9912	0.9878	0.9878	0.0257
CIFAR-100 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs LSUN	0.9981	0.9982	0.9982	0.0047
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9992	0.9982	0.9982	0.0019
CIFAR-100 vs iSUN	0.9972	0.9966	0.9966	0.0077
CelebA vs CIFAR-10	0.9972	0.9984	0.9984	0.0087
CelebA vs CIFAR-100	0.9955	0.9971	0.9971	0.0170
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9990	0.9988	0.9988	0.0026
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	1.0000	1.0000	1.0000	0.0000
CelebA vs TinyImagenet	0.9987	0.9982	0.9982	0.0022
CelebA vs iSUN	0.9992	0.9996	0.9996	0.0028
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9998	0.9998	0.9998	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.9973	0.9979	0.9979	0.0017
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0001
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9971	0.9961	0.9961	0.0095
FashionMNIST vs Omniglot	0.9991	0.9993	0.9993	0.0011
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9985	0.9985	0.9985	0.0010
KMNIST vs MNIST	0.9768	0.9800	0.9800	0.0942
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9987	0.9975	0.9975	0.0017
KMNIST vs Omniglot	0.9945	0.9957	0.9957	0.0234
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9996	0.9996	0.9996	0.0022
MNIST vs KMNIST	0.9719	0.9699	0.9699	0.1340
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9998	0.9990	0.9991	0.0002
MNIST vs Omniglot	0.9331	0.9535	0.9535	0.5244
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.9936	0.9958	0.9958	0.0011
NotMNIST vs KMNIST	0.9961	0.9972	0.9972	0.0007
NotMNIST vs MNIST	0.9999	0.9992	0.9992	0.0002
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9992	0.9971	0.9972	0.0031
Omniglot vs KMNIST	0.9919	0.9892	0.9893	0.0430
Omniglot vs MNIST	0.9300	0.9120	0.9121	0.3672
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-10	0.9994	0.9998	0.9998	0.0000
SVHN vs CIFAR-100	0.9992	0.9997	0.9997	0.0007
SVHN vs CelebA	0.9999	0.9996	0.9996	0.0001
SVHN vs Constant	1.0000	1.0000	1.0000	0.0000
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9997	0.9999	0.9999	0.0000
SVHN vs iSUN	1.0000	1.0000	1.0000	0.0001
TinyImagenet vs CelebA	0.9979	0.9928	0.9929	0.0051
TinyImagenet vs Constant	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs LSUN	0.9968	0.9957	0.9958	0.0123
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9995	0.9987	0.9987	0.0010
TinyImagenet vs iSUN	0.9920	0.9898	0.9898	0.0289
Average	0.9970	0.9968	0.9968	0.0149

Table 130: The detailed performance for indicator $\log p_\theta(x) - \log p_\omega(x)$ when only 20% data in mixture distribution can be used for training, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7283	0.6654	0.6654	0.9371
CIFAR-10 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.6251	0.6400	0.6401	0.9113
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0080	0.1539	0.1540	1.0000
CIFAR-10 vs iSUN	0.6194	0.6519	0.6520	0.9073
CIFAR-100 vs CelebA	0.6792	0.6321	0.6322	0.9766
CIFAR-100 vs Constant	0.0000	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.5701	0.6152	0.6152	0.9677
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0086	0.1539	0.1539	1.0000
CIFAR-100 vs iSUN	0.5711	0.6262	0.6262	0.9568
CelebA vs CIFAR-10	0.2063	0.4974	0.4974	0.9741
CelebA vs CIFAR-100	0.2546	0.5123	0.5123	0.9438
CelebA vs Constant	0.0000	0.4503	0.4503	1.0000
CelebA vs LSUN	0.4703	0.6127	0.6127	0.8906
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0006	0.2578	0.2578	1.0000
CelebA vs TinyImagenet	0.2484	0.5149	0.5150	0.9545
CelebA vs iSUN	0.4484	0.6231	0.6232	0.8948
Constant vs CIFAR-10	0.7881	0.8668	0.8668	1.0000
Constant vs CIFAR-100	0.9257	0.9461	0.9461	0.5399
Constant vs CelebA	0.8823	0.8926	0.8926	0.9421
Constant vs LSUN	0.7883	0.8643	0.8643	0.9948
Constant vs Noise	0.9392	0.9690	0.9690	1.0000
Constant vs SVHN	0.4693	0.4735	0.4735	1.0000
Constant vs TinyImagenet	0.8762	0.9066	0.9066	0.7000
Constant vs iSUN	0.7342	0.8374	0.8374	0.9976
Constant28 vs FashionMNIST	0.7875	0.7819	0.7819	0.5914
Constant28 vs KMNIST	0.5467	0.6434	0.6434	0.9584
Constant28 vs MNIST	0.2694	0.5214	0.5214	0.9999
Constant28 vs Noise28	0.8792	0.9357	0.9358	1.0000
Constant28 vs NotMNIST	0.9952	0.9937	0.9937	0.0153
Constant28 vs Omniglot	0.3024	0.5838	0.5839	1.0000
FashionMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs KMNIST	0.3173	0.3903	0.3904	0.9925
FashionMNIST vs MNIST	0.0622	0.3125	0.3125	0.9983
FashionMNIST vs Noise28	0.9993	0.9996	0.9996	0.0000
FashionMNIST vs NotMNIST	0.5412	0.5496	0.5497	0.9258
FashionMNIST vs Omniglot	0.0177	0.3506	0.3507	1.0000
KMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
KMNIST vs FashionMNIST	0.2976	0.3768	0.3768	0.9844
KMNIST vs MNIST	0.1085	0.3201	0.3201	0.9998
KMNIST vs Noise28	0.9999	0.9999	0.9999	0.0000
KMNIST vs NotMNIST	0.1873	0.3389	0.3389	0.9607
KMNIST vs Omniglot	0.0834	0.3602	0.3602	1.0000
MNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
MNIST vs FashionMNIST	0.6974	0.6682	0.6683	0.6851
MNIST vs KMNIST	0.8756	0.8615	0.8615	0.3969
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.4716	0.4537	0.4538	0.8703
MNIST vs Omniglot	0.2396	0.4050	0.4051	0.9919
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0002	0.3069	0.3069	0.9999
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.0001	0.3069	0.3069	1.0000
NotMNIST vs FashionMNIST	0.2830	0.3682	0.3682	0.9835
NotMNIST vs KMNIST	0.1385	0.3268	0.3269	0.9991
NotMNIST vs MNIST	0.0107	0.3074	0.3074	0.9994
NotMNIST vs Noise28	0.9974	0.9984	0.9984	0.0000
NotMNIST vs Omniglot	0.0184	0.3507	0.3508	1.0000
Omniglot vs Constant28	0.0000	0.2668	0.2669	1.0000
Omniglot vs FashionMNIST	0.7556	0.7348	0.7348	0.7959
Omniglot vs KMNIST	0.8241	0.8017	0.8017	0.6224
Omniglot vs MNIST	0.4171	0.4311	0.4312	0.9784
Omniglot vs Noise28	0.9980	0.9984	0.9984	0.0000
Omniglot vs NotMNIST	0.4006	0.3722	0.3722	0.9130
SVHN vs CIFAR-10	0.9871	0.9945	0.9945	0.0547
SVHN vs CIFAR-100	0.9877	0.9948	0.9948	0.0540
SVHN vs CelebA	0.9989	0.9993	0.9993	0.0005
SVHN vs Constant	0.0000	0.5076	0.5076	1.0000
SVHN vs LSUN	0.9972	0.9990	0.9990	0.0071
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9895	0.9956	0.9956	0.0416
SVHN vs iSUN	0.9964	0.9988	0.9988	0.0103
TinyImagenet vs CelebA	0.6574	0.5918	0.5918	0.9795
TinyImagenet vs Constant	0.0000	0.3032	0.3032	1.0000
TinyImagenet vs LSUN	0.6630	0.6828	0.6828	0.9353
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0044	0.1515	0.1515	1.0000
TinyImagenet vs iSUN	0.6487	0.6860	0.6861	0.9379
Average	0.4380	0.5762	0.5762	0.7736

Table 131: The detailed performance for indicator $\log p_\gamma(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9970	0.9932	0.9932	0.0099
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9992	0.9992	0.9992	0.0015
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9985	0.9944	0.9944	0.0062
CIFAR-10 vs iSUN	0.9986	0.9982	0.9982	0.0043
CIFAR-100 vs CelebA	0.9953	0.9785	0.9785	0.0116
CIFAR-100 vs Constant	0.9998	0.9999	0.9999	0.0000
CIFAR-100 vs LSUN	0.9972	0.9949	0.9949	0.0043
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9977	0.9938	0.9938	0.0070
CIFAR-100 vs iSUN	0.9971	0.9973	0.9973	0.0080
CelebA vs CIFAR-10	0.9356	0.9460	0.9460	0.1762
CelebA vs CIFAR-100	0.9053	0.9124	0.9124	0.2317
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9932	0.9902	0.9902	0.0135
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9996	0.9991	0.9991	0.0012
CelebA vs TinyImagenet	0.9580	0.9656	0.9657	0.1316
CelebA vs iSUN	0.9988	0.9994	0.9994	0.0039
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9957	0.9947	0.9947	0.0123
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.9004	0.8859	0.8860	0.3942
FashionMNIST vs MNIST	0.9571	0.9246	0.9247	0.1256
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7475	0.6629	0.6630	0.6158
FashionMNIST vs Omniglot	0.9994	0.9992	0.9992	0.0009
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9976	0.9966	0.9967	0.0066
KMNIST vs MNIST	0.8560	0.8634	0.8634	0.6207
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9376	0.8579	0.8580	0.1090
KMNIST vs Omniglot	0.8887	0.9076	0.9076	0.4503
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9979	0.9958	0.9958	0.0076
MNIST vs KMNIST	0.4531	0.4501	0.4502	0.9535
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9567	0.8795	0.8796	0.0606
MNIST vs Omniglot	0.9600	0.9709	0.9709	0.2520
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	0.9999	0.9994	0.9994	0.0002
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.9991	0.9991	0.9991	0.0019
NotMNIST vs KMNIST	0.9980	0.9984	0.9984	0.0020
NotMNIST vs MNIST	0.9946	0.9890	0.9890	0.0129
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9943	0.9953	0.9953	0.0193
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9995	0.9983	0.9983	0.0007
Omniglot vs KMNIST	0.9370	0.8848	0.8849	0.1809
Omniglot vs MNIST	0.8923	0.7990	0.7992	0.3458
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9398	0.8230	0.8231	0.0962
SVHN vs CIFAR-10	0.9994	0.9997	0.9997	0.0010
SVHN vs CIFAR-100	0.9989	0.9996	0.9996	0.0024
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.9960	0.9977	0.9977	0.0102
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9990	0.9992	0.9992	0.0018
SVHN vs iSUN	1.0000	1.0000	1.0000	0.0001
TinyImagenet vs CelebA	0.9980	0.9914	0.9914	0.0043
TinyImagenet vs Constant	0.9999	0.9999	0.9999	0.0000
TinyImagenet vs LSUN	0.9970	0.9959	0.9959	0.0095
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9992	0.9972	0.9972	0.0024
TinyImagenet vs iSUN	0.9917	0.9890	0.9890	0.0263
Average	0.9799	0.9740	0.9740	0.0537

Table 132: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9904	0.9848	0.9848	0.0365
CIFAR-10 vs Constant	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs LSUN	0.9993	0.9993	0.9993	0.0013
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9977	0.9922	0.9922	0.0088
CIFAR-10 vs iSUN	0.9986	0.9984	0.9984	0.0034
CIFAR-100 vs CelebA	0.9944	0.9788	0.9788	0.0122
CIFAR-100 vs Constant	0.9998	0.9999	0.9999	0.0000
CIFAR-100 vs LSUN	0.9975	0.9953	0.9954	0.0040
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9974	0.9930	0.9930	0.0076
CIFAR-100 vs iSUN	0.9974	0.9977	0.9977	0.0071
CelebA vs CIFAR-10	0.9571	0.9659	0.9659	0.1355
CelebA vs CIFAR-100	0.9351	0.9458	0.9458	0.1942
CelebA vs Constant	1.0000	1.0000	1.0000	0.0000
CelebA vs LSUN	0.9958	0.9934	0.9934	0.0086
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9997	0.9994	0.9994	0.0008
CelebA vs TinyImagenet	0.9713	0.9779	0.9780	0.1013
CelebA vs iSUN	0.9992	0.9996	0.9996	0.0024
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9980	0.9977	0.9977	0.0112
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.8414	0.8468	0.8468	0.6593
FashionMNIST vs MNIST	0.9541	0.9250	0.9251	0.1544
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7507	0.6777	0.6778	0.6378
FashionMNIST vs Omniglot	0.9972	0.9975	0.9975	0.0087
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9974	0.9970	0.9970	0.0059
KMNIST vs MNIST	0.8688	0.8706	0.8707	0.5788
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9472	0.8774	0.8775	0.0952
KMNIST vs Omniglot	0.9001	0.9153	0.9153	0.4107
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9991	0.9991	0.9991	0.0065
MNIST vs KMNIST	0.8882	0.9031	0.9031	0.6563
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9896	0.9662	0.9663	0.0184
MNIST vs Omniglot	0.9110	0.9464	0.9464	0.7027
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	0.9999	0.9998	0.9998	0.0001
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.9975	0.9982	0.9982	0.0008
NotMNIST vs KMNIST	0.9917	0.9945	0.9945	0.0045
NotMNIST vs MNIST	0.9940	0.9886	0.9886	0.0132
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9922	0.9937	0.9937	0.0368
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9996	0.9995	0.9995	0.0022
Omniglot vs KMNIST	0.9852	0.9781	0.9781	0.0659
Omniglot vs MNIST	0.8845	0.8041	0.8042	0.4784
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9656	0.8868	0.8869	0.0568
SVHN vs CIFAR-10	0.9989	0.9995	0.9995	0.0027
SVHN vs CIFAR-100	0.9980	0.9991	0.9991	0.0064
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.9990	0.9995	0.9995	0.0033
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9988	0.9993	0.9993	0.0029
SVHN vs iSUN	1.0000	1.0000	1.0000	0.0002
TinyImagenet vs CelebA	0.9965	0.9901	0.9901	0.0085
TinyImagenet vs Constant	0.9999	0.9999	0.9999	0.0000
TinyImagenet vs LSUN	0.9977	0.9968	0.9968	0.0077
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9989	0.9966	0.9966	0.0032
TinyImagenet vs iSUN	0.9928	0.9905	0.9905	0.0227
Average	0.9855	0.9821	0.9821	0.0564

Table 133: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7468	0.6868	0.6868	0.9288
CIFAR-10 vs Constant	0.0001	0.3069	0.3069	1.0000
CIFAR-10 vs LSUN	0.6909	0.7187	0.7188	0.9330
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0065	0.1540	0.1540	0.9999
CIFAR-10 vs iSUN	0.6565	0.6978	0.6979	0.9519
CIFAR-100 vs CelebA	0.6806	0.6349	0.6349	0.9813
CIFAR-100 vs Constant	0.0005	0.3069	0.3069	1.0000
CIFAR-100 vs LSUN	0.5891	0.6498	0.6498	0.9851
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0072	0.1540	0.1540	1.0000
CIFAR-100 vs iSUN	0.5917	0.6597	0.6598	0.9829
CelebA vs CIFAR-10	0.1992	0.4951	0.4951	0.9725
CelebA vs CIFAR-100	0.2706	0.5174	0.5175	0.9357
CelebA vs Constant	0.1762	0.4897	0.4897	0.9424
CelebA vs LSUN	0.5873	0.7024	0.7025	0.9008
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0006	0.2578	0.2578	1.0000
CelebA vs TinyImagenet	0.2225	0.5066	0.5066	0.9619
CelebA vs iSUN	0.5709	0.7058	0.7058	0.9050
Constant vs CIFAR-10	0.7714	0.8469	0.8469	0.9995
Constant vs CIFAR-100	0.8527	0.8943	0.8944	0.8850
Constant vs CelebA	0.7978	0.8158	0.8158	0.9983
Constant vs LSUN	0.7094	0.8107	0.8107	0.9996
Constant vs Noise	0.9372	0.9679	0.9679	1.0000
Constant vs SVHN	0.2068	0.2248	0.2248	1.0000
Constant vs TinyImagenet	0.8437	0.8849	0.8849	0.8430
Constant vs iSUN	0.8236	0.8856	0.8856	0.9347
Constant28 vs FashionMNIST	0.9885	0.9876	0.9876	0.0686
Constant28 vs KMNIST	0.7864	0.8144	0.8145	0.6359
Constant28 vs MNIST	0.3424	0.5818	0.5818	0.9998
Constant28 vs Noise28	0.9341	0.9650	0.9650	0.9770
Constant28 vs NotMNIST	0.9865	0.9774	0.9774	0.0211
Constant28 vs Omniglot	0.4221	0.6624	0.6624	1.0000
FashionMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
FashionMNIST vs KMNIST	0.7603	0.7760	0.7761	0.8373
FashionMNIST vs MNIST	0.3275	0.3970	0.3970	0.9975
FashionMNIST vs Noise28	0.9938	0.9959	0.9959	0.0007
FashionMNIST vs NotMNIST	0.4955	0.4687	0.4688	0.9297
FashionMNIST vs Omniglot	0.5222	0.5482	0.5482	0.9844
KMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
KMNIST vs FashionMNIST	0.1600	0.3327	0.3327	0.9799
KMNIST vs MNIST	0.1321	0.3253	0.3253	0.9992
KMNIST vs Noise28	0.9999	0.9999	0.9999	0.0000
KMNIST vs NotMNIST	0.2058	0.3437	0.3437	0.9607
KMNIST vs Omniglot	0.1534	0.3757	0.3757	0.9991
MNIST vs Constant28	0.1400	0.3329	0.3329	0.9590
MNIST vs FashionMNIST	0.4622	0.4822	0.4823	0.8688
MNIST vs KMNIST	0.8619	0.8466	0.8467	0.4760
MNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.4531	0.4414	0.4415	0.8720
MNIST vs Omniglot	0.4959	0.5258	0.5258	0.9130
Noise vs CIFAR-10	0.0000	0.3069	0.3069	1.0000
Noise vs CIFAR-100	0.0000	0.3069	0.3069	1.0000
Noise vs CelebA	0.0000	0.1893	0.1894	1.0000
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0000	0.3069	0.3069	1.0000
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.0000	0.3105	0.3106	1.0000

Noise vs iSUN	0.0000	0.3292	0.3292	1.0000
Noise28 vs Constant28	0.0000	0.3069	0.3069	1.0000
Noise28 vs FashionMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs KMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.0000	0.3069	0.3069	1.0000
NotMNIST vs FashionMNIST	0.4261	0.4514	0.4515	0.9713
NotMNIST vs KMNIST	0.7696	0.7976	0.7976	0.9396
NotMNIST vs MNIST	0.3579	0.4189	0.4190	0.9973
NotMNIST vs Noise28	0.9967	0.9979	0.9979	0.0000
NotMNIST vs Omniglot	0.2151	0.3935	0.3935	0.9999
Omniglot vs Constant28	0.0000	0.2668	0.2669	1.0000
Omniglot vs FashionMNIST	0.3647	0.3794	0.3795	0.9439
Omniglot vs KMNIST	0.7891	0.7607	0.7607	0.6794
Omniglot vs MNIST	0.3810	0.4057	0.4058	0.9842
Omniglot vs Noise28	0.9963	0.9962	0.9962	0.0053
Omniglot vs NotMNIST	0.3835	0.3635	0.3636	0.9227
SVHN vs CIFAR-10	0.9901	0.9961	0.9961	0.0387
SVHN vs CIFAR-100	0.9903	0.9961	0.9961	0.0410
SVHN vs CelebA	0.9983	0.9990	0.9990	0.0006
SVHN vs Constant	0.0818	0.5231	0.5231	1.0000
SVHN vs LSUN	0.9976	0.9991	0.9991	0.0036
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9924	0.9970	0.9970	0.0281
SVHN vs iSUN	0.9967	0.9989	0.9989	0.0063
TinyImagenet vs CelebA	0.6751	0.6226	0.6226	0.9794
TinyImagenet vs Constant	0.1537	0.3325	0.3325	0.9072
TinyImagenet vs LSUN	0.6765	0.7238	0.7238	0.9718
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0028	0.1515	0.1516	0.9998
TinyImagenet vs iSUN	0.6755	0.7196	0.7196	0.9464
Average	0.4725	0.5920	0.5920	0.7705

Table 134: The detailed performance for indicator $\log p_\gamma(x)$ when only 20% data in mixture distribution can be used for training, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9537	0.9093	0.9094	0.2173
CIFAR-10 vs Constant	0.5855	0.5179	0.5180	0.5784
CIFAR-10 vs LSUN	0.9964	0.9952	0.9952	0.0115
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9949	0.9776	0.9776	0.0166
CIFAR-10 vs iSUN	0.9925	0.9904	0.9904	0.0257
CIFAR-100 vs CelebA	0.9714	0.9416	0.9416	0.1277
CIFAR-100 vs Constant	0.4390	0.4384	0.4384	0.7340
CIFAR-100 vs LSUN	0.9963	0.9960	0.9960	0.0125
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9929	0.9738	0.9738	0.0227
CIFAR-100 vs iSUN	0.9908	0.9886	0.9886	0.0304
CelebA vs CIFAR-10	0.8270	0.8528	0.8529	0.4364
CelebA vs CIFAR-100	0.7385	0.7622	0.7623	0.5208
CelebA vs Constant	0.0128	0.4511	0.4512	1.0000
CelebA vs LSUN	0.9813	0.9877	0.9877	0.0736
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9934	0.9839	0.9839	0.0176
CelebA vs TinyImagenet	0.8666	0.8935	0.8935	0.3873
CelebA vs iSUN	0.9690	0.9818	0.9819	0.1315
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9974	0.9971	0.9971	0.0123
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.1952	0.3614	0.3614	0.9995
FashionMNIST vs MNIST	0.4578	0.5423	0.5424	0.9975
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6613	0.5830	0.5831	0.6968
FashionMNIST vs Omniglot	0.1853	0.4250	0.4251	1.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9313	0.8717	0.8718	0.1749
KMNIST vs MNIST	0.8288	0.8410	0.8410	0.7276
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9289	0.8451	0.8451	0.1358
KMNIST vs Omniglot	0.7155	0.7848	0.7849	0.9223
MNIST vs Constant28	0.9785	0.9746	0.9747	0.0788
MNIST vs FashionMNIST	0.9263	0.8419	0.8420	0.1595
MNIST vs KMNIST	0.3819	0.4029	0.4030	0.9095
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9323	0.8324	0.8325	0.1094
MNIST vs Omniglot	0.4991	0.5390	0.5391	0.9195
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
NotMNIST vs FashionMNIST	0.6982	0.6168	0.6169	0.5986
NotMNIST vs KMNIST	0.1883	0.3736	0.3736	0.9985
NotMNIST vs MNIST	0.5292	0.5756	0.5757	0.9582
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.6642	0.7070	0.7070	0.8362
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9451	0.8593	0.8593	0.1301
Omniglot vs KMNIST	0.7179	0.5716	0.5717	0.5914
Omniglot vs MNIST	0.7276	0.6747	0.6748	0.8844
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9203	0.7908	0.7909	0.1453
SVHN vs CIFAR-10	0.9852	0.9914	0.9914	0.0532
SVHN vs CIFAR-100	0.9779	0.9850	0.9851	0.0710
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.7784	0.8738	0.8738	0.3949
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9904	0.9933	0.9933	0.0288
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0008
TinyImagenet vs CelebA	0.9859	0.9607	0.9608	0.0523
TinyImagenet vs Constant	0.1117	0.3233	0.3234	0.9371
TinyImagenet vs LSUN	0.9882	0.9844	0.9844	0.0460
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9979	0.9904	0.9904	0.0062
TinyImagenet vs iSUN	0.9802	0.9749	0.9749	0.0691
Average	0.8816	0.8884	0.8884	0.2064

Table 135: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when only 20% data in mixture distribution can be used for training, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9589	0.9231	0.9231	0.1868
CIFAR-10 vs Constant	0.7025	0.6474	0.6474	0.5056
CIFAR-10 vs LSUN	0.9975	0.9968	0.9968	0.0092
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9949	0.9787	0.9787	0.0171
CIFAR-10 vs iSUN	0.9941	0.9925	0.9925	0.0205
CIFAR-100 vs CelebA	0.9730	0.9464	0.9464	0.1270
CIFAR-100 vs Constant	0.4830	0.4713	0.4714	0.7101
CIFAR-100 vs LSUN	0.9967	0.9964	0.9964	0.0111
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9931	0.9744	0.9744	0.0214
CIFAR-100 vs iSUN	0.9917	0.9900	0.9900	0.0277
CelebA vs CIFAR-10	0.8669	0.8909	0.8909	0.3731
CelebA vs CIFAR-100	0.7816	0.7993	0.7993	0.4613
CelebA vs Constant	0.0232	0.4523	0.4524	1.0000
CelebA vs LSUN	0.9866	0.9914	0.9914	0.0543
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9977	0.9941	0.9941	0.0063
CelebA vs TinyImagenet	0.8945	0.9188	0.9188	0.3312
CelebA vs iSUN	0.9779	0.9868	0.9869	0.0952
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9994	0.9993	0.9993	0.0037
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.1990	0.3612	0.3612	0.9986
FashionMNIST vs MNIST	0.5043	0.5604	0.5604	0.9543
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6764	0.5939	0.5940	0.6568
FashionMNIST vs Omniglot	0.2412	0.4395	0.4395	0.9963
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9384	0.8844	0.8845	0.1602
KMNIST vs MNIST	0.8374	0.8454	0.8454	0.6877
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9410	0.8675	0.8676	0.1147
KMNIST vs Omniglot	0.7594	0.8033	0.8034	0.7741
MNIST vs Constant28	0.9977	0.9977	0.9977	0.0232
MNIST vs FashionMNIST	0.9705	0.9324	0.9325	0.0826
MNIST vs KMNIST	0.6350	0.5556	0.5557	0.7711
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9723	0.9188	0.9188	0.0466
MNIST vs Omniglot	0.5075	0.5499	0.5500	0.9230
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs FashionMNIST	0.6999	0.6215	0.6216	0.6230
NotMNIST vs KMNIST	0.1937	0.3740	0.3740	0.9984
NotMNIST vs MNIST	0.5583	0.5913	0.5914	0.9388
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.7078	0.7325	0.7325	0.7607
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9698	0.9127	0.9128	0.0769
Omniglot vs KMNIST	0.8700	0.7763	0.7764	0.4001
Omniglot vs MNIST	0.7396	0.6934	0.6935	0.9013
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9486	0.8498	0.8499	0.0912
SVHN vs CIFAR-10	0.9926	0.9949	0.9950	0.0219
SVHN vs CIFAR-100	0.9872	0.9903	0.9903	0.0356
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.8239	0.9059	0.9059	0.3704
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9937	0.9950	0.9950	0.0174
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0002
TinyImagenet vs CelebA	0.9827	0.9579	0.9580	0.0731
TinyImagenet vs Constant	0.1516	0.3314	0.3314	0.9222
TinyImagenet vs LSUN	0.9909	0.9881	0.9881	0.0365
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9979	0.9903	0.9903	0.0062
TinyImagenet vs iSUN	0.9820	0.9769	0.9769	0.0614
Average	0.8955	0.9015	0.9016	0.1901

Table 136: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when only 20% data in mixture distribution can be used for training, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8330	0.6640	0.6641	0.3636
CIFAR-10 vs Constant	0.9160	0.8707	0.8708	0.1735
CIFAR-10 vs LSUN	0.9538	0.9291	0.9292	0.1258
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9979	0.9926	0.9926	0.0077
CIFAR-10 vs iSUN	0.9922	0.9887	0.9887	0.0217
CIFAR-100 vs CelebA	0.9494	0.9056	0.9056	0.2373
CIFAR-100 vs Constant	0.9996	0.9997	0.9997	0.0005
CIFAR-100 vs LSUN	0.9963	0.9960	0.9960	0.0111
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9858	0.9533	0.9533	0.0539
CIFAR-100 vs iSUN	0.9942	0.9940	0.9940	0.0173
CelebA vs CIFAR-10	0.8523	0.8770	0.8770	0.3716
CelebA vs CIFAR-100	0.7207	0.7573	0.7574	0.5852
CelebA vs Constant	0.0018	0.4504	0.4504	1.0000
CelebA vs LSUN	0.8553	0.8671	0.8671	0.2654
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9702	0.9376	0.9376	0.0829
CelebA vs TinyImagenet	0.8009	0.8363	0.8363	0.4410
CelebA vs iSUN	0.9573	0.9713	0.9713	0.1713
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9975	0.9972	0.9972	0.0123
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.2921	0.4044	0.4044	0.9987
FashionMNIST vs MNIST	0.3679	0.4788	0.4788	1.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.5538	0.5120	0.5121	0.8225
FashionMNIST vs Omniglot	0.5952	0.5893	0.5894	0.8004
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9360	0.9260	0.9261	0.2196
KMNIST vs MNIST	0.7415	0.7454	0.7455	0.6332
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9050	0.8355	0.8356	0.2187
KMNIST vs Omniglot	0.8214	0.8615	0.8616	0.5777
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9676	0.9372	0.9372	0.0844
MNIST vs KMNIST	0.3829	0.4057	0.4057	0.9572
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9490	0.8850	0.8851	0.1211
MNIST vs Omniglot	0.5543	0.6163	0.6164	0.8799
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	0.9998	0.9998	0.9998	0.0005
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0002
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9990	0.9991	0.9991	0.0000
NotMNIST vs FashionMNIST	0.7742	0.7006	0.7007	0.4904
NotMNIST vs KMNIST	0.6873	0.6413	0.6414	0.7323
NotMNIST vs MNIST	0.9088	0.9088	0.9088	0.3962
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9473	0.9566	0.9566	0.2555
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9784	0.9539	0.9540	0.1069
Omniglot vs KMNIST	0.7520	0.6514	0.6516	0.4780
Omniglot vs MNIST	0.7367	0.6429	0.6430	0.6692
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9577	0.8811	0.8811	0.0746
SVHN vs CIFAR-10	0.8516	0.8970	0.8970	0.2961
SVHN vs CIFAR-100	0.9476	0.9681	0.9681	0.1295
SVHN vs CelebA	0.9765	0.9685	0.9685	0.0523
SVHN vs Constant	0.9474	0.9720	0.9720	0.1298
SVHN vs LSUN	0.9996	0.9997	0.9997	0.0011
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9779	0.9856	0.9856	0.0663
SVHN vs iSUN	0.9949	0.9945	0.9945	0.0105
TinyImagenet vs CelebA	0.9891	0.9672	0.9672	0.0387
TinyImagenet vs Constant	0.4256	0.4114	0.4115	0.6561
TinyImagenet vs LSUN	0.9928	0.9896	0.9896	0.0254
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9980	0.9936	0.9936	0.0075
TinyImagenet vs iSUN	0.9631	0.9517	0.9517	0.1087
Average	0.9092	0.9089	0.9089	0.1737

Table 137: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is streaming with size 4096, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8514	0.6982	0.6983	0.3568
CIFAR-10 vs Constant	0.9579	0.9420	0.9421	0.1242
CIFAR-10 vs LSUN	0.9671	0.9473	0.9474	0.0839
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9978	0.9923	0.9923	0.0082
CIFAR-10 vs iSUN	0.9928	0.9895	0.9895	0.0203
CIFAR-100 vs CelebA	0.9522	0.9109	0.9109	0.2217
CIFAR-100 vs Constant	0.9997	0.9998	0.9998	0.0000
CIFAR-100 vs LSUN	0.9968	0.9966	0.9966	0.0093
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9864	0.9548	0.9548	0.0502
CIFAR-100 vs iSUN	0.9947	0.9945	0.9945	0.0158
CelebA vs CIFAR-10	0.8807	0.9044	0.9044	0.3214
CelebA vs CIFAR-100	0.7555	0.7863	0.7863	0.5382
CelebA vs Constant	0.0107	0.4520	0.4520	0.9997
CelebA vs LSUN	0.8717	0.8813	0.8814	0.2260
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9848	0.9653	0.9653	0.0414
CelebA vs TinyImagenet	0.8243	0.8545	0.8546	0.4054
CelebA vs iSUN	0.9703	0.9795	0.9795	0.1193
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9988	0.9987	0.9987	0.0072
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.2975	0.4053	0.4053	0.9966
FashionMNIST vs MNIST	0.4161	0.4963	0.4963	0.9918
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.5629	0.5190	0.5191	0.8144
FashionMNIST vs Omniglot	0.6373	0.6140	0.6140	0.7192
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9448	0.9368	0.9368	0.1913
KMNIST vs MNIST	0.7486	0.7493	0.7493	0.6231
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9232	0.8620	0.8620	0.1801
KMNIST vs Omniglot	0.8365	0.8684	0.8685	0.5354
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9914	0.9857	0.9857	0.0278
MNIST vs KMNIST	0.5166	0.4725	0.4726	0.8407
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9898	0.9751	0.9752	0.0241
MNIST vs Omniglot	0.5675	0.6318	0.6319	0.8584
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0001
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0002
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9989	0.9990	0.9990	0.0000
NotMNIST vs FashionMNIST	0.7756	0.7048	0.7049	0.5031
NotMNIST vs KMNIST	0.6884	0.6423	0.6424	0.7404
NotMNIST vs MNIST	0.9181	0.9153	0.9154	0.3565
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9547	0.9617	0.9617	0.2150
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9916	0.9808	0.9809	0.0358
Omniglot vs KMNIST	0.8600	0.8123	0.8124	0.3347
Omniglot vs MNIST	0.7459	0.6596	0.6597	0.6820
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9814	0.9446	0.9447	0.0349
SVHN vs CIFAR-10	0.9085	0.9333	0.9333	0.1552
SVHN vs CIFAR-100	0.9784	0.9858	0.9858	0.0494
SVHN vs CelebA	0.9944	0.9911	0.9911	0.0114
SVHN vs Constant	0.9698	0.9853	0.9853	0.1001
SVHN vs LSUN	0.9997	0.9998	0.9998	0.0005
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9895	0.9921	0.9921	0.0264
SVHN vs iSUN	0.9974	0.9964	0.9964	0.0047
TinyImagenet vs CelebA	0.9881	0.9692	0.9692	0.0470
TinyImagenet vs Constant	0.5620	0.4729	0.4730	0.5751
TinyImagenet vs LSUN	0.9941	0.9915	0.9915	0.0209
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9979	0.9934	0.9934	0.0075
TinyImagenet vs iSUN	0.9687	0.9574	0.9574	0.0840
Average	0.9205	0.9201	0.9202	0.1558

Table 138: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when data is streaming with size 4096, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9745	0.9482	0.9483	0.1194
CIFAR-10 vs Constant	0.7063	0.5753	0.5754	0.4175
CIFAR-10 vs LSUN	0.9977	0.9966	0.9966	0.0071
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9972	0.9899	0.9900	0.0106
CIFAR-10 vs iSUN	0.9959	0.9945	0.9945	0.0140
CIFAR-100 vs CelebA	0.9654	0.9307	0.9307	0.1593
CIFAR-100 vs Constant	0.6795	0.6002	0.6002	0.4933
CIFAR-100 vs LSUN	0.9962	0.9953	0.9953	0.0105
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9953	0.9863	0.9863	0.0201
CIFAR-100 vs iSUN	0.9947	0.9938	0.9938	0.0192
CelebA vs CIFAR-10	0.8458	0.8648	0.8648	0.3751
CelebA vs CIFAR-100	0.7744	0.7937	0.7938	0.4691
CelebA vs Constant	0.0002	0.4503	0.4503	1.0000
CelebA vs LSUN	0.9874	0.9908	0.9908	0.0463
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9931	0.9830	0.9830	0.0177
CelebA vs TinyImagenet	0.8713	0.8928	0.8929	0.3528
CelebA vs iSUN	0.9823	0.9869	0.9870	0.0594
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9962	0.9953	0.9953	0.0123
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.2101	0.3772	0.3772	0.9998
FashionMNIST vs MNIST	0.3587	0.4866	0.4867	0.9987
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6478	0.5771	0.5772	0.7134
FashionMNIST vs Omniglot	0.2924	0.5028	0.5028	0.9994
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9389	0.8768	0.8768	0.1437
KMNIST vs MNIST	0.8391	0.8463	0.8463	0.6826
KMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9303	0.8482	0.8482	0.1315
KMNIST vs Omniglot	0.7887	0.8417	0.8417	0.7913
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0007
MNIST vs FashionMNIST	0.9458	0.8894	0.8895	0.1258
MNIST vs KMNIST	0.3456	0.3984	0.3985	0.9782
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9214	0.8123	0.8124	0.1234
MNIST vs Omniglot	0.7143	0.7271	0.7271	0.8045
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9998	0.9998	0.9998	0.0000
NotMNIST vs FashionMNIST	0.7546	0.6658	0.6659	0.5183
NotMNIST vs KMNIST	0.4117	0.4360	0.4361	0.9130
NotMNIST vs MNIST	0.9452	0.9360	0.9360	0.2414
NotMNIST vs Noise28	0.9991	0.9991	0.9991	0.0017
NotMNIST vs Omniglot	0.9585	0.9665	0.9665	0.2257
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9788	0.9451	0.9452	0.0597
Omniglot vs KMNIST	0.8676	0.7665	0.7666	0.3437
Omniglot vs MNIST	0.7873	0.7145	0.7146	0.4839
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9480	0.8467	0.8468	0.0876
SVHN vs CIFAR-10	0.9836	0.9890	0.9891	0.0535
SVHN vs CIFAR-100	0.9785	0.9854	0.9855	0.0708
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.8217	0.9099	0.9099	0.3529
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0002
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9906	0.9943	0.9943	0.0281
SVHN vs iSUN	0.9997	0.9999	0.9999	0.0010
TinyImagenet vs CelebA	0.9893	0.9728	0.9728	0.0405
TinyImagenet vs Constant	0.1303	0.3267	0.3267	0.9247
TinyImagenet vs LSUN	0.9918	0.9877	0.9877	0.0310
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9979	0.9921	0.9921	0.0065
TinyImagenet vs iSUN	0.9838	0.9787	0.9787	0.0578
Average	0.9044	0.9083	0.9083	0.1689

Table 139: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is split to several blocks with size 4096, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9696	0.9455	0.9455	0.1394
CIFAR-10 vs Constant	0.8200	0.7015	0.7016	0.3321
CIFAR-10 vs LSUN	0.9984	0.9977	0.9977	0.0049
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9971	0.9898	0.9898	0.0108
CIFAR-10 vs iSUN	0.9966	0.9952	0.9952	0.0112
CIFAR-100 vs CelebA	0.9665	0.9338	0.9339	0.1514
CIFAR-100 vs Constant	0.7271	0.6551	0.6551	0.4546
CIFAR-100 vs LSUN	0.9967	0.9960	0.9960	0.0099
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9953	0.9863	0.9863	0.0200
CIFAR-100 vs iSUN	0.9952	0.9944	0.9944	0.0176
CelebA vs CIFAR-10	0.8793	0.8988	0.8988	0.3224
CelebA vs CIFAR-100	0.8156	0.8320	0.8320	0.4125
CelebA vs Constant	0.0015	0.4503	0.4503	1.0000
CelebA vs LSUN	0.9906	0.9930	0.9930	0.0343
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9962	0.9907	0.9907	0.0098
CelebA vs TinyImagenet	0.8994	0.9200	0.9201	0.3007
CelebA vs iSUN	0.9876	0.9907	0.9907	0.0428
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9980	0.9977	0.9977	0.0110
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	0.2101	0.3774	0.3774	0.9997
FashionMNIST vs MNIST	0.3992	0.4998	0.4999	0.9882
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.6592	0.5853	0.5854	0.6903
FashionMNIST vs Omniglot	0.3726	0.5300	0.5300	0.9828
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9464	0.8906	0.8907	0.1310
KMNIST vs MNIST	0.8491	0.8521	0.8521	0.6436
KMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9407	0.8681	0.8681	0.1156
KMNIST vs Omniglot	0.8281	0.8580	0.8580	0.6130
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9826	0.9614	0.9615	0.0526
MNIST vs KMNIST	0.4730	0.4647	0.4648	0.9446
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9610	0.8915	0.8916	0.0623
MNIST vs Omniglot	0.7400	0.7740	0.7740	0.8696
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9998	0.9998	0.9998	0.0000
NotMNIST vs FashionMNIST	0.7555	0.6702	0.6703	0.5514
NotMNIST vs KMNIST	0.4147	0.4359	0.4360	0.9179
NotMNIST vs MNIST	0.9523	0.9424	0.9425	0.2173
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9615	0.9681	0.9682	0.1919
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.9933	0.9818	0.9819	0.0244
Omniglot vs KMNIST	0.9604	0.9376	0.9376	0.1565
Omniglot vs MNIST	0.7908	0.7206	0.7207	0.5094
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9738	0.9146	0.9147	0.0488
SVHN vs CIFAR-10	0.9906	0.9931	0.9931	0.0266
SVHN vs CIFAR-100	0.9882	0.9908	0.9908	0.0334
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0001
SVHN vs Constant	0.8563	0.9304	0.9304	0.3257
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9937	0.9959	0.9959	0.0161
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0006
TinyImagenet vs CelebA	0.9867	0.9711	0.9711	0.0535
TinyImagenet vs Constant	0.1992	0.3407	0.3408	0.8976
TinyImagenet vs LSUN	0.9932	0.9899	0.9899	0.0253
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9978	0.9921	0.9921	0.0068
TinyImagenet vs iSUN	0.9856	0.9813	0.9813	0.0509
Average	0.9151	0.9193	0.9193	0.1569

Table 140: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when data is split to several blocks with size 4096, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8727	0.8373	0.8373	0.7230
CIFAR-10 vs Constant	0.0870	0.3200	0.3201	0.9910
CIFAR-10 vs LSUN	0.9622	0.9560	0.9560	0.1653
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0280	0.1545	0.1545	1.0000
CIFAR-10 vs iSUN	0.9414	0.9341	0.9341	0.2199
CIFAR-100 vs CelebA	0.8346	0.8020	0.8020	0.8681
CIFAR-100 vs Constant	0.0407	0.3118	0.3118	0.9965
CIFAR-100 vs LSUN	0.9558	0.9509	0.9509	0.1986
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0271	0.1544	0.1544	1.0000
CIFAR-100 vs iSUN	0.9353	0.9298	0.9298	0.2536
CelebA vs CIFAR-10	0.3070	0.5322	0.5322	0.9498
CelebA vs CIFAR-100	0.3464	0.5454	0.5455	0.9114
CelebA vs Constant	0.0255	0.4552	0.4552	0.9920
CelebA vs LSUN	0.8342	0.8633	0.8634	0.4708
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0023	0.2579	0.2579	1.0000
CelebA vs TinyImagenet	0.3568	0.5553	0.5553	0.9133
CelebA vs iSUN	0.7982	0.8391	0.8391	0.4977
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9991	0.9999	0.9999	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.4961	0.6431	0.6432	1.0000
FashionMNIST vs KMNIST	0.5725	0.5804	0.5805	0.8817
FashionMNIST vs MNIST	0.1509	0.3312	0.3312	1.0000
FashionMNIST vs Noise28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	0.7803	0.7912	0.7912	0.7621
FashionMNIST vs Omniglot	0.1197	0.3675	0.3676	0.9996
KMNIST vs Constant28	0.9772	0.9503	0.9503	0.0683
KMNIST vs FashionMNIST	0.7629	0.7332	0.7333	0.6376
KMNIST vs MNIST	0.1213	0.3227	0.3227	0.9999
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9270	0.9260	0.9260	0.3399
KMNIST vs Omniglot	0.0816	0.3600	0.3601	0.9999
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9931	0.9921	0.9921	0.0268
MNIST vs KMNIST	0.9538	0.9478	0.9478	0.1903
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9998	0.9998	0.9998	0.0013
MNIST vs Omniglot	0.4725	0.5102	0.5103	0.8807
Noise vs CIFAR-10	0.1030	0.3281	0.3281	0.8989
Noise vs CIFAR-100	0.1068	0.3289	0.3289	0.8957
Noise vs CelebA	0.0106	0.1909	0.1909	0.9902
Noise vs Constant	0.5406	0.4688	0.4688	0.4651
Noise vs LSUN	0.0804	0.3230	0.3231	0.9249
Noise vs SVHN	0.3059	0.2040	0.2040	0.6971
Noise vs TinyImagenet	0.0810	0.3271	0.3271	0.9200

Noise vs iSUN	0.0639	0.3423	0.3423	0.9398
Noise28 vs Constant28	0.2030	0.3514	0.3514	0.8124
Noise28 vs FashionMNIST	0.9252	0.8193	0.8193	0.1187
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9988	0.9942	0.9942	0.0016
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.7447	0.7144	0.7145	1.0000
NotMNIST vs FashionMNIST	0.6385	0.6224	0.6224	0.9365
NotMNIST vs KMNIST	0.5989	0.5989	0.5990	0.9422
NotMNIST vs MNIST	0.1840	0.3419	0.3419	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.1404	0.3725	0.3725	0.9999
Omniglot vs Constant28	0.9950	0.9684	0.9685	0.0050
Omniglot vs FashionMNIST	0.9854	0.9827	0.9827	0.0960
Omniglot vs KMNIST	0.9775	0.9738	0.9738	0.1343
Omniglot vs MNIST	0.7673	0.7244	0.7244	0.8078
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9992	0.9990	0.9990	0.0036
SVHN vs CIFAR-10	0.9941	0.9975	0.9975	0.0215
SVHN vs CIFAR-100	0.9933	0.9971	0.9971	0.0284
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.4840	0.6504	0.6504	0.6839
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0004
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9959	0.9982	0.9982	0.0139
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0003
TinyImagenet vs CelebA	0.8451	0.8050	0.8050	0.8190
TinyImagenet vs Constant	0.0130	0.3041	0.3042	1.0000
TinyImagenet vs LSUN	0.9202	0.9107	0.9108	0.3457
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0261	0.1522	0.1522	1.0000
TinyImagenet vs iSUN	0.8910	0.8792	0.8792	0.4008
Average	0.6997	0.7554	0.7554	0.4223

Table 141: The detailed performance for indicator $WAIC'(x)$ which replace the likelihood in $\mathbb{E}_\theta \log p_\theta(x)$ with BPD, based on 5 models RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8801	0.8276	0.8276	0.5765
CIFAR-10 vs Constant	0.8942	0.7804	0.7804	0.1982
CIFAR-10 vs LSUN	0.9747	0.9728	0.9728	0.1228
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.1377	0.1661	0.1662	0.9876
CIFAR-10 vs iSUN	0.9681	0.9673	0.9673	0.1410
CIFAR-100 vs CelebA	0.9193	0.8812	0.8812	0.4433
CIFAR-100 vs Constant	0.9621	0.9383	0.9383	0.1351
CIFAR-100 vs LSUN	0.9943	0.9940	0.9940	0.0211
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.1647	0.1683	0.1683	0.9992
CIFAR-100 vs iSUN	0.9916	0.9903	0.9903	0.0326
CelebA vs CIFAR-10	0.4320	0.5881	0.5882	0.9209
CelebA vs CIFAR-100	0.4771	0.6090	0.6090	0.8902
CelebA vs Constant	0.9749	0.9660	0.9661	0.0459
CelebA vs LSUN	0.8763	0.9169	0.9169	0.4902
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.1513	0.2817	0.2817	0.9740
CelebA vs TinyImagenet	0.4666	0.6120	0.6121	0.9046
CelebA vs iSUN	0.8486	0.8994	0.8995	0.5165
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	nan	1.0000	1.0000	nan
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	nan	1.0000	1.0000	nan
Constant28 vs NotMNIST	0.9938	0.9997	0.9997	0.0258
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.7433	0.7691	0.7691	0.9228
FashionMNIST vs KMNIST	0.7145	0.6916	0.6917	0.7732
FashionMNIST vs MNIST	0.2776	0.3703	0.3704	0.9835
FashionMNIST vs Noise28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	0.8378	0.8400	0.8401	0.6633
FashionMNIST vs Omniglot	0.2748	0.4125	0.4125	0.9820
KMNIST vs Constant28	0.7268	0.7310	0.7310	0.6042
KMNIST vs FashionMNIST	0.5655	0.5440	0.5441	0.8771
KMNIST vs MNIST	0.1838	0.3381	0.3381	0.9956
KMNIST vs Noise28	0.9991	0.9994	0.9994	0.0000
KMNIST vs NotMNIST	0.7123	0.7225	0.7225	0.7992
KMNIST vs Omniglot	0.1554	0.3762	0.3763	0.9995
MNIST vs Constant28	0.9879	0.9682	0.9682	0.0133
MNIST vs FashionMNIST	0.9436	0.9439	0.9439	0.2732
MNIST vs KMNIST	0.8839	0.8775	0.8775	0.4606
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9860	0.9874	0.9874	0.0649
MNIST vs Omniglot	0.6192	0.6153	0.6154	0.8848
Noise vs CIFAR-10	0.9847	0.9390	0.9390	0.0185
Noise vs CIFAR-100	0.9843	0.9376	0.9376	0.0187
Noise vs CelebA	0.9901	0.9279	0.9280	0.0133
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	0.9908	0.9631	0.9632	0.0129
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	0.9815	0.9301	0.9302	0.0213

Noise vs iSUN	0.9869	0.9539	0.9540	0.0185
Noise28 vs Constant28	0.3977	0.4084	0.4084	0.6382
Noise28 vs FashionMNIST	0.9953	0.9914	0.9914	0.0146
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9998	0.9998	0.9998	0.0007
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.7211	0.6798	0.6799	0.8800
NotMNIST vs FashionMNIST	0.5544	0.5289	0.5290	0.8889
NotMNIST vs KMNIST	0.7702	0.7845	0.7845	0.8076
NotMNIST vs MNIST	0.6351	0.6700	0.6700	0.9510
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.5961	0.6776	0.6776	0.9829
Omniglot vs Constant28	0.9070	0.8707	0.8708	0.3452
Omniglot vs FashionMNIST	0.7892	0.7312	0.7313	0.6232
Omniglot vs KMNIST	0.9388	0.9210	0.9210	0.2668
Omniglot vs MNIST	0.7657	0.7152	0.7152	0.7417
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.8599	0.8150	0.8150	0.4896
SVHN vs CIFAR-10	0.9813	0.9926	0.9926	0.0950
SVHN vs CIFAR-100	0.9822	0.9928	0.9928	0.0919
SVHN vs CelebA	0.9990	0.9993	0.9993	0.0012
SVHN vs Constant	0.8700	0.8763	0.8763	0.2332
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0005
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9930	0.9973	0.9973	0.0267
SVHN vs iSUN	0.9997	0.9999	0.9999	0.0009
TinyImagenet vs CelebA	0.7882	0.7144	0.7144	0.8318
TinyImagenet vs Constant	0.9956	0.9959	0.9959	0.0108
TinyImagenet vs LSUN	0.9684	0.9628	0.9628	0.1317
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.2687	0.1824	0.1824	0.9830
TinyImagenet vs iSUN	0.9526	0.9416	0.9416	0.1691
Average	nan	0.8462	0.8462	nan

Table 142: The detailed performance for indicator $WAIC(x)$ based on 5 models RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8724	0.8370	0.8370	0.7243
CIFAR-10 vs Constant	0.0843	0.3195	0.3195	0.9926
CIFAR-10 vs LSUN	0.9616	0.9554	0.9554	0.1676
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0280	0.1545	0.1545	1.0000
CIFAR-10 vs iSUN	0.9406	0.9333	0.9333	0.2225
CIFAR-100 vs CelebA	0.8331	0.8006	0.8006	0.8738
CIFAR-100 vs Constant	0.0363	0.3110	0.3110	0.9994
CIFAR-100 vs LSUN	0.9536	0.9491	0.9491	0.2115
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0272	0.1544	0.1544	1.0000
CIFAR-100 vs iSUN	0.9326	0.9276	0.9276	0.2672
CelebA vs CIFAR-10	0.3070	0.5321	0.5322	0.9496
CelebA vs CIFAR-100	0.3464	0.5454	0.5454	0.9112
CelebA vs Constant	0.0245	0.4550	0.4550	0.9924
CelebA vs LSUN	0.8341	0.8632	0.8633	0.4714
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0023	0.2579	0.2579	1.0000
CelebA vs TinyImagenet	0.3568	0.5553	0.5553	0.9132
CelebA vs iSUN	0.7981	0.8390	0.8390	0.4978
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9999	0.9999	0.9999	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.4948	0.6408	0.6408	1.0000
FashionMNIST vs KMNIST	0.5717	0.5798	0.5799	0.8825
FashionMNIST vs MNIST	0.1506	0.3311	0.3312	1.0000
FashionMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.7797	0.7907	0.7907	0.7626
FashionMNIST vs Omniglot	0.1195	0.3675	0.3675	0.9996
KMNIST vs Constant28	0.9774	0.9502	0.9502	0.0663
KMNIST vs FashionMNIST	0.7638	0.7340	0.7340	0.6360
KMNIST vs MNIST	0.1213	0.3227	0.3227	0.9999
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9275	0.9264	0.9264	0.3369
KMNIST vs Omniglot	0.0815	0.3600	0.3601	0.9999
MNIST vs Constant28	0.9950	0.9735	0.9735	0.0050
MNIST vs FashionMNIST	0.9932	0.9921	0.9921	0.0269
MNIST vs KMNIST	0.9535	0.9475	0.9475	0.1918
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9998	0.9998	0.9998	0.0014
MNIST vs Omniglot	0.4715	0.5096	0.5096	0.8803
Noise vs CIFAR-10	0.0461	0.3160	0.3160	0.9548
Noise vs CIFAR-100	0.0468	0.3162	0.3162	0.9539
Noise vs CelebA	0.0023	0.1897	0.1897	0.9978
Noise vs Constant	0.1388	0.3362	0.3362	0.8656
Noise vs LSUN	0.0369	0.3140	0.3140	0.9669
Noise vs SVHN	0.1263	0.1711	0.1711	0.8756
Noise vs TinyImagenet	0.0400	0.3185	0.3185	0.9605

Noise vs iSUN	0.0321	0.3356	0.3356	0.9709
Noise28 vs Constant28	0.1831	0.3463	0.3463	0.8373
Noise28 vs FashionMNIST	0.9214	0.8128	0.8129	0.1250
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9986	0.9938	0.9939	0.0021
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.7384	0.7045	0.7045	1.0000
NotMNIST vs FashionMNIST	0.6379	0.6214	0.6215	0.9350
NotMNIST vs KMNIST	0.5950	0.5950	0.5950	0.9429
NotMNIST vs MNIST	0.1805	0.3407	0.3408	1.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.1383	0.3719	0.3720	0.9999
Omniglot vs Constant28	0.9949	0.9684	0.9684	0.0050
Omniglot vs FashionMNIST	0.9859	0.9833	0.9833	0.0918
Omniglot vs KMNIST	0.9773	0.9736	0.9736	0.1361
Omniglot vs MNIST	0.7655	0.7232	0.7232	0.8103
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9993	0.9991	0.9991	0.0033
SVHN vs CIFAR-10	0.9941	0.9975	0.9975	0.0215
SVHN vs CIFAR-100	0.9933	0.9971	0.9971	0.0284
SVHN vs CelebA	0.9999	0.9999	0.9999	0.0001
SVHN vs Constant	0.4803	0.6489	0.6490	0.6913
SVHN vs LSUN	0.9999	1.0000	1.0000	0.0004
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9959	0.9982	0.9982	0.0139
SVHN vs iSUN	0.9998	0.9999	0.9999	0.0003
TinyImagenet vs CelebA	0.8451	0.8049	0.8049	0.8186
TinyImagenet vs Constant	0.0115	0.3040	0.3040	1.0000
TinyImagenet vs LSUN	0.9197	0.9103	0.9103	0.3486
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0261	0.1522	0.1522	1.0000
TinyImagenet vs iSUN	0.8905	0.8788	0.8788	0.4030
Average	0.6900	0.7526	0.7526	0.4320

Table 143: The detailed performance for indicator $\mathbb{E}_\theta \log p_\theta(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8282	0.7033	0.7034	0.6398
CIFAR-10 vs Constant	0.9680	0.9646	0.9646	0.1352
CIFAR-10 vs LSUN	0.9609	0.9528	0.9528	0.1576
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.4255	0.2434	0.2435	0.9766
CIFAR-10 vs iSUN	0.9576	0.9534	0.9534	0.1719
CIFAR-100 vs CelebA	0.8945	0.8214	0.8214	0.4924
CIFAR-100 vs Constant	0.9804	0.9792	0.9792	0.0873
CIFAR-100 vs LSUN	0.9932	0.9930	0.9930	0.0251
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.4678	0.2695	0.2696	0.9967
CIFAR-100 vs iSUN	0.9911	0.9911	0.9911	0.0355
CelebA vs CIFAR-10	0.5684	0.7042	0.7042	0.8843
CelebA vs CIFAR-100	0.5983	0.7209	0.7209	0.8587
CelebA vs Constant	0.9942	0.9974	0.9974	0.0075
CelebA vs LSUN	0.8089	0.8722	0.8722	0.6043
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.6845	0.5946	0.5946	0.8317
CelebA vs TinyImagenet	0.5802	0.7180	0.7180	0.8887
CelebA vs iSUN	0.7982	0.8758	0.8759	0.6118
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	nan	1.0000	1.0000	nan
Constant28 vs NotMNIST	0.9967	0.9997	0.9997	0.0182
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.8040	0.8144	0.8144	0.8580
FashionMNIST vs KMNIST	0.7719	0.7573	0.7574	0.7522
FashionMNIST vs MNIST	0.5864	0.5831	0.5832	0.9597
FashionMNIST vs Noise28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	0.7792	0.7541	0.7542	0.6950
FashionMNIST vs Omniglot	0.6275	0.6615	0.6616	0.9393
KMNIST vs Constant28	0.5385	0.4686	0.4687	0.6246
KMNIST vs FashionMNIST	0.4699	0.4501	0.4502	0.9021
KMNIST vs MNIST	0.2401	0.3566	0.3567	0.9930
KMNIST vs Noise28	0.9989	0.9993	0.9993	0.0001
KMNIST vs NotMNIST	0.5655	0.5135	0.5136	0.8418
KMNIST vs Omniglot	0.2256	0.3989	0.3990	0.9984
MNIST vs Constant28	0.9705	0.9522	0.9523	0.1476
MNIST vs FashionMNIST	0.8901	0.8434	0.8434	0.3598
MNIST vs KMNIST	0.8309	0.7850	0.7850	0.5261
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9519	0.9305	0.9305	0.1640
MNIST vs Omniglot	0.6495	0.6654	0.6654	0.8952
Noise vs CIFAR-10	0.9997	0.9996	0.9996	0.0010
Noise vs CIFAR-100	0.9998	0.9997	0.9997	0.0010
Noise vs CelebA	0.9996	0.9985	0.9985	0.0011
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	0.9995	0.9993	0.9993	0.0014
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	0.9996	0.9995	0.9995	0.0013

Noise vs iSUN	0.9992	0.9989	0.9989	0.0030
Noise28 vs Constant28	0.5018	0.4509	0.4510	0.6285
Noise28 vs FashionMNIST	0.9965	0.9954	0.9954	0.0121
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9999	0.9998	0.9998	0.0004
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.7049	0.6556	0.6558	0.8760
NotMNIST vs FashionMNIST	0.5341	0.4944	0.4945	0.8831
NotMNIST vs KMNIST	0.7708	0.7794	0.7794	0.7966
NotMNIST vs MNIST	0.6875	0.7267	0.7268	0.9356
NotMNIST vs Noise28	0.9999	0.9999	0.9999	0.0005
NotMNIST vs Omniglot	0.6675	0.7534	0.7534	0.9729
Omniglot vs Constant28	0.8539	0.7872	0.7873	0.3776
Omniglot vs FashionMNIST	0.7383	0.6307	0.6308	0.6620
Omniglot vs KMNIST	0.9307	0.9011	0.9012	0.2807
Omniglot vs MNIST	0.7617	0.7081	0.7081	0.7416
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.8020	0.6980	0.6981	0.5575
SVHN vs CIFAR-10	0.9328	0.9653	0.9653	0.2557
SVHN vs CIFAR-100	0.9396	0.9676	0.9676	0.2139
SVHN vs CelebA	0.9936	0.9936	0.9936	0.0256
SVHN vs Constant	0.9436	0.9657	0.9657	0.1701
SVHN vs LSUN	0.9997	0.9998	0.9998	0.0013
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9748	0.9876	0.9876	0.1006
SVHN vs iSUN	0.9992	0.9995	0.9995	0.0022
TinyImagenet vs CelebA	0.6682	0.4797	0.4798	0.8780
TinyImagenet vs Constant	0.9981	0.9985	0.9985	0.0010
TinyImagenet vs LSUN	0.9597	0.9523	0.9523	0.1694
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.6125	0.3514	0.3516	0.9080
TinyImagenet vs iSUN	0.9484	0.9409	0.9409	0.1926
Average	nan	0.8529	0.8529	nan

Table 144: The detailed performance for indicator $Var_{\theta} \log p_{\theta}(x)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9031	0.8727	0.8727	0.5825
CIFAR-10 vs Constant	0.2789	0.3661	0.3661	0.9017
CIFAR-10 vs LSUN	0.9780	0.9756	0.9756	0.0871
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0173	0.1544	0.1544	1.0000
CIFAR-10 vs iSUN	0.9631	0.9587	0.9587	0.1373
CIFAR-100 vs CelebA	0.8511	0.7982	0.7982	0.7221
CIFAR-100 vs Constant	0.2809	0.3654	0.3654	0.9560
CIFAR-100 vs LSUN	0.9915	0.9892	0.9892	0.0288
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0432	0.1552	0.1553	1.0000
CIFAR-100 vs iSUN	0.9820	0.9762	0.9762	0.0593
CelebA vs CIFAR-10	0.2954	0.5276	0.5277	0.9519
CelebA vs CIFAR-100	0.3477	0.5459	0.5459	0.9084
CelebA vs Constant	0.1870	0.4932	0.4932	0.8968
CelebA vs LSUN	0.8859	0.9056	0.9057	0.3497
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0026	0.2579	0.2579	0.9999
CelebA vs TinyImagenet	0.3485	0.5517	0.5517	0.9185
CelebA vs iSUN	0.8478	0.8755	0.8756	0.3898
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9968	0.9971	0.9971	0.0150
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.3721	0.3967	0.3968	0.8205
FashionMNIST vs KMNIST	0.9200	0.9255	0.9255	0.3926
FashionMNIST vs MNIST	0.7978	0.8077	0.8077	0.6599
FashionMNIST vs Noise28	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	0.8675	0.8432	0.8433	0.5400
FashionMNIST vs Omniglot	0.7546	0.7473	0.7474	0.6287
KMNIST vs Constant28	0.3685	0.4172	0.4173	1.0000
KMNIST vs FashionMNIST	0.4776	0.5217	0.5218	0.9719
KMNIST vs MNIST	0.3545	0.4156	0.4157	0.9978
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.5974	0.6108	0.6108	0.9331
KMNIST vs Omniglot	0.4030	0.4874	0.4874	0.9893
MNIST vs Constant28	0.9475	0.8616	0.8616	0.1059
MNIST vs FashionMNIST	0.9481	0.9436	0.9436	0.1995
MNIST vs KMNIST	0.9782	0.9765	0.9765	0.0992
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9991	0.9991	0.9991	0.0012
MNIST vs Omniglot	0.7798	0.7494	0.7495	0.5517
Noise vs CIFAR-10	0.0110	0.3090	0.3090	0.9896
Noise vs CIFAR-100	0.0189	0.3105	0.3106	0.9816
Noise vs CelebA	0.0146	0.1914	0.1915	0.9864
Noise vs Constant	0.0392	0.3146	0.3146	0.9613
Noise vs LSUN	0.0424	0.3151	0.3151	0.9621
Noise vs SVHN	0.0044	0.1543	0.1543	0.9959
Noise vs TinyImagenet	0.0155	0.3136	0.3136	0.9851

Noise vs iSUN	0.0347	0.3362	0.3362	0.9685
Noise28 vs Constant28	0.0973	0.3249	0.3249	0.9326
Noise28 vs FashionMNIST	0.7757	0.6423	0.6424	0.3998
Noise28 vs KMNIST	0.9227	0.8878	0.8878	0.1612
Noise28 vs MNIST	0.9185	0.8771	0.8772	0.1599
Noise28 vs NotMNIST	0.9270	0.8943	0.8944	0.1565
Noise28 vs Omniglot	0.9034	0.8764	0.8764	0.1703
NotMNIST vs Constant28	0.2336	0.3732	0.3733	1.0000
NotMNIST vs FashionMNIST	0.6018	0.6248	0.6248	0.9591
NotMNIST vs KMNIST	0.8169	0.8349	0.8349	0.8658
NotMNIST vs MNIST	0.6224	0.6625	0.6625	0.9882
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.6118	0.6504	0.6505	0.9808
Omniglot vs Constant28	0.8693	0.7812	0.7813	0.4144
Omniglot vs FashionMNIST	0.8576	0.8457	0.8457	0.6106
Omniglot vs KMNIST	0.8986	0.8939	0.8940	0.4851
Omniglot vs MNIST	0.6711	0.6097	0.6097	0.8829
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9718	0.9715	0.9715	0.1460
SVHN vs CIFAR-10	0.9957	0.9984	0.9984	0.0130
SVHN vs CIFAR-100	0.9951	0.9980	0.9980	0.0154
SVHN vs CelebA	0.9998	0.9999	0.9999	0.0001
SVHN vs Constant	0.7746	0.8287	0.8287	0.4298
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0001
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9970	0.9988	0.9988	0.0077
SVHN vs iSUN	0.9999	1.0000	1.0000	0.0002
TinyImagenet vs CelebA	0.8398	0.7789	0.7789	0.7509
TinyImagenet vs Constant	0.3316	0.3772	0.3772	0.8768
TinyImagenet vs LSUN	0.9888	0.9856	0.9856	0.0409
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0280	0.1522	0.1522	1.0000
TinyImagenet vs iSUN	0.9743	0.9677	0.9677	0.0856
Average	0.7127	0.7560	0.7560	0.4365

Table 145: The detailed performance for indicator $\log p_\theta(x|y)$ based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.1566	0.2049	0.2050	0.9970
CIFAR-10 vs Constant	0.0215	0.3085	0.3085	0.9961
CIFAR-10 vs LSUN	0.0329	0.3106	0.3107	0.9992
CIFAR-10 vs Noise	0.0026	0.3074	0.3074	0.9974
CIFAR-10 vs SVHN	0.1665	0.1686	0.1687	0.9923
CIFAR-10 vs iSUN	0.0496	0.3361	0.3361	0.9971
CIFAR-100 vs CelebA	0.4183	0.2838	0.2839	0.9686
CIFAR-100 vs Constant	0.0013	0.3069	0.3070	0.9998
CIFAR-100 vs LSUN	0.1122	0.3220	0.3220	0.9985
CIFAR-100 vs Noise	0.0006	0.3070	0.3070	0.9994
CIFAR-100 vs SVHN	0.1879	0.1712	0.1712	0.9930
CIFAR-100 vs iSUN	0.1240	0.3482	0.3482	0.9964
CelebA vs CIFAR-10	0.5136	0.6469	0.6469	0.8946
CelebA vs CIFAR-100	0.4940	0.6362	0.6362	0.9016
CelebA vs Constant	0.0959	0.4714	0.4714	0.9322
CelebA vs LSUN	0.4710	0.6312	0.6312	0.9510
CelebA vs Noise	0.0000	0.4503	0.4503	1.0000
CelebA vs SVHN	0.2714	0.3071	0.3072	0.9711
CelebA vs TinyImagenet	0.4990	0.6469	0.6469	0.9090
CelebA vs iSUN	0.4619	0.6497	0.6498	0.9615
Constant vs CIFAR-10	0.7632	0.6086	0.6086	0.2372
Constant vs CIFAR-100	0.7376	0.5878	0.5878	0.2628
Constant vs CelebA	0.5862	0.3447	0.3448	0.4138
Constant vs LSUN	0.6551	0.5307	0.5307	0.3449
Constant vs Noise	0.4272	0.4214	0.4215	0.5728
Constant vs SVHN	0.0733	0.1634	0.1634	0.9269
Constant vs TinyImagenet	0.7105	0.5715	0.5715	0.2897
Constant vs iSUN	0.6541	0.5541	0.5541	0.3459
Constant28 vs FashionMNIST	0.0260	0.3120	0.3121	0.9740
Constant28 vs KMNIST	0.0055	0.3081	0.3081	0.9945
Constant28 vs MNIST	0.0119	0.3093	0.3093	0.9881
Constant28 vs Noise28	0.0103	0.3097	0.3098	0.9897
Constant28 vs NotMNIST	0.0047	0.3078	0.3078	0.9957
Constant28 vs Omniglot	0.0433	0.3586	0.3587	0.9567
FashionMNIST vs Constant28	0.3846	0.4357	0.4357	0.9929
FashionMNIST vs KMNIST	0.4244	0.4546	0.4547	0.9740
FashionMNIST vs MNIST	0.3525	0.4005	0.4005	0.9807
FashionMNIST vs Noise28	0.0261	0.3079	0.3079	1.0000
FashionMNIST vs NotMNIST	0.1453	0.3287	0.3288	0.9915
FashionMNIST vs Omniglot	0.3732	0.4720	0.4721	0.9812
KMNIST vs Constant28	0.8153	0.8471	0.8471	0.8651
KMNIST vs FashionMNIST	0.3616	0.4073	0.4074	0.9799
KMNIST vs MNIST	0.4273	0.4369	0.4370	0.9709
KMNIST vs Noise28	0.4082	0.5203	0.5204	0.9974
KMNIST vs NotMNIST	0.1757	0.3373	0.3374	0.9975
KMNIST vs Omniglot	0.4698	0.5187	0.5188	0.9411
MNIST vs Constant28	0.9520	0.9435	0.9435	0.1863
MNIST vs FashionMNIST	0.4273	0.4637	0.4638	0.9810
MNIST vs KMNIST	0.3188	0.3885	0.3886	0.9860
MNIST vs Noise28	0.5880	0.5790	0.5791	0.8984
MNIST vs NotMNIST	0.5850	0.5844	0.5845	0.9408
MNIST vs Omniglot	0.5730	0.6160	0.6161	0.9278
Noise vs CIFAR-10	0.9995	0.9997	0.9997	0.0000
Noise vs CIFAR-100	0.9996	0.9996	0.9996	0.0001
Noise vs CelebA	0.9998	0.9998	0.9998	0.0000
Noise vs Constant	0.9999	0.9999	0.9999	0.0000
Noise vs LSUN	0.9985	0.9989	0.9989	0.0019
Noise vs SVHN	0.9999	0.9999	0.9999	0.0000
Noise vs TinyImagenet	0.9997	0.9998	0.9998	0.0000

Noise vs iSUN	0.9987	0.9990	0.9990	0.0021
Noise28 vs Constant28	0.4547	0.4335	0.4335	0.8823
Noise28 vs FashionMNIST	0.0109	0.3082	0.3082	0.9997
Noise28 vs KMNIST	0.0005	0.3069	0.3069	1.0000
Noise28 vs MNIST	0.0000	0.3069	0.3069	1.0000
Noise28 vs NotMNIST	0.1148	0.3284	0.3284	0.9402
Noise28 vs Omniglot	0.0000	0.3495	0.3495	1.0000
NotMNIST vs Constant28	0.5548	0.5522	0.5522	0.9726
NotMNIST vs FashionMNIST	0.3153	0.3960	0.3961	0.9880
NotMNIST vs KMNIST	0.3803	0.4172	0.4173	0.9830
NotMNIST vs MNIST	0.3016	0.3850	0.3851	0.9980
NotMNIST vs Noise28	0.0046	0.3077	0.3077	0.9960
NotMNIST vs Omniglot	0.3260	0.4581	0.4582	0.9965
Omniglot vs Constant28	0.7945	0.6108	0.6108	0.3362
Omniglot vs FashionMNIST	0.3596	0.3487	0.3488	0.9778
Omniglot vs KMNIST	0.2457	0.3106	0.3106	0.9961
Omniglot vs MNIST	0.4881	0.4306	0.4307	0.9545
Omniglot vs Noise28	0.0074	0.2672	0.2673	1.0000
Omniglot vs NotMNIST	0.4817	0.4088	0.4089	0.9394
SVHN vs CIFAR-10	0.2538	0.5815	0.5815	0.9899
SVHN vs CIFAR-100	0.2221	0.5669	0.5669	0.9905
SVHN vs CelebA	0.0531	0.3664	0.3664	0.9976
SVHN vs Constant	0.0710	0.5211	0.5211	0.9719
SVHN vs LSUN	0.0094	0.5093	0.5093	0.9952
SVHN vs Noise	0.0093	0.5096	0.5096	0.9907
SVHN vs TinyImagenet	0.2123	0.5676	0.5676	0.9900
SVHN vs iSUN	0.0146	0.5346	0.5346	0.9956
TinyImagenet vs CelebA	0.4264	0.2911	0.2912	0.9750
TinyImagenet vs Constant	0.0015	0.3033	0.3033	1.0000
TinyImagenet vs LSUN	0.2997	0.3715	0.3716	0.9911
TinyImagenet vs Noise	0.0017	0.3035	0.3035	0.9983
TinyImagenet vs SVHN	0.2558	0.1799	0.1799	0.9820
TinyImagenet vs iSUN	0.3177	0.4044	0.4045	0.9853
Average	0.3433	0.4726	0.4726	0.8278

Table 146: The detailed performance for indicator difference between $\log p_\theta(x)$ with BN when 10% data in batch are mixture distribution, and $\log p_\theta(x)$ with BN when 90% data in batch are mixture distribution, with batch size 64, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs Constant	0.5354	0.4638	0.4639	0.6168
CIFAR-10 vs LSUN	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0556	0.1566	0.1567	1.0000
CIFAR-10 vs iSUN	0.9998	0.9996	0.9996	0.0004
CIFAR-100 vs CelebA	0.9842	0.9774	0.9774	0.0714
CIFAR-100 vs Constant	0.3239	0.3795	0.3795	0.8658
CIFAR-100 vs LSUN	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0882	0.1601	0.1601	1.0000
CIFAR-100 vs iSUN	0.9999	0.9999	0.9999	0.0002
CelebA vs CIFAR-10	0.2824	0.5247	0.5247	0.9682
CelebA vs CIFAR-100	0.3260	0.5379	0.5379	0.9250
CelebA vs Constant	0.3860	0.5549	0.5549	0.7584
CelebA vs LSUN	0.9998	0.9999	0.9999	0.0000
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0076	0.2581	0.2581	1.0000
CelebA vs TinyImagenet	0.3611	0.5598	0.5598	0.9264
CelebA vs iSUN	0.9998	0.9999	0.9999	0.0000
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
KMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
KMNIST vs FashionMNIST	0.9962	0.9957	0.9957	0.0172
KMNIST vs MNIST	0.9793	0.9679	0.9679	0.0505
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
KMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9999	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9992	0.9994	0.9994	0.0010
Noise vs CIFAR-10	0.0320	0.3118	0.3118	0.9988
Noise vs CIFAR-100	0.0278	0.3109	0.3110	0.9990
Noise vs CelebA	0.1157	0.2040	0.2040	0.9914
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.0451	0.3144	0.3144	0.9941
Noise vs SVHN	0.0013	0.1538	0.1538	1.0000
Noise vs TinyImagenet	0.0720	0.3229	0.3229	0.9911

Noise vs iSUN	0.0354	0.3351	0.3351	0.9966
Noise28 vs Constant28	0.9381	0.8667	0.8668	0.1444
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs FashionMNIST	0.9999	0.9999	0.9999	0.0000
NotMNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs MNIST	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	1.0000	1.0000	1.0000	0.0000
Omniglot vs Constant28	0.9723	0.9829	0.9829	0.0000
Omniglot vs FashionMNIST	0.9715	0.9824	0.9824	0.0000
Omniglot vs KMNIST	0.9640	0.9790	0.9790	0.0026
Omniglot vs MNIST	0.9070	0.9353	0.9353	0.8965
Omniglot vs Noise28	0.9984	0.9989	0.9989	0.0000
Omniglot vs NotMNIST	0.9877	0.9909	0.9909	0.0000
SVHN vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
SVHN vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
SVHN vs CelebA	1.0000	1.0000	1.0000	0.0000
SVHN vs Constant	0.9197	0.9608	0.9608	0.2596
SVHN vs LSUN	1.0000	1.0000	1.0000	0.0000
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
SVHN vs iSUN	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs CelebA	0.9870	0.9829	0.9829	0.0409
TinyImagenet vs Constant	0.0797	0.3148	0.3148	0.9971
TinyImagenet vs LSUN	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0579	0.1550	0.1550	1.0000
TinyImagenet vs iSUN	0.9998	0.9998	0.9998	0.0003
Average	0.8200	0.8581	0.8581	0.2121

Table 147: The detailed performance for indicator $\log p_{\theta}(x)$ with BN based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9352	0.8973	0.8973	0.3168
CIFAR-10 vs Constant	0.4941	0.4442	0.4443	0.6351
CIFAR-10 vs LSUN	0.9792	0.9712	0.9712	0.0737
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.0247	0.1544	0.1545	1.0000
CIFAR-10 vs iSUN	0.9651	0.9514	0.9514	0.1058
CIFAR-100 vs CelebA	0.8551	0.8008	0.8008	0.6937
CIFAR-100 vs Constant	0.2200	0.3500	0.3500	0.8939
CIFAR-100 vs LSUN	0.9481	0.9456	0.9456	0.2432
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.0248	0.1544	0.1544	1.0000
CIFAR-100 vs iSUN	0.9376	0.9298	0.9298	0.2482
CelebA vs CIFAR-10	0.3248	0.5375	0.5375	0.9325
CelebA vs CIFAR-100	0.4025	0.5669	0.5670	0.8730
CelebA vs Constant	0.2708	0.5169	0.5169	0.8084
CelebA vs LSUN	0.5105	0.6442	0.6443	0.8921
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.0021	0.2579	0.2579	1.0000
CelebA vs TinyImagenet	0.3987	0.5715	0.5715	0.8864
CelebA vs iSUN	0.5413	0.6894	0.6895	0.8773
Constant vs CIFAR-10	0.9999	0.9999	0.9999	0.0001
Constant vs CIFAR-100	0.9999	0.9999	0.9999	0.0004
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0001
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9525	0.9365	0.9365	0.4009
Constant vs TinyImagenet	0.9999	0.9999	0.9999	0.0005
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0001
Constant28 vs Omniglot	0.9998	0.9997	0.9997	0.0004
FashionMNIST vs Constant28	0.0734	0.3213	0.3213	0.9392
FashionMNIST vs KMNIST	0.7074	0.7674	0.7675	0.9279
FashionMNIST vs MNIST	0.7841	0.8497	0.8497	0.8863
FashionMNIST vs Noise28	0.8946	0.9343	0.9343	0.8763
FashionMNIST vs NotMNIST	0.9697	0.9691	0.9691	0.1433
FashionMNIST vs Omniglot	0.6593	0.7406	0.7406	0.9649
KMNIST vs Constant28	0.0087	0.3082	0.3082	0.9991
KMNIST vs FashionMNIST	0.7257	0.6958	0.6959	0.7580
KMNIST vs MNIST	0.6792	0.6451	0.6451	0.7890
KMNIST vs Noise28	0.2605	0.3598	0.3598	0.9924
KMNIST vs NotMNIST	0.1262	0.3257	0.3257	0.9951
KMNIST vs Omniglot	0.0648	0.3573	0.3573	0.9999
MNIST vs Constant28	0.0278	0.3118	0.3118	0.9890
MNIST vs FashionMNIST	0.0292	0.3102	0.3102	0.9993
MNIST vs KMNIST	0.8701	0.8574	0.8574	0.4740
MNIST vs Noise28	0.0040	0.3076	0.3076	0.9962
MNIST vs NotMNIST	0.7206	0.6011	0.6011	0.5657
MNIST vs Omniglot	0.1146	0.3664	0.3664	0.9990
Noise vs CIFAR-10	0.1116	0.3298	0.3298	0.8974
Noise vs CIFAR-100	0.1316	0.3343	0.3344	0.8760
Noise vs CelebA	0.3573	0.2602	0.2602	0.6508
Noise vs Constant	0.0000	0.3069	0.3069	1.0000
Noise vs LSUN	0.3302	0.3877	0.3877	0.6806
Noise vs SVHN	0.0000	0.1537	0.1538	1.0000
Noise vs TinyImagenet	0.1925	0.3529	0.3529	0.8170

Noise vs iSUN	0.2636	0.3918	0.3918	0.7445
Noise28 vs Constant28	0.2577	0.3664	0.3664	0.7498
Noise28 vs FashionMNIST	0.9856	0.9510	0.9510	0.0243
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.7268	0.5801	0.5802	0.3121
Noise28 vs Omniglot	0.1221	0.3680	0.3680	0.9996
NotMNIST vs Constant28	0.0164	0.3074	0.3075	1.0000
NotMNIST vs FashionMNIST	0.1261	0.3241	0.3241	0.9887
NotMNIST vs KMNIST	0.3244	0.3934	0.3935	0.9558
NotMNIST vs MNIST	0.1256	0.3311	0.3312	0.9975
NotMNIST vs Noise28	0.9997	0.9998	0.9998	0.0000
NotMNIST vs Omniglot	0.0374	0.3534	0.3534	1.0000
Omniglot vs Constant28	0.0028	0.2672	0.2672	1.0000
Omniglot vs FashionMNIST	0.6575	0.5006	0.5007	0.6109
Omniglot vs KMNIST	0.7619	0.7247	0.7247	0.6846
Omniglot vs MNIST	0.5374	0.4733	0.4733	0.9079
Omniglot vs Noise28	0.9625	0.9181	0.9182	0.1249
Omniglot vs NotMNIST	0.3857	0.3567	0.3567	0.8930
SVHN vs CIFAR-10	0.8658	0.9523	0.9523	0.7771
SVHN vs CIFAR-100	0.9030	0.9650	0.9650	0.6291
SVHN vs CelebA	0.9865	0.9905	0.9905	0.0867
SVHN vs Constant	0.7280	0.7878	0.7879	0.5037
SVHN vs LSUN	0.9995	0.9998	0.9998	0.0027
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9167	0.9703	0.9703	0.5664
SVHN vs iSUN	0.9982	0.9993	0.9993	0.0092
TinyImagenet vs CelebA	0.8747	0.8285	0.8285	0.6977
TinyImagenet vs Constant	0.0169	0.3048	0.3048	1.0000
TinyImagenet vs LSUN	0.8271	0.8249	0.8250	0.6537
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.0193	0.1519	0.1519	1.0000
TinyImagenet vs iSUN	0.8154	0.8106	0.8106	0.6614
Average	0.5965	0.6703	0.6703	0.5617

Table 148: The detailed performance for indicator $\log p_\theta(x)$ trained with BN but testing without BN based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8434	0.7174	0.7174	0.5344
CIFAR-10 vs Constant	0.9558	0.9521	0.9521	0.2091
CIFAR-10 vs LSUN	0.9671	0.9556	0.9556	0.1160
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.1874	0.1711	0.1711	0.9923
CIFAR-10 vs iSUN	0.9504	0.9328	0.9329	0.1533
CIFAR-100 vs CelebA	0.5816	0.3947	0.3948	0.9129
CIFAR-100 vs Constant	0.9590	0.9531	0.9531	0.1834
CIFAR-100 vs LSUN	0.8878	0.8741	0.8742	0.4145
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.3538	0.2128	0.2129	0.9905
CIFAR-100 vs iSUN	0.8760	0.8641	0.8641	0.4090
CelebA vs CIFAR-10	0.5583	0.6966	0.6967	0.8863
CelebA vs CIFAR-100	0.5478	0.6895	0.6895	0.8912
CelebA vs Constant	0.8214	0.8293	0.8294	0.3756
CelebA vs LSUN	0.5290	0.6815	0.6815	0.9040
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.2730	0.3074	0.3075	0.9711
CelebA vs TinyImagenet	0.5531	0.6989	0.6990	0.8973
CelebA vs iSUN	0.5381	0.7104	0.7105	0.8988
Constant vs CIFAR-10	0.9987	0.9957	0.9958	0.0020
Constant vs CIFAR-100	0.9993	0.9980	0.9981	0.0012
Constant vs CelebA	0.9999	0.9991	0.9991	0.0001
Constant vs LSUN	1.0000	1.0000	1.0000	0.0001
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9994	0.9947	0.9948	0.0010
Constant vs TinyImagenet	0.9992	0.9964	0.9964	0.0016
Constant vs iSUN	0.9997	0.9981	0.9981	0.0004
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9996	0.9996	0.9996	0.0025
Constant28 vs Omniglot	0.9999	0.9999	0.9999	0.0002
FashionMNIST vs Constant28	0.6152	0.6399	0.6399	0.9335
FashionMNIST vs KMNIST	0.5756	0.5683	0.5684	0.9397
FashionMNIST vs MNIST	0.6475	0.6238	0.6239	0.8544
FashionMNIST vs Noise28	0.9739	0.9812	0.9812	0.1331
FashionMNIST vs NotMNIST	0.8550	0.8223	0.8224	0.4963
FashionMNIST vs Omniglot	0.6268	0.6600	0.6601	0.9000
KMNIST vs Constant28	0.1847	0.3510	0.3511	0.9983
KMNIST vs FashionMNIST	0.6058	0.5725	0.5726	0.8762
KMNIST vs MNIST	0.5730	0.5571	0.5572	0.8862
KMNIST vs Noise28	0.5918	0.6664	0.6664	0.9931
KMNIST vs NotMNIST	0.8243	0.8204	0.8205	0.6774
KMNIST vs Omniglot	0.5302	0.5616	0.5617	0.9192
MNIST vs Constant28	0.0480	0.3116	0.3117	0.9982
MNIST vs FashionMNIST	0.5728	0.5822	0.5823	0.9465
MNIST vs KMNIST	0.6813	0.6664	0.6665	0.8536
MNIST vs Noise28	0.4120	0.4362	0.4363	0.9778
MNIST vs NotMNIST	0.4150	0.4566	0.4566	0.9776
MNIST vs Omniglot	0.4330	0.5102	0.5104	0.9709
Noise vs CIFAR-10	0.9995	0.9997	0.9997	0.0000
Noise vs CIFAR-100	0.9996	0.9996	0.9996	0.0001
Noise vs CelebA	0.9998	0.9998	0.9998	0.0000
Noise vs Constant	0.9999	0.9999	0.9999	0.0000
Noise vs LSUN	0.9985	0.9989	0.9989	0.0019
Noise vs SVHN	0.9999	0.9999	0.9999	0.0000
Noise vs TinyImagenet	0.9997	0.9998	0.9998	0.0000

Noise vs iSUN	0.9987	0.9990	0.9990	0.0021
Noise28 vs Constant28	0.5910	0.5434	0.5435	0.6932
Noise28 vs FashionMNIST	0.9891	0.9836	0.9836	0.0344
Noise28 vs KMNIST	0.9995	0.9994	0.9994	0.0023
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.8852	0.7588	0.7589	0.1833
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.4455	0.4934	0.4935	0.9641
NotMNIST vs FashionMNIST	0.4844	0.4779	0.4781	0.9126
NotMNIST vs KMNIST	0.6189	0.6007	0.6009	0.8855
NotMNIST vs MNIST	0.6978	0.6982	0.6982	0.8579
NotMNIST vs Noise28	0.9991	0.9977	0.9978	0.0018
NotMNIST vs Omniglot	0.6737	0.7170	0.7170	0.9071
Omniglot vs Constant28	0.2055	0.3040	0.3040	0.8954
Omniglot vs FashionMNIST	0.6404	0.5532	0.5533	0.7774
Omniglot vs KMNIST	0.7543	0.7059	0.7059	0.7100
Omniglot vs MNIST	0.5119	0.4583	0.4584	0.9333
Omniglot vs Noise28	0.9926	0.9904	0.9904	0.0351
Omniglot vs NotMNIST	0.5183	0.4461	0.4462	0.8713
SVHN vs CIFAR-10	0.7468	0.8703	0.8703	0.7614
SVHN vs CIFAR-100	0.7788	0.8852	0.8852	0.6835
SVHN vs CelebA	0.9485	0.9552	0.9552	0.2398
SVHN vs Constant	0.9514	0.9736	0.9736	0.1761
SVHN vs LSUN	0.9951	0.9976	0.9976	0.0208
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.7880	0.8911	0.8911	0.6739
SVHN vs iSUN	0.9894	0.9950	0.9950	0.0421
TinyImagenet vs CelebA	0.5736	0.3981	0.3982	0.9321
TinyImagenet vs Constant	0.9820	0.9759	0.9759	0.0597
TinyImagenet vs LSUN	0.7006	0.6790	0.6790	0.7831
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.5054	0.2772	0.2774	0.9625
TinyImagenet vs iSUN	0.6827	0.6756	0.6757	0.7916
Average	0.7738	0.7794	0.7795	0.4552

Table 149: The detailed performance for indicator $T_{b,10\%,90\%}$ with batch size 64, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7511	0.6609	0.6609	0.8160
CIFAR-10 vs Constant	0.7234	0.6960	0.6960	0.7670
CIFAR-10 vs LSUN	0.8005	0.8085	0.8085	0.7410
CIFAR-10 vs Noise	0.9999	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.4531	0.2473	0.2474	0.8814
CIFAR-10 vs iSUN	0.7691	0.7703	0.7703	0.7299
CIFAR-100 vs CelebA	0.6755	0.5983	0.5984	0.9381
CIFAR-100 vs Constant	0.3733	0.4284	0.4284	0.9949
CIFAR-100 vs LSUN	0.7763	0.7899	0.7899	0.7984
CIFAR-100 vs Noise	0.9997	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.3770	0.2201	0.2201	0.9236
CIFAR-100 vs iSUN	0.7417	0.7496	0.7496	0.7844
CelebA vs CIFAR-10	0.8757	0.9202	0.9202	0.4459
CelebA vs CIFAR-100	0.8269	0.8843	0.8843	0.5711
CelebA vs Constant	0.6495	0.7508	0.7508	0.8192
CelebA vs LSUN	0.9693	0.9829	0.9829	0.1468
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5946	0.5032	0.5033	0.8014
CelebA vs TinyImagenet	0.8620	0.9114	0.9114	0.4997
CelebA vs iSUN	0.9563	0.9767	0.9767	0.1890
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9998	0.9998	0.9998	0.0000
FashionMNIST vs KMNIST	0.9944	0.9962	0.9962	0.0004
FashionMNIST vs MNIST	0.9954	0.9970	0.9970	0.0004
FashionMNIST vs Noise28	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	0.9987	0.9990	0.9990	0.0001
FashionMNIST vs Omniglot	0.9986	0.9993	0.9993	0.0000
KMNIST vs Constant28	0.9987	0.9993	0.9993	0.0000
KMNIST vs FashionMNIST	0.9870	0.9902	0.9902	0.0565
KMNIST vs MNIST	0.9616	0.9675	0.9675	0.2237
KMNIST vs Noise28	0.9987	0.9993	0.9993	0.0000
KMNIST vs NotMNIST	0.9954	0.9969	0.9969	0.0004
KMNIST vs Omniglot	0.9812	0.9879	0.9879	0.0970
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9998	0.9998	0.9998	0.0000
MNIST vs KMNIST	0.9995	0.9996	0.9996	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9956	0.9970	0.9970	0.0027
Noise vs CIFAR-10	0.4283	0.4179	0.4180	0.7197
Noise vs CIFAR-100	0.4037	0.4087	0.4087	0.7284
Noise vs CelebA	0.4548	0.2829	0.2829	0.7229
Noise vs Constant	0.4705	0.4351	0.4352	0.7333
Noise vs LSUN	0.4298	0.4182	0.4183	0.7501
Noise vs SVHN	0.4140	0.2249	0.2250	0.7028
Noise vs TinyImagenet	0.4311	0.4232	0.4232	0.7218

Noise vs iSUN	0.4438	0.4493	0.4493	0.7141
Noise28 vs Constant28	0.9760	0.9793	0.9793	0.1416
Noise28 vs FashionMNIST	0.9795	0.9812	0.9812	0.0939
Noise28 vs KMNIST	0.9976	0.9986	0.9986	0.0000
Noise28 vs MNIST	0.9983	0.9991	0.9991	0.0000
Noise28 vs NotMNIST	0.9574	0.9477	0.9477	0.1551
Noise28 vs Omniglot	0.9990	0.9995	0.9995	0.0000
NotMNIST vs Constant28	0.9886	0.9914	0.9914	0.0235
NotMNIST vs FashionMNIST	0.9756	0.9820	0.9820	0.1694
NotMNIST vs KMNIST	0.9948	0.9957	0.9957	0.0103
NotMNIST vs MNIST	0.9927	0.9943	0.9943	0.0150
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9989	0.9992	0.9992	0.0011
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.3822	0.3628	0.3628	0.9537
Omniglot vs KMNIST	0.4525	0.4224	0.4225	0.9735
Omniglot vs MNIST	0.4968	0.4614	0.4615	0.9631
Omniglot vs Noise28	0.3068	0.3348	0.3349	0.9776
Omniglot vs NotMNIST	0.4038	0.3787	0.3788	0.9244
SVHN vs CIFAR-10	0.9358	0.9775	0.9775	0.4450
SVHN vs CIFAR-100	0.9233	0.9727	0.9727	0.5303
SVHN vs CelebA	0.9447	0.9682	0.9682	0.4383
SVHN vs Constant	0.9145	0.9706	0.9706	0.6261
SVHN vs LSUN	0.9616	0.9872	0.9872	0.2418
SVHN vs Noise	0.9994	0.9998	0.9998	0.0000
SVHN vs TinyImagenet	0.9338	0.9772	0.9772	0.4640
SVHN vs iSUN	0.9607	0.9879	0.9879	0.2577
TinyImagenet vs CelebA	0.6127	0.5098	0.5099	0.9411
TinyImagenet vs Constant	0.1931	0.3394	0.3395	0.9999
TinyImagenet vs LSUN	0.7163	0.7224	0.7225	0.8536
TinyImagenet vs Noise	0.9991	0.9994	0.9994	0.0000
TinyImagenet vs SVHN	0.3170	0.1936	0.1936	0.9279
TinyImagenet vs iSUN	0.6790	0.6781	0.6781	0.8304
Average	0.8302	0.8242	0.8242	0.3404

Table 150: The detailed performance for indicator Mahalanobis distance with epsilon 0.0 based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7049	0.6132	0.6132	0.8762
CIFAR-10 vs Constant	0.7244	0.7004	0.7004	0.7573
CIFAR-10 vs LSUN	0.7802	0.7894	0.7894	0.7743
CIFAR-10 vs Noise	0.9999	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.3601	0.2111	0.2112	0.9187
CIFAR-10 vs iSUN	0.7441	0.7460	0.7461	0.7636
CIFAR-100 vs CelebA	0.6737	0.5963	0.5963	0.9381
CIFAR-100 vs Constant	0.4238	0.4648	0.4648	0.9910
CIFAR-100 vs LSUN	0.7836	0.7980	0.7980	0.7886
CIFAR-100 vs Noise	0.9997	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.3482	0.2112	0.2112	0.9335
CIFAR-100 vs iSUN	0.7465	0.7556	0.7557	0.7795
CelebA vs CIFAR-10	0.8793	0.9225	0.9225	0.4316
CelebA vs CIFAR-100	0.8324	0.8883	0.8883	0.5568
CelebA vs Constant	0.6909	0.7848	0.7848	0.7821
CelebA vs LSUN	0.9724	0.9846	0.9846	0.1315
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5861	0.4974	0.4975	0.8075
CelebA vs TinyImagenet	0.8657	0.9137	0.9137	0.4871
CelebA vs iSUN	0.9595	0.9784	0.9784	0.1766
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs KMNIST	0.9935	0.9953	0.9953	0.0060
FashionMNIST vs MNIST	0.9946	0.9963	0.9963	0.0031
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9991	0.9992	0.9992	0.0003
FashionMNIST vs Omniglot	0.9991	0.9995	0.9995	0.0000
KMNIST vs Constant28	0.9995	0.9997	0.9997	0.0000
KMNIST vs FashionMNIST	0.9872	0.9902	0.9902	0.0541
KMNIST vs MNIST	0.9604	0.9666	0.9666	0.2384
KMNIST vs Noise28	0.9995	0.9998	0.9998	0.0000
KMNIST vs NotMNIST	0.9975	0.9982	0.9982	0.0001
KMNIST vs Omniglot	0.9824	0.9886	0.9886	0.0869
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9999	1.0000	1.0000	0.0000
MNIST vs KMNIST	0.9995	0.9996	0.9996	0.0004
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9823	0.9879	0.9879	0.1597
Noise vs CIFAR-10	0.4009	0.4080	0.4080	0.7166
Noise vs CIFAR-100	0.3878	0.4033	0.4033	0.7172
Noise vs CelebA	0.4198	0.2719	0.2720	0.7209
Noise vs Constant	0.6830	0.6285	0.6286	0.6091
Noise vs LSUN	0.4194	0.4143	0.4143	0.7280
Noise vs SVHN	0.3724	0.2149	0.2150	0.7150
Noise vs TinyImagenet	0.4009	0.4120	0.4120	0.7219

Noise vs iSUN	0.4347	0.4457	0.4458	0.6945
Noise28 vs Constant28	0.9840	0.9830	0.9830	0.0770
Noise28 vs FashionMNIST	0.9969	0.9968	0.9968	0.0167
Noise28 vs KMNIST	0.9998	0.9999	0.9999	0.0000
Noise28 vs MNIST	0.9999	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9898	0.9834	0.9834	0.0333
Noise28 vs Omniglot	0.9999	0.9999	0.9999	0.0000
NotMNIST vs Constant28	0.9855	0.9900	0.9900	0.0130
NotMNIST vs FashionMNIST	0.9681	0.9773	0.9773	0.2456
NotMNIST vs KMNIST	0.9943	0.9953	0.9953	0.0139
NotMNIST vs MNIST	0.9927	0.9944	0.9944	0.0136
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9988	0.9991	0.9991	0.0019
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.3499	0.3495	0.3495	0.9650
Omniglot vs KMNIST	0.4591	0.4280	0.4281	0.9723
Omniglot vs MNIST	0.5076	0.4712	0.4712	0.9592
Omniglot vs Noise28	0.1953	0.3008	0.3008	0.9957
Omniglot vs NotMNIST	0.4083	0.3842	0.3843	0.9259
SVHN vs CIFAR-10	0.9161	0.9701	0.9701	0.5626
SVHN vs CIFAR-100	0.8997	0.9637	0.9637	0.6487
SVHN vs CelebA	0.9287	0.9597	0.9597	0.5909
SVHN vs Constant	0.8982	0.9665	0.9665	0.7953
SVHN vs LSUN	0.9531	0.9843	0.9843	0.3335
SVHN vs Noise	0.9994	0.9998	0.9998	0.0000
SVHN vs TinyImagenet	0.9129	0.9694	0.9694	0.5871
SVHN vs iSUN	0.9492	0.9842	0.9842	0.3534
TinyImagenet vs CelebA	0.6110	0.5083	0.5084	0.9407
TinyImagenet vs Constant	0.2232	0.3542	0.3542	0.9999
TinyImagenet vs LSUN	0.7270	0.7342	0.7342	0.8387
TinyImagenet vs Noise	0.9989	0.9993	0.9993	0.0000
TinyImagenet vs SVHN	0.2949	0.1891	0.1891	0.9373
TinyImagenet vs iSUN	0.6875	0.6878	0.6879	0.8214
Average	0.8277	0.8253	0.8253	0.3484

Table 151: The detailed performance for indicator Mahalanobis distance with epsilon 0.01 based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7170	0.6253	0.6253	0.8637
CIFAR-10 vs Constant	0.7009	0.6671	0.6672	0.7814
CIFAR-10 vs LSUN	0.7843	0.7932	0.7932	0.7689
CIFAR-10 vs Noise	0.9999	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.3741	0.2143	0.2143	0.9109
CIFAR-10 vs iSUN	0.7495	0.7511	0.7511	0.7565
CIFAR-100 vs CelebA	0.6742	0.5967	0.5967	0.9378
CIFAR-100 vs Constant	0.3966	0.4431	0.4432	0.9935
CIFAR-100 vs LSUN	0.7805	0.7945	0.7946	0.7925
CIFAR-100 vs Noise	0.9997	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.3547	0.2118	0.2118	0.9298
CIFAR-100 vs iSUN	0.7445	0.7531	0.7532	0.7817
CelebA vs CIFAR-10	0.8780	0.9216	0.9216	0.4363
CelebA vs CIFAR-100	0.8301	0.8865	0.8865	0.5612
CelebA vs Constant	0.6702	0.7679	0.7679	0.8005
CelebA vs LSUN	0.9713	0.9840	0.9840	0.1362
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5883	0.4977	0.4977	0.8044
CelebA vs TinyImagenet	0.8643	0.9127	0.9127	0.4902
CelebA vs iSUN	0.9584	0.9777	0.9777	0.1803
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs KMNIST	0.9949	0.9965	0.9965	0.0006
FashionMNIST vs MNIST	0.9957	0.9972	0.9972	0.0004
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9991	0.9992	0.9992	0.0001
FashionMNIST vs Omniglot	0.9990	0.9995	0.9995	0.0000
KMNIST vs Constant28	0.9993	0.9997	0.9997	0.0000
KMNIST vs FashionMNIST	0.9873	0.9904	0.9904	0.0511
KMNIST vs MNIST	0.9613	0.9672	0.9672	0.2260
KMNIST vs Noise28	0.9994	0.9997	0.9997	0.0000
KMNIST vs NotMNIST	0.9968	0.9978	0.9978	0.0001
KMNIST vs Omniglot	0.9822	0.9885	0.9885	0.0901
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9999	0.9999	0.9999	0.0000
MNIST vs KMNIST	0.9996	0.9997	0.9997	0.0001
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9911	0.9936	0.9936	0.0620
Noise vs CIFAR-10	0.4109	0.4116	0.4116	0.7106
Noise vs CIFAR-100	0.3923	0.4048	0.4048	0.7130
Noise vs CelebA	0.4308	0.2753	0.2754	0.7115
Noise vs Constant	0.5768	0.5053	0.5054	0.6607
Noise vs LSUN	0.4249	0.4163	0.4164	0.7216
Noise vs SVHN	0.3795	0.2167	0.2167	0.7087
Noise vs TinyImagenet	0.4116	0.4159	0.4159	0.7121

Noise vs iSUN	0.4409	0.4481	0.4481	0.6883
Noise28 vs Constant28	0.9848	0.9847	0.9847	0.0783
Noise28 vs FashionMNIST	0.9955	0.9953	0.9953	0.0227
Noise28 vs KMNIST	0.9999	0.9999	0.9999	0.0000
Noise28 vs MNIST	0.9999	0.9999	0.9999	0.0000
Noise28 vs NotMNIST	0.9859	0.9774	0.9774	0.0452
Noise28 vs Omniglot	0.9999	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9857	0.9900	0.9900	0.0191
NotMNIST vs FashionMNIST	0.9708	0.9790	0.9790	0.2220
NotMNIST vs KMNIST	0.9945	0.9955	0.9955	0.0126
NotMNIST vs MNIST	0.9926	0.9943	0.9943	0.0147
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9988	0.9991	0.9991	0.0017
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.3637	0.3549	0.3549	0.9605
Omniglot vs KMNIST	0.4563	0.4256	0.4257	0.9733
Omniglot vs MNIST	0.5025	0.4666	0.4666	0.9619
Omniglot vs Noise28	0.2396	0.3130	0.3130	0.9906
Omniglot vs NotMNIST	0.4056	0.3812	0.3813	0.9253
SVHN vs CIFAR-10	0.9213	0.9720	0.9720	0.5334
SVHN vs CIFAR-100	0.9053	0.9657	0.9657	0.6189
SVHN vs CelebA	0.9331	0.9621	0.9621	0.5490
SVHN vs Constant	0.8779	0.9587	0.9587	0.8339
SVHN vs LSUN	0.9554	0.9851	0.9851	0.3068
SVHN vs Noise	0.9994	0.9998	0.9998	0.0000
SVHN vs TinyImagenet	0.9179	0.9713	0.9713	0.5585
SVHN vs iSUN	0.9520	0.9851	0.9851	0.3284
TinyImagenet vs CelebA	0.6113	0.5084	0.5085	0.9408
TinyImagenet vs Constant	0.2049	0.3442	0.3442	0.9999
TinyImagenet vs LSUN	0.7224	0.7293	0.7293	0.8430
TinyImagenet vs Noise	0.9990	0.9994	0.9994	0.0000
TinyImagenet vs SVHN	0.2969	0.1890	0.1890	0.9343
TinyImagenet vs iSUN	0.6839	0.6839	0.6839	0.8245
Average	0.8271	0.8234	0.8234	0.3460

Table 152: The detailed performance for indicator Mahalanobis distance with epsilon 0.005 based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7334	0.6423	0.6423	0.8437
CIFAR-10 vs Constant	0.6930	0.6564	0.6564	0.7911
CIFAR-10 vs LSUN	0.7918	0.8003	0.8003	0.7584
CIFAR-10 vs Noise	0.9999	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.4022	0.2241	0.2241	0.8998
CIFAR-10 vs iSUN	0.7585	0.7598	0.7598	0.7457
CIFAR-100 vs CelebA	0.6748	0.5975	0.5975	0.9385
CIFAR-100 vs Constant	0.3796	0.4316	0.4316	0.9946
CIFAR-100 vs LSUN	0.7782	0.7920	0.7920	0.7966
CIFAR-100 vs Noise	0.9997	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.3654	0.2153	0.2153	0.9270
CIFAR-100 vs iSUN	0.7430	0.7511	0.7511	0.7835
CelebA vs CIFAR-10	0.8768	0.9209	0.9209	0.4399
CelebA vs CIFAR-100	0.8284	0.8853	0.8853	0.5660
CelebA vs Constant	0.6567	0.7568	0.7568	0.8126
CelebA vs LSUN	0.9703	0.9834	0.9834	0.1411
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5914	0.5001	0.5002	0.8026
CelebA vs TinyImagenet	0.8631	0.9120	0.9120	0.4935
CelebA vs iSUN	0.9573	0.9772	0.9772	0.1853
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs KMNIST	0.9949	0.9966	0.9966	0.0003
FashionMNIST vs MNIST	0.9957	0.9972	0.9972	0.0001
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9990	0.9992	0.9992	0.0001
FashionMNIST vs Omniglot	0.9990	0.9995	0.9995	0.0000
KMNIST vs Constant28	0.9991	0.9995	0.9995	0.0000
KMNIST vs FashionMNIST	0.9874	0.9904	0.9904	0.0518
KMNIST vs MNIST	0.9616	0.9674	0.9674	0.2200
KMNIST vs Noise28	0.9991	0.9995	0.9995	0.0000
KMNIST vs NotMNIST	0.9963	0.9975	0.9975	0.0003
KMNIST vs Omniglot	0.9819	0.9883	0.9883	0.0891
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9998	0.9999	0.9999	0.0000
MNIST vs KMNIST	0.9996	0.9997	0.9997	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9953	0.9968	0.9968	0.0089
Noise vs CIFAR-10	0.4222	0.4156	0.4157	0.7026
Noise vs CIFAR-100	0.4004	0.4076	0.4076	0.7083
Noise vs CelebA	0.4454	0.2799	0.2800	0.7015
Noise vs Constant	0.5116	0.4564	0.4564	0.6882
Noise vs LSUN	0.4300	0.4181	0.4182	0.7172
Noise vs SVHN	0.3963	0.2208	0.2209	0.6971
Noise vs TinyImagenet	0.4239	0.4204	0.4204	0.7053

Noise vs iSUN	0.4464	0.4502	0.4502	0.6862
Noise28 vs Constant28	0.9835	0.9849	0.9849	0.0976
Noise28 vs FashionMNIST	0.9918	0.9920	0.9920	0.0383
Noise28 vs KMNIST	0.9992	0.9996	0.9996	0.0000
Noise28 vs MNIST	0.9996	0.9997	0.9997	0.0000
Noise28 vs NotMNIST	0.9785	0.9682	0.9682	0.0647
Noise28 vs Omniglot	0.9999	0.9999	0.9999	0.0000
NotMNIST vs Constant28	0.9863	0.9903	0.9903	0.0232
NotMNIST vs FashionMNIST	0.9733	0.9806	0.9806	0.1955
NotMNIST vs KMNIST	0.9947	0.9956	0.9956	0.0114
NotMNIST vs MNIST	0.9926	0.9943	0.9943	0.0147
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9988	0.9991	0.9991	0.0016
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.3742	0.3593	0.3594	0.9571
Omniglot vs KMNIST	0.4545	0.4241	0.4241	0.9730
Omniglot vs MNIST	0.4993	0.4637	0.4637	0.9625
Omniglot vs Noise28	0.2778	0.3249	0.3250	0.9838
Omniglot vs NotMNIST	0.4046	0.3798	0.3799	0.9244
SVHN vs CIFAR-10	0.9283	0.9747	0.9747	0.4935
SVHN vs CIFAR-100	0.9139	0.9690	0.9690	0.5784
SVHN vs CelebA	0.9390	0.9652	0.9652	0.4923
SVHN vs Constant	0.8690	0.9548	0.9548	0.8357
SVHN vs LSUN	0.9586	0.9862	0.9862	0.2760
SVHN vs Noise	0.9994	0.9998	0.9998	0.0000
SVHN vs TinyImagenet	0.9253	0.9740	0.9740	0.5190
SVHN vs iSUN	0.9563	0.9865	0.9865	0.2952
TinyImagenet vs CelebA	0.6119	0.5090	0.5090	0.9406
TinyImagenet vs Constant	0.1942	0.3397	0.3398	0.9999
TinyImagenet vs LSUN	0.7190	0.7255	0.7255	0.8471
TinyImagenet vs Noise	0.9990	0.9994	0.9994	0.0000
TinyImagenet vs SVHN	0.3052	0.1906	0.1907	0.9310
TinyImagenet vs iSUN	0.6812	0.6807	0.6808	0.8263
Average	0.8281	0.8233	0.8233	0.3426

Table 153: The detailed performance for indicator Mahalanobis distance with epsilon 0.002 based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7380	0.6472	0.6472	0.8372
CIFAR-10 vs Constant	0.6935	0.6576	0.6576	0.7907
CIFAR-10 vs LSUN	0.7940	0.8024	0.8024	0.7550
CIFAR-10 vs Noise	0.9999	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.4127	0.2283	0.2283	0.8959
CIFAR-10 vs iSUN	0.7613	0.7625	0.7626	0.7426
CIFAR-100 vs CelebA	0.6750	0.5977	0.5977	0.9387
CIFAR-100 vs Constant	0.3764	0.4296	0.4297	0.9947
CIFAR-100 vs LSUN	0.7776	0.7914	0.7914	0.7975
CIFAR-100 vs Noise	0.9997	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.3684	0.2164	0.2164	0.9260
CIFAR-100 vs iSUN	0.7426	0.7507	0.7507	0.7848
CelebA vs CIFAR-10	0.8765	0.9207	0.9207	0.4403
CelebA vs CIFAR-100	0.8280	0.8850	0.8850	0.5665
CelebA vs Constant	0.6539	0.7545	0.7545	0.8150
CelebA vs LSUN	0.9701	0.9833	0.9833	0.1424
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5922	0.5009	0.5009	0.8023
CelebA vs TinyImagenet	0.8628	0.9118	0.9118	0.4941
CelebA vs iSUN	0.9571	0.9771	0.9771	0.1864
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs KMNIST	0.9949	0.9965	0.9965	0.0003
FashionMNIST vs MNIST	0.9957	0.9972	0.9972	0.0001
FashionMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9990	0.9992	0.9992	0.0001
FashionMNIST vs Omniglot	0.9990	0.9995	0.9995	0.0000
KMNIST vs Constant28	0.9990	0.9995	0.9995	0.0000
KMNIST vs FashionMNIST	0.9873	0.9904	0.9904	0.0552
KMNIST vs MNIST	0.9616	0.9674	0.9674	0.2242
KMNIST vs Noise28	0.9990	0.9995	0.9995	0.0000
KMNIST vs NotMNIST	0.9961	0.9974	0.9974	0.0003
KMNIST vs Omniglot	0.9818	0.9882	0.9882	0.0931
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9998	0.9999	0.9999	0.0000
MNIST vs KMNIST	0.9996	0.9997	0.9997	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9957	0.9971	0.9971	0.0041
Noise vs CIFAR-10	0.4260	0.4171	0.4171	0.6974
Noise vs CIFAR-100	0.4025	0.4083	0.4083	0.7062
Noise vs CelebA	0.4483	0.2809	0.2809	0.7000
Noise vs Constant	0.4986	0.4488	0.4488	0.6952
Noise vs LSUN	0.4314	0.4187	0.4187	0.7186
Noise vs SVHN	0.4020	0.2222	0.2223	0.6918
Noise vs TinyImagenet	0.4271	0.4216	0.4216	0.7023

Noise vs iSUN	0.4476	0.4506	0.4507	0.6838
Noise28 vs Constant28	0.9819	0.9838	0.9838	0.1088
Noise28 vs FashionMNIST	0.9902	0.9904	0.9904	0.0448
Noise28 vs KMNIST	0.9991	0.9995	0.9995	0.0000
Noise28 vs MNIST	0.9993	0.9996	0.9996	0.0000
Noise28 vs NotMNIST	0.9754	0.9646	0.9646	0.0764
Noise28 vs Omniglot	0.9996	0.9998	0.9998	0.0000
NotMNIST vs Constant28	0.9866	0.9904	0.9904	0.0236
NotMNIST vs FashionMNIST	0.9739	0.9809	0.9809	0.1872
NotMNIST vs KMNIST	0.9947	0.9957	0.9957	0.0112
NotMNIST vs MNIST	0.9927	0.9943	0.9943	0.0147
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9989	0.9992	0.9992	0.0016
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.3766	0.3603	0.3604	0.9563
Omniglot vs KMNIST	0.4541	0.4237	0.4238	0.9735
Omniglot vs MNIST	0.4986	0.4631	0.4632	0.9627
Omniglot vs Noise28	0.2864	0.3278	0.3278	0.9825
Omniglot vs NotMNIST	0.4045	0.3796	0.3797	0.9251
SVHN vs CIFAR-10	0.9303	0.9754	0.9754	0.4778
SVHN vs CIFAR-100	0.9163	0.9700	0.9700	0.5663
SVHN vs CelebA	0.9406	0.9661	0.9661	0.4772
SVHN vs Constant	0.8695	0.9549	0.9549	0.8322
SVHN vs LSUN	0.9594	0.9864	0.9864	0.2665
SVHN vs Noise	0.9994	0.9998	0.9998	0.0000
SVHN vs TinyImagenet	0.9275	0.9748	0.9748	0.5039
SVHN vs iSUN	0.9575	0.9868	0.9868	0.2828
TinyImagenet vs CelebA	0.6121	0.5092	0.5093	0.9412
TinyImagenet vs Constant	0.1924	0.3391	0.3391	0.9999
TinyImagenet vs LSUN	0.7183	0.7246	0.7247	0.8492
TinyImagenet vs Noise	0.9990	0.9994	0.9994	0.0000
TinyImagenet vs SVHN	0.3079	0.1913	0.1913	0.9303
TinyImagenet vs iSUN	0.6806	0.6800	0.6800	0.8272
Average	0.8285	0.8234	0.8234	0.3418

Table 154: The detailed performance for indicator Mahalanobis distance with epsilon 0.0014 based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7415	0.6508	0.6508	0.8314
CIFAR-10 vs Constant	0.6953	0.6599	0.6600	0.7912
CIFAR-10 vs LSUN	0.7957	0.8040	0.8040	0.7506
CIFAR-10 vs Noise	0.9999	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.4215	0.2320	0.2321	0.8930
CIFAR-10 vs iSUN	0.7633	0.7645	0.7645	0.7398
CIFAR-100 vs CelebA	0.6751	0.5979	0.5979	0.9384
CIFAR-100 vs Constant	0.3745	0.4284	0.4285	0.9948
CIFAR-100 vs LSUN	0.7773	0.7910	0.7910	0.7979
CIFAR-100 vs Noise	0.9997	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.3706	0.2173	0.2173	0.9254
CIFAR-100 vs iSUN	0.7423	0.7504	0.7504	0.7845
CelebA vs CIFAR-10	0.8763	0.9206	0.9206	0.4424
CelebA vs CIFAR-100	0.8277	0.8848	0.8848	0.5681
CelebA vs Constant	0.6522	0.7531	0.7531	0.8169
CelebA vs LSUN	0.9699	0.9832	0.9832	0.1437
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5928	0.5015	0.5015	0.8023
CelebA vs TinyImagenet	0.8626	0.9117	0.9117	0.4962
CelebA vs iSUN	0.9569	0.9770	0.9770	0.1869
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs KMNIST	0.9949	0.9965	0.9965	0.0003
FashionMNIST vs MNIST	0.9957	0.9972	0.9972	0.0001
FashionMNIST vs Noise28	0.9999	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9989	0.9992	0.9992	0.0001
FashionMNIST vs Omniglot	0.9990	0.9995	0.9995	0.0000
KMNIST vs Constant28	0.9990	0.9995	0.9995	0.0000
KMNIST vs FashionMNIST	0.9873	0.9904	0.9904	0.0552
KMNIST vs MNIST	0.9617	0.9675	0.9675	0.2240
KMNIST vs Noise28	0.9990	0.9995	0.9995	0.0000
KMNIST vs NotMNIST	0.9960	0.9973	0.9973	0.0003
KMNIST vs Omniglot	0.9817	0.9881	0.9881	0.0947
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9998	0.9999	0.9999	0.0000
MNIST vs KMNIST	0.9996	0.9997	0.9997	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9957	0.9971	0.9971	0.0029
Noise vs CIFAR-10	0.4279	0.4178	0.4178	0.6967
Noise vs CIFAR-100	0.4041	0.4089	0.4089	0.7051
Noise vs CelebA	0.4508	0.2817	0.2817	0.6982
Noise vs Constant	0.4898	0.4441	0.4442	0.7034
Noise vs LSUN	0.4322	0.4190	0.4190	0.7209
Noise vs SVHN	0.4061	0.2233	0.2233	0.6898
Noise vs TinyImagenet	0.4290	0.4223	0.4223	0.7045

Noise vs iSUN	0.4482	0.4509	0.4509	0.6863
Noise28 vs Constant28	0.9804	0.9827	0.9827	0.1164
Noise28 vs FashionMNIST	0.9884	0.9887	0.9887	0.0501
Noise28 vs KMNIST	0.9989	0.9994	0.9994	0.0000
Noise28 vs MNIST	0.9992	0.9995	0.9995	0.0000
Noise28 vs NotMNIST	0.9723	0.9613	0.9613	0.0856
Noise28 vs Omniglot	0.9995	0.9997	0.9997	0.0000
NotMNIST vs Constant28	0.9868	0.9905	0.9905	0.0240
NotMNIST vs FashionMNIST	0.9743	0.9812	0.9812	0.1817
NotMNIST vs KMNIST	0.9948	0.9957	0.9957	0.0111
NotMNIST vs MNIST	0.9927	0.9943	0.9943	0.0148
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9989	0.9992	0.9992	0.0015
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.3782	0.3610	0.3611	0.9554
Omniglot vs KMNIST	0.4538	0.4235	0.4235	0.9736
Omniglot vs MNIST	0.4982	0.4627	0.4627	0.9627
Omniglot vs Noise28	0.2922	0.3298	0.3298	0.9808
Omniglot vs NotMNIST	0.4044	0.3794	0.3795	0.9252
SVHN vs CIFAR-10	0.9318	0.9760	0.9760	0.4696
SVHN vs CIFAR-100	0.9182	0.9707	0.9707	0.5566
SVHN vs CelebA	0.9417	0.9667	0.9667	0.4668
SVHN vs Constant	0.8711	0.9552	0.9552	0.8223
SVHN vs LSUN	0.9601	0.9867	0.9867	0.2582
SVHN vs Noise	0.9994	0.9998	0.9998	0.0000
SVHN vs TinyImagenet	0.9292	0.9755	0.9755	0.4948
SVHN vs iSUN	0.9583	0.9871	0.9871	0.2769
TinyImagenet vs CelebA	0.6122	0.5093	0.5094	0.9410
TinyImagenet vs Constant	0.1914	0.3387	0.3388	0.9999
TinyImagenet vs LSUN	0.7177	0.7240	0.7240	0.8496
TinyImagenet vs Noise	0.9990	0.9994	0.9994	0.0000
TinyImagenet vs SVHN	0.3100	0.1918	0.1919	0.9292
TinyImagenet vs iSUN	0.6801	0.6794	0.6795	0.8271
Average	0.8288	0.8235	0.8235	0.3413

Table 155: The detailed performance for indicator Mahalanobis distance with epsilon 0.001 based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.7461	0.6557	0.6557	0.8245
CIFAR-10 vs Constant	0.7015	0.6680	0.6680	0.7870
CIFAR-10 vs LSUN	0.7980	0.8062	0.8062	0.7464
CIFAR-10 vs Noise	0.9999	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.4352	0.2384	0.2384	0.8884
CIFAR-10 vs iSUN	0.7661	0.7672	0.7673	0.7359
CIFAR-100 vs CelebA	0.6753	0.5981	0.5981	0.9382
CIFAR-100 vs Constant	0.3728	0.4276	0.4277	0.9948
CIFAR-100 vs LSUN	0.7768	0.7904	0.7905	0.7981
CIFAR-100 vs Noise	0.9997	0.9998	0.9998	0.0000
CIFAR-100 vs SVHN	0.3737	0.2186	0.2186	0.9246
CIFAR-100 vs iSUN	0.7420	0.7500	0.7500	0.7839
CelebA vs CIFAR-10	0.8760	0.9204	0.9204	0.4444
CelebA vs CIFAR-100	0.8273	0.8846	0.8846	0.5691
CelebA vs Constant	0.6504	0.7516	0.7516	0.8184
CelebA vs LSUN	0.9696	0.9831	0.9831	0.1450
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.5937	0.5023	0.5023	0.8019
CelebA vs TinyImagenet	0.8623	0.9115	0.9115	0.4977
CelebA vs iSUN	0.9566	0.9768	0.9768	0.1882
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9998	0.9999	0.9999	0.0000
FashionMNIST vs KMNIST	0.9948	0.9964	0.9964	0.0004
FashionMNIST vs MNIST	0.9957	0.9972	0.9972	0.0002
FashionMNIST vs Noise28	0.9999	0.9999	0.9999	0.0000
FashionMNIST vs NotMNIST	0.9989	0.9991	0.9991	0.0001
FashionMNIST vs Omniglot	0.9990	0.9995	0.9995	0.0000
KMNIST vs Constant28	0.9989	0.9994	0.9994	0.0000
KMNIST vs FashionMNIST	0.9873	0.9903	0.9903	0.0553
KMNIST vs MNIST	0.9617	0.9675	0.9675	0.2221
KMNIST vs Noise28	0.9989	0.9995	0.9995	0.0000
KMNIST vs NotMNIST	0.9958	0.9972	0.9972	0.0003
KMNIST vs Omniglot	0.9816	0.9881	0.9881	0.0947
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9998	0.9999	0.9999	0.0000
MNIST vs KMNIST	0.9995	0.9996	0.9996	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9957	0.9971	0.9971	0.0025
Noise vs CIFAR-10	0.4295	0.4184	0.4184	0.7006
Noise vs CIFAR-100	0.4052	0.4092	0.4093	0.7105
Noise vs CelebA	0.4539	0.2827	0.2827	0.7028
Noise vs Constant	0.4804	0.4394	0.4394	0.7119
Noise vs LSUN	0.4327	0.4192	0.4193	0.7250
Noise vs SVHN	0.4112	0.2245	0.2245	0.6900
Noise vs TinyImagenet	0.4319	0.4234	0.4235	0.7071

Noise vs iSUN	0.4477	0.4507	0.4508	0.6933
Noise28 vs Constant28	0.9778	0.9807	0.9807	0.1352
Noise28 vs FashionMNIST	0.9849	0.9857	0.9857	0.0673
Noise28 vs KMNIST	0.9985	0.9992	0.9992	0.0000
Noise28 vs MNIST	0.9988	0.9994	0.9994	0.0000
Noise28 vs NotMNIST	0.9664	0.9555	0.9556	0.1099
Noise28 vs Omniglot	0.9994	0.9997	0.9997	0.0000
NotMNIST vs Constant28	0.9874	0.9908	0.9908	0.0241
NotMNIST vs FashionMNIST	0.9750	0.9816	0.9816	0.1760
NotMNIST vs KMNIST	0.9948	0.9957	0.9957	0.0107
NotMNIST vs MNIST	0.9927	0.9943	0.9943	0.0151
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9989	0.9992	0.9992	0.0012
Omniglot vs Constant28	1.0000	1.0000	1.0000	0.0000
Omniglot vs FashionMNIST	0.3802	0.3619	0.3620	0.9548
Omniglot vs KMNIST	0.4533	0.4230	0.4231	0.9732
Omniglot vs MNIST	0.4975	0.4621	0.4622	0.9629
Omniglot vs Noise28	0.2996	0.3323	0.3324	0.9790
Omniglot vs NotMNIST	0.4041	0.3791	0.3792	0.9246
SVHN vs CIFAR-10	0.9338	0.9767	0.9767	0.4583
SVHN vs CIFAR-100	0.9207	0.9717	0.9717	0.5441
SVHN vs CelebA	0.9433	0.9675	0.9675	0.4525
SVHN vs Constant	0.8792	0.9581	0.9581	0.7918
SVHN vs LSUN	0.9608	0.9869	0.9869	0.2526
SVHN vs Noise	0.9994	0.9998	0.9998	0.0000
SVHN vs TinyImagenet	0.9314	0.9763	0.9763	0.4798
SVHN vs iSUN	0.9595	0.9875	0.9875	0.2663
TinyImagenet vs CelebA	0.6124	0.5096	0.5096	0.9413
TinyImagenet vs Constant	0.1909	0.3386	0.3386	0.9999
TinyImagenet vs LSUN	0.7170	0.7232	0.7232	0.8520
TinyImagenet vs Noise	0.9991	0.9994	0.9994	0.0000
TinyImagenet vs SVHN	0.3132	0.1926	0.1926	0.9287
TinyImagenet vs iSUN	0.6796	0.6788	0.6788	0.8282
Average	0.8294	0.8237	0.8237	0.3410

Table 156: The detailed performance for indicator Mahalanobis distance with epsilon 0.0005 based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6815	0.5506	0.5506	0.8969
CIFAR-10 vs Constant	0.6504	0.6504	0.6505	0.9125
CIFAR-10 vs LSUN	0.6538	0.6642	0.6642	0.9152
CIFAR-10 vs Noise	0.6707	0.6837	0.6837	0.9094
CIFAR-10 vs SVHN	0.6628	0.4607	0.4607	0.9127
CIFAR-10 vs iSUN	0.6420	0.6785	0.6785	0.9228
CIFAR-100 vs CelebA	0.6485	0.5347	0.5348	0.8841
CIFAR-100 vs Constant	0.6366	0.6784	0.6784	0.9150
CIFAR-100 vs LSUN	0.6324	0.6599	0.6599	0.9047
CIFAR-100 vs Noise	0.6607	0.6971	0.6971	0.8913
CIFAR-100 vs SVHN	0.6430	0.4791	0.4791	0.9005
CIFAR-100 vs iSUN	0.6176	0.6703	0.6703	0.9144
CelebA vs CIFAR-10	0.4288	0.6198	0.6199	0.9736
CelebA vs CIFAR-100	0.4371	0.6239	0.6240	0.9670
CelebA vs Constant	0.4481	0.6409	0.6409	0.9659
CelebA vs LSUN	0.4128	0.6102	0.6103	0.9766
CelebA vs Noise	0.3388	0.5757	0.5757	0.9977
CelebA vs SVHN	0.4767	0.4084	0.4085	0.9456
CelebA vs TinyImagenet	0.4252	0.6226	0.6226	0.9723
CelebA vs iSUN	0.4041	0.6330	0.6330	0.9798
Constant vs CIFAR-10	0.4506	0.4577	0.4578	0.9635
Constant vs CIFAR-100	0.4628	0.4675	0.4676	0.9698
Constant vs CelebA	0.4601	0.3047	0.3047	0.9706
Constant vs LSUN	0.4615	0.4697	0.4698	0.9578
Constant vs Noise	0.3299	0.3830	0.3830	0.9709
Constant vs SVHN	0.5105	0.2717	0.2717	0.9493
Constant vs TinyImagenet	0.4448	0.4564	0.4565	0.9694
Constant vs iSUN	0.4438	0.4823	0.4824	0.9690
Constant28 vs FashionMNIST	0.3706	0.4291	0.4293	0.9387
Constant28 vs KMNIST	0.2698	0.3763	0.3764	0.9755
Constant28 vs MNIST	0.2039	0.3494	0.3496	0.9906
Constant28 vs Noise28	0.2551	0.3651	0.3652	0.9983
Constant28 vs NotMNIST	0.3205	0.4060	0.4062	0.9597
Constant28 vs Omniglot	0.2476	0.4106	0.4107	0.9886
FashionMNIST vs Constant28	0.9011	0.9083	0.9083	0.5194
FashionMNIST vs KMNIST	0.8304	0.8249	0.8249	0.7007
FashionMNIST vs MNIST	0.8347	0.8402	0.8402	0.7159
FashionMNIST vs Noise28	0.8675	0.8746	0.8746	0.6490
FashionMNIST vs NotMNIST	0.8137	0.7958	0.7958	0.7202
FashionMNIST vs Omniglot	0.8398	0.8616	0.8616	0.6987
KMNIST vs Constant28	0.8901	0.8001	0.8001	0.4210
KMNIST vs FashionMNIST	0.8030	0.7235	0.7236	0.5200
KMNIST vs MNIST	0.8362	0.7783	0.7784	0.5059
KMNIST vs Noise28	0.8703	0.8297	0.8298	0.4503
KMNIST vs NotMNIST	0.8744	0.8201	0.8201	0.4228
KMNIST vs Omniglot	0.8456	0.8209	0.8210	0.4901
MNIST vs Constant28	0.9597	0.9613	0.9613	0.1787
MNIST vs FashionMNIST	0.8445	0.7539	0.7540	0.3497
MNIST vs KMNIST	0.8422	0.7456	0.7457	0.3441
MNIST vs Noise28	0.8765	0.7968	0.7969	0.2857
MNIST vs NotMNIST	0.8294	0.7346	0.7346	0.3726
MNIST vs Omniglot	0.8309	0.7735	0.7736	0.3626
Noise vs CIFAR-10	0.5208	0.5181	0.5182	0.9460
Noise vs CIFAR-100	0.5248	0.5240	0.5241	0.9464
Noise vs CelebA	0.5063	0.3398	0.3398	0.9515
Noise vs Constant	0.5580	0.5629	0.5630	0.9285
Noise vs LSUN	0.5135	0.5141	0.5142	0.9515
Noise vs SVHN	0.5477	0.3155	0.3156	0.9324
Noise vs TinyImagenet	0.5210	0.5248	0.5249	0.9484

Noise vs iSUN	0.5173	0.5445	0.5446	0.9483
Noise28 vs Constant28	0.4678	0.4676	0.4677	0.9475
Noise28 vs FashionMNIST	0.4797	0.4816	0.4817	0.9522
Noise28 vs KMNIST	0.4948	0.4959	0.4960	0.9482
Noise28 vs MNIST	0.4878	0.4956	0.4957	0.9502
Noise28 vs NotMNIST	0.5006	0.5036	0.5038	0.9519
Noise28 vs Omniglot	0.4885	0.5444	0.5445	0.9488
NotMNIST vs Constant28	0.9408	0.9545	0.9545	0.5161
NotMNIST vs FashionMNIST	0.8528	0.8159	0.8160	0.6619
NotMNIST vs KMNIST	0.8292	0.7701	0.7702	0.6825
NotMNIST vs MNIST	0.8013	0.7262	0.7263	0.7275
NotMNIST vs Noise28	0.8600	0.8183	0.8184	0.6595
NotMNIST vs Omniglot	0.8457	0.8249	0.8249	0.6745
Omniglot vs Constant28	0.6799	0.6208	0.6209	0.8341
Omniglot vs FashionMNIST	0.6093	0.5600	0.5601	0.8937
Omniglot vs KMNIST	0.5923	0.5598	0.5599	0.9247
Omniglot vs MNIST	0.5884	0.5486	0.5487	0.9237
Omniglot vs Noise28	0.6108	0.5772	0.5772	0.9034
Omniglot vs NotMNIST	0.6153	0.5753	0.5754	0.8874
SVHN vs CIFAR-10	0.8249	0.9138	0.9138	0.7415
SVHN vs CIFAR-100	0.8178	0.9072	0.9072	0.7299
SVHN vs CelebA	0.8296	0.8523	0.8523	0.7253
SVHN vs Constant	0.8201	0.9134	0.9134	0.7382
SVHN vs LSUN	0.8224	0.9115	0.9115	0.7348
SVHN vs Noise	0.8189	0.9079	0.9079	0.7296
SVHN vs TinyImagenet	0.8196	0.9092	0.9092	0.7343
SVHN vs iSUN	0.8202	0.9181	0.9181	0.7385
TinyImagenet vs CelebA	0.5857	0.4303	0.4303	0.9048
TinyImagenet vs Constant	0.5355	0.5383	0.5384	0.9360
TinyImagenet vs LSUN	0.5639	0.5736	0.5736	0.9266
TinyImagenet vs Noise	0.5897	0.6020	0.6020	0.9102
TinyImagenet vs SVHN	0.5690	0.3553	0.3554	0.9190
TinyImagenet vs iSUN	0.5524	0.5869	0.5869	0.9322
Average	0.6274	0.6295	0.6296	0.8139

Table 157: The detailed performance for indicator entropy $H[p(y|x)]$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.3184	0.2504	0.2505	0.9919
CIFAR-10 vs Constant	0.3496	0.4137	0.4138	0.9863
CIFAR-10 vs LSUN	0.3465	0.4130	0.4131	0.9900
CIFAR-10 vs Noise	0.3292	0.4047	0.4048	0.9914
CIFAR-10 vs SVHN	0.3372	0.2109	0.2110	0.9895
CIFAR-10 vs iSUN	0.3580	0.4486	0.4487	0.9882
CIFAR-100 vs CelebA	0.3513	0.2581	0.2581	0.9984
CIFAR-100 vs Constant	0.3635	0.4208	0.4209	0.9993
CIFAR-100 vs LSUN	0.3677	0.4196	0.4197	0.9967
CIFAR-100 vs Noise	0.3396	0.4055	0.4056	0.9995
CIFAR-100 vs SVHN	0.3571	0.2150	0.2150	0.9986
CIFAR-100 vs iSUN	0.3826	0.4565	0.4566	0.9959
CelebA vs CIFAR-10	0.5712	0.7206	0.7206	0.9250
CelebA vs CIFAR-100	0.5629	0.7128	0.7128	0.9231
CelebA vs Constant	0.5518	0.7084	0.7084	0.9417
CelebA vs LSUN	0.5871	0.7329	0.7330	0.9181
CelebA vs Noise	0.6615	0.8068	0.8068	0.8955
CelebA vs SVHN	0.5232	0.4421	0.4421	0.9269
CelebA vs TinyImagenet	0.5747	0.7236	0.7237	0.9226
CelebA vs iSUN	0.5959	0.7619	0.7620	0.9135
Constant vs CIFAR-10	0.5494	0.5352	0.5354	0.9204
Constant vs CIFAR-100	0.5372	0.5329	0.5330	0.9204
Constant vs CelebA	0.5402	0.3690	0.3691	0.9227
Constant vs LSUN	0.5385	0.5308	0.5309	0.9322
Constant vs Noise	0.6707	0.6057	0.6058	0.7406
Constant vs SVHN	0.4895	0.2701	0.2702	0.9285
Constant vs TinyImagenet	0.5553	0.5489	0.5490	0.9121
Constant vs iSUN	0.5565	0.5752	0.5753	0.9165
Constant28 vs FashionMNIST	0.6294	0.5832	0.5834	0.9345
Constant28 vs KMNIST	0.7304	0.7008	0.7010	0.8891
Constant28 vs MNIST	0.7962	0.7838	0.7839	0.8444
Constant28 vs Noise28	0.7452	0.7824	0.7823	0.7822
Constant28 vs NotMNIST	0.6795	0.6370	0.6372	0.9455
Constant28 vs Omniglot	0.7524	0.7779	0.7781	0.8283
FashionMNIST vs Constant28	0.0991	0.3185	0.3185	1.0000
FashionMNIST vs KMNIST	0.1697	0.3355	0.3355	0.9968
FashionMNIST vs MNIST	0.1653	0.3347	0.3348	0.9982
FashionMNIST vs Noise28	0.1324	0.3263	0.3263	0.9984
FashionMNIST vs NotMNIST	0.1862	0.3417	0.3418	0.9926
FashionMNIST vs Omniglot	0.1603	0.3798	0.3798	0.9965
KMNIST vs Constant28	0.1098	0.3238	0.3238	0.9535
KMNIST vs FashionMNIST	0.1970	0.3425	0.3425	0.9741
KMNIST vs MNIST	0.1638	0.3342	0.3343	0.9842
KMNIST vs Noise28	0.1297	0.3263	0.3264	0.9912
KMNIST vs NotMNIST	0.1256	0.3260	0.3260	0.9843
KMNIST vs Omniglot	0.1544	0.3774	0.3775	0.9852
MNIST vs Constant28	0.0403	0.3108	0.3108	1.0000
MNIST vs FashionMNIST	0.1556	0.3355	0.3356	0.9708
MNIST vs KMNIST	0.1580	0.3377	0.3377	0.9648
MNIST vs Noise28	0.1234	0.3297	0.3298	0.9775
MNIST vs NotMNIST	0.1706	0.3416	0.3416	0.9645
MNIST vs Omniglot	0.1692	0.3866	0.3867	0.9651
Noise vs CIFAR-10	0.4794	0.4845	0.4846	0.9559
Noise vs CIFAR-100	0.4752	0.4843	0.4844	0.9624
Noise vs CelebA	0.4930	0.3300	0.3301	0.9542
Noise vs Constant	0.4415	0.4588	0.4589	0.9767
Noise vs LSUN	0.4863	0.4918	0.4919	0.9584
Noise vs SVHN	0.4527	0.2513	0.2513	0.9669
Noise vs TinyImagenet	0.4786	0.4900	0.4901	0.9560

Noise vs iSUN	0.4826	0.5182	0.5184	0.9576
Noise28 vs Constant28	0.5322	0.5120	0.5121	0.9206
Noise28 vs FashionMNIST	0.5203	0.5133	0.5135	0.9383
Noise28 vs KMNIST	0.5050	0.5019	0.5020	0.9494
Noise28 vs MNIST	0.5123	0.5084	0.5085	0.9510
Noise28 vs NotMNIST	0.4995	0.5000	0.5001	0.9542
Noise28 vs Omniglot	0.5118	0.5592	0.5593	0.9481
NotMNIST vs Constant28	0.0594	0.3125	0.3125	1.0000
NotMNIST vs FashionMNIST	0.1472	0.3313	0.3314	0.9897
NotMNIST vs KMNIST	0.1709	0.3371	0.3371	0.9832
NotMNIST vs MNIST	0.1988	0.3448	0.3449	0.9711
NotMNIST vs Noise28	0.1400	0.3297	0.3298	0.9885
NotMNIST vs Omniglot	0.1543	0.3787	0.3788	0.9839
Omniglot vs Constant28	0.3201	0.3388	0.3389	0.9893
Omniglot vs FashionMNIST	0.3907	0.3740	0.3741	0.9857
Omniglot vs KMNIST	0.4077	0.3919	0.3920	0.9887
Omniglot vs MNIST	0.4116	0.3936	0.3938	0.9848
Omniglot vs Noise28	0.3892	0.3759	0.3760	0.9902
Omniglot vs NotMNIST	0.3847	0.3705	0.3706	0.9900
SVHN vs CIFAR-10	0.1751	0.5546	0.5546	0.9933
SVHN vs CIFAR-100	0.1823	0.5562	0.5563	0.9924
SVHN vs CelebA	0.1705	0.3911	0.3912	0.9965
SVHN vs Constant	0.1804	0.5570	0.5571	0.9961
SVHN vs LSUN	0.1775	0.5549	0.5550	0.9940
SVHN vs Noise	0.1809	0.5555	0.5556	0.9935
SVHN vs TinyImagenet	0.1804	0.5606	0.5607	0.9924
SVHN vs iSUN	0.1797	0.5819	0.5819	0.9940
TinyImagenet vs CelebA	0.4139	0.2773	0.2774	0.9901
TinyImagenet vs Constant	0.4639	0.4681	0.4683	0.9716
TinyImagenet vs LSUN	0.4360	0.4518	0.4519	0.9867
TinyImagenet vs Noise	0.4104	0.4343	0.4344	0.9923
TinyImagenet vs SVHN	0.4311	0.2372	0.2373	0.9880
TinyImagenet vs iSUN	0.4480	0.4872	0.4873	0.9811
Average	0.3727	0.4545	0.4546	0.9616

Table 158: The detailed performance for indicator negative entropy $-H[p(y|x)]$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6722	0.5836	0.4992	0.9001
CIFAR-10 vs Constant	0.6460	0.6927	0.6302	0.9166
CIFAR-10 vs LSUN	0.6454	0.6925	0.6305	0.9148
CIFAR-10 vs Noise	0.6640	0.7078	0.6523	0.9060
CIFAR-10 vs SVHN	0.6544	0.5180	0.4142	0.9096
CIFAR-10 vs iSUN	0.6332	0.7057	0.6458	0.9206
CIFAR-100 vs CelebA	0.6409	0.5320	0.5259	0.9022
CIFAR-100 vs Constant	0.6335	0.6761	0.6739	0.9158
CIFAR-100 vs LSUN	0.6269	0.6586	0.6529	0.9143
CIFAR-100 vs Noise	0.6534	0.6934	0.6914	0.9007
CIFAR-100 vs SVHN	0.6370	0.4765	0.4693	0.9089
CIFAR-100 vs iSUN	0.6131	0.6691	0.6634	0.9171
CelebA vs CIFAR-10	0.4363	0.6241	0.6241	0.9697
CelebA vs CIFAR-100	0.4445	0.6280	0.6280	0.9666
CelebA vs Constant	0.4534	0.6426	0.6427	0.9667
CelebA vs LSUN	0.4224	0.6155	0.6155	0.9757
CelebA vs Noise	0.3558	0.5825	0.5825	0.9947
CelebA vs SVHN	0.4802	0.4115	0.4116	0.9456
CelebA vs TinyImagenet	0.4331	0.6271	0.6271	0.9678
CelebA vs iSUN	0.4156	0.6387	0.6387	0.9767
Constant vs CIFAR-10	0.5031	0.4940	0.4941	0.9453
Constant vs CIFAR-100	0.5104	0.5036	0.5038	0.9390
Constant vs CelebA	0.5078	0.3293	0.3294	0.9478
Constant vs LSUN	0.5068	0.5029	0.5030	0.9524
Constant vs Noise	0.4074	0.4272	0.4273	0.9685
Constant vs SVHN	0.5507	0.2972	0.2973	0.9101
Constant vs TinyImagenet	0.5016	0.4927	0.4928	0.9394
Constant vs iSUN	0.4978	0.5167	0.5168	0.9531
Constant28 vs FashionMNIST	0.2293	0.3818	0.3819	0.9933
Constant28 vs KMNIST	0.1909	0.3561	0.3562	0.9958
Constant28 vs MNIST	0.1430	0.3355	0.3355	0.9992
Constant28 vs Noise28	0.1735	0.3422	0.3422	0.9992
Constant28 vs NotMNIST	0.2494	0.3726	0.3726	0.9803
Constant28 vs Omniglot	0.1769	0.3914	0.3914	0.9965
FashionMNIST vs Constant28	0.8847	0.8939	0.8543	0.5243
FashionMNIST vs KMNIST	0.8101	0.8355	0.7705	0.7044
FashionMNIST vs MNIST	0.8126	0.8388	0.7767	0.7181
FashionMNIST vs Noise28	0.8515	0.8708	0.8271	0.6534
FashionMNIST vs NotMNIST	0.7938	0.8230	0.7502	0.7266
FashionMNIST vs Omniglot	0.8208	0.8677	0.8183	0.6990
KMNIST vs Constant28	0.8788	0.8978	0.8296	0.4228
KMNIST vs FashionMNIST	0.7797	0.8321	0.7055	0.5190
KMNIST vs MNIST	0.7955	0.8414	0.7231	0.5044
KMNIST vs Noise28	0.8275	0.8610	0.7596	0.4495
KMNIST vs NotMNIST	0.8387	0.8684	0.7731	0.4213
KMNIST vs Omniglot	0.8065	0.8701	0.7746	0.4891
MNIST vs Constant28	0.8903	0.9076	0.8272	0.1932
MNIST vs FashionMNIST	0.8004	0.8518	0.7189	0.3680
MNIST vs KMNIST	0.8014	0.8524	0.7200	0.3658
MNIST vs Noise28	0.8315	0.8694	0.7529	0.3077
MNIST vs NotMNIST	0.7847	0.8435	0.7028	0.3985
MNIST vs Omniglot	0.7902	0.8685	0.7506	0.3876
Noise vs CIFAR-10	0.5193	0.5351	0.5194	0.9478
Noise vs CIFAR-100	0.5240	0.5396	0.5247	0.9456
Noise vs CelebA	0.5058	0.3626	0.3404	0.9513
Noise vs Constant	0.5546	0.5700	0.5585	0.9333
Noise vs LSUN	0.5126	0.5311	0.5155	0.9464
Noise vs SVHN	0.5448	0.3366	0.3150	0.9382
Noise vs TinyImagenet	0.5197	0.5405	0.5250	0.9483

Noise vs iSUN	0.5169	0.5608	0.5458	0.9491
Noise28 vs Constant28	0.4653	0.4811	0.4617	0.9526
Noise28 vs FashionMNIST	0.4811	0.5009	0.4839	0.9508
Noise28 vs KMNIST	0.4949	0.5114	0.4955	0.9506
Noise28 vs MNIST	0.4879	0.5091	0.4936	0.9571
Noise28 vs NotMNIST	0.5008	0.5186	0.5037	0.9529
Noise28 vs Omniglot	0.4886	0.5596	0.5455	0.9506
NotMNIST vs Constant28	0.9288	0.9417	0.9214	0.5137
NotMNIST vs FashionMNIST	0.8345	0.8612	0.7824	0.6583
NotMNIST vs KMNIST	0.8190	0.8498	0.7623	0.6778
NotMNIST vs MNIST	0.7950	0.8339	0.7346	0.7244
NotMNIST vs Noise28	0.8468	0.8707	0.7994	0.6536
NotMNIST vs Omniglot	0.8339	0.8818	0.8158	0.6700
Omniglot vs Constant28	0.6669	0.6136	0.6127	0.8536
Omniglot vs FashionMNIST	0.6008	0.5590	0.5565	0.9120
Omniglot vs KMNIST	0.5880	0.5583	0.5563	0.9296
Omniglot vs MNIST	0.5848	0.5487	0.5460	0.9263
Omniglot vs Noise28	0.6030	0.5737	0.5729	0.9162
Omniglot vs NotMNIST	0.6064	0.5719	0.5703	0.9058
SVHN vs CIFAR-10	0.7983	0.9198	0.8860	0.7367
SVHN vs CIFAR-100	0.7920	0.9171	0.8811	0.7292
SVHN vs CelebA	0.8067	0.8650	0.8063	0.7233
SVHN vs Constant	0.7910	0.9167	0.8805	0.7371
SVHN vs LSUN	0.7960	0.9189	0.8843	0.7325
SVHN vs Noise	0.7945	0.9181	0.8827	0.7294
SVHN vs TinyImagenet	0.7939	0.9193	0.8846	0.7326
SVHN vs iSUN	0.7958	0.9264	0.8953	0.7370
TinyImagenet vs CelebA	0.5768	0.4264	0.4247	0.9151
TinyImagenet vs Constant	0.5329	0.5372	0.5340	0.9399
TinyImagenet vs LSUN	0.5598	0.5722	0.5705	0.9288
TinyImagenet vs Noise	0.5809	0.5979	0.5973	0.9259
TinyImagenet vs SVHN	0.5628	0.3538	0.3512	0.9252
TinyImagenet vs iSUN	0.5483	0.5851	0.5832	0.9396
Average	0.6159	0.6490	0.6154	0.8164

Table 159: The detailed performance for indicator $\max p(y|x)$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6722	0.5838	0.4993	0.8973
CIFAR-10 vs Constant	0.6459	0.6924	0.6298	0.9132
CIFAR-10 vs LSUN	0.6455	0.6928	0.6306	0.9150
CIFAR-10 vs Noise	0.6642	0.7080	0.6528	0.9077
CIFAR-10 vs SVHN	0.6544	0.5181	0.4143	0.9120
CIFAR-10 vs iSUN	0.6332	0.7057	0.6459	0.9198
CIFAR-100 vs CelebA	0.6411	0.5322	0.5261	0.9026
CIFAR-100 vs Constant	0.6338	0.6764	0.6741	0.9147
CIFAR-100 vs LSUN	0.6268	0.6585	0.6528	0.9167
CIFAR-100 vs Noise	0.6537	0.6935	0.6915	0.9013
CIFAR-100 vs SVHN	0.6370	0.4765	0.4694	0.9082
CIFAR-100 vs iSUN	0.6131	0.6690	0.6634	0.9191
CelebA vs CIFAR-10	0.4363	0.6241	0.6241	0.9697
CelebA vs CIFAR-100	0.4447	0.6281	0.6281	0.9672
CelebA vs Constant	0.4533	0.6425	0.6426	0.9665
CelebA vs LSUN	0.4225	0.6155	0.6155	0.9756
CelebA vs Noise	0.3559	0.5826	0.5826	0.9942
CelebA vs SVHN	0.4801	0.4115	0.4116	0.9457
CelebA vs TinyImagenet	0.4334	0.6272	0.6273	0.9686
CelebA vs iSUN	0.4156	0.6386	0.6386	0.9765
Constant vs CIFAR-10	0.5034	0.4944	0.4945	0.9450
Constant vs CIFAR-100	0.5102	0.5034	0.5035	0.9390
Constant vs CelebA	0.5079	0.3293	0.3293	0.9477
Constant vs LSUN	0.5069	0.5030	0.5031	0.9526
Constant vs Noise	0.4073	0.4269	0.4270	0.9670
Constant vs SVHN	0.5508	0.2973	0.2973	0.9103
Constant vs TinyImagenet	0.5018	0.4928	0.4929	0.9396
Constant vs iSUN	0.4981	0.5169	0.5170	0.9527
Constant28 vs FashionMNIST	0.2293	0.3818	0.3819	0.9929
Constant28 vs KMNIST	0.1910	0.3561	0.3562	0.9959
Constant28 vs MNIST	0.1430	0.3355	0.3355	0.9992
Constant28 vs Noise28	0.1735	0.3422	0.3423	0.9993
Constant28 vs NotMNIST	0.2495	0.3726	0.3726	0.9806
Constant28 vs Omniglot	0.1770	0.3914	0.3914	0.9965
FashionMNIST vs Constant28	0.8843	0.8936	0.8537	0.5233
FashionMNIST vs KMNIST	0.8103	0.8358	0.7708	0.7058
FashionMNIST vs MNIST	0.8125	0.8387	0.7766	0.7177
FashionMNIST vs Noise28	0.8516	0.8710	0.8274	0.6565
FashionMNIST vs NotMNIST	0.7939	0.8231	0.7502	0.7257
FashionMNIST vs Omniglot	0.8208	0.8677	0.8184	0.7010
KMNIST vs Constant28	0.8787	0.8977	0.8294	0.4225
KMNIST vs FashionMNIST	0.7801	0.8323	0.7059	0.5190
KMNIST vs MNIST	0.7956	0.8414	0.7232	0.5042
KMNIST vs Noise28	0.8274	0.8610	0.7596	0.4497
KMNIST vs NotMNIST	0.8388	0.8684	0.7732	0.4219
KMNIST vs Omniglot	0.8062	0.8700	0.7743	0.4890
MNIST vs Constant28	0.8904	0.9077	0.8274	0.1928
MNIST vs FashionMNIST	0.8003	0.8517	0.7187	0.3683
MNIST vs KMNIST	0.8012	0.8522	0.7198	0.3663
MNIST vs Noise28	0.8318	0.8696	0.7533	0.3070
MNIST vs NotMNIST	0.7848	0.8436	0.7029	0.3984
MNIST vs Omniglot	0.7902	0.8685	0.7506	0.3875
Noise vs CIFAR-10	0.5192	0.5351	0.5195	0.9436
Noise vs CIFAR-100	0.5244	0.5399	0.5252	0.9477
Noise vs CelebA	0.5053	0.3623	0.3401	0.9520
Noise vs Constant	0.5546	0.5705	0.5587	0.9371
Noise vs LSUN	0.5132	0.5316	0.5160	0.9491
Noise vs SVHN	0.5447	0.3368	0.3153	0.9372
Noise vs TinyImagenet	0.5202	0.5404	0.5250	0.9447

Noise vs iSUN	0.5166	0.5603	0.5452	0.9480
Noise28 vs Constant28	0.4658	0.4812	0.4619	0.9490
Noise28 vs FashionMNIST	0.4808	0.5007	0.4838	0.9515
Noise28 vs KMNIST	0.4952	0.5117	0.4958	0.9539
Noise28 vs MNIST	0.4879	0.5089	0.4933	0.9549
Noise28 vs NotMNIST	0.5009	0.5187	0.5038	0.9502
Noise28 vs Omniglot	0.4885	0.5595	0.5453	0.9506
NotMNIST vs Constant28	0.9290	0.9420	0.9219	0.5159
NotMNIST vs FashionMNIST	0.8347	0.8613	0.7827	0.6587
NotMNIST vs KMNIST	0.8189	0.8498	0.7622	0.6790
NotMNIST vs MNIST	0.7948	0.8337	0.7343	0.7209
NotMNIST vs Noise28	0.8466	0.8706	0.7991	0.6538
NotMNIST vs Omniglot	0.8340	0.8819	0.8159	0.6704
Omniglot vs Constant28	0.6670	0.6137	0.6127	0.8569
Omniglot vs FashionMNIST	0.6011	0.5589	0.5564	0.9119
Omniglot vs KMNIST	0.5881	0.5583	0.5563	0.9299
Omniglot vs MNIST	0.5848	0.5486	0.5459	0.9279
Omniglot vs Noise28	0.6032	0.5739	0.5731	0.9175
Omniglot vs NotMNIST	0.6064	0.5720	0.5704	0.9043
SVHN vs CIFAR-10	0.7984	0.9199	0.8861	0.7375
SVHN vs CIFAR-100	0.7919	0.9171	0.8810	0.7284
SVHN vs CelebA	0.8068	0.8651	0.8064	0.7211
SVHN vs Constant	0.7920	0.9172	0.8813	0.7414
SVHN vs LSUN	0.7964	0.9191	0.8846	0.7328
SVHN vs Noise	0.7943	0.9180	0.8825	0.7276
SVHN vs TinyImagenet	0.7942	0.9194	0.8848	0.7332
SVHN vs iSUN	0.7957	0.9264	0.8952	0.7373
TinyImagenet vs CelebA	0.5771	0.4265	0.4249	0.9172
TinyImagenet vs Constant	0.5328	0.5373	0.5342	0.9359
TinyImagenet vs LSUN	0.5598	0.5721	0.5704	0.9297
TinyImagenet vs Noise	0.5810	0.5980	0.5975	0.9249
TinyImagenet vs SVHN	0.5622	0.3537	0.3511	0.9257
TinyImagenet vs iSUN	0.5484	0.5851	0.5832	0.9377
Average	0.6160	0.6490	0.6155	0.8164

Table 160: The detailed performance for indicator ODIN with $T = 1, \epsilon = 0$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6653	0.5814	0.4970	0.9339
CIFAR-10 vs Constant	0.6062	0.6781	0.6158	0.9867
CIFAR-10 vs LSUN	0.6445	0.6928	0.6316	0.9323
CIFAR-10 vs Noise	0.6335	0.6972	0.6417	0.9865
CIFAR-10 vs SVHN	0.6125	0.5056	0.4024	0.9905
CIFAR-10 vs iSUN	0.6302	0.7046	0.6450	0.9431
CIFAR-100 vs CelebA	0.6298	0.5284	0.5224	0.9221
CIFAR-100 vs Constant	0.5517	0.6382	0.6361	0.9741
CIFAR-100 vs LSUN	0.6407	0.6653	0.6597	0.8980
CIFAR-100 vs Noise	0.6023	0.6721	0.6703	0.9682
CIFAR-100 vs SVHN	0.5456	0.4414	0.4345	0.9826
CIFAR-100 vs iSUN	0.6242	0.6744	0.6688	0.9054
CelebA vs CIFAR-10	0.4343	0.6225	0.6225	0.9705
CelebA vs CIFAR-100	0.4442	0.6276	0.6277	0.9675
CelebA vs Constant	0.4558	0.6443	0.6444	0.9666
CelebA vs LSUN	0.4273	0.6180	0.6181	0.9736
CelebA vs Noise	0.2980	0.5541	0.5542	0.9977
CelebA vs SVHN	0.4591	0.3984	0.3985	0.9518
CelebA vs TinyImagenet	0.4299	0.6251	0.6252	0.9682
CelebA vs iSUN	0.4168	0.6392	0.6393	0.9768
Constant vs CIFAR-10	0.4979	0.4884	0.4885	0.9458
Constant vs CIFAR-100	0.5038	0.4962	0.4963	0.9404
Constant vs CelebA	0.5006	0.3241	0.3241	0.9508
Constant vs LSUN	0.5016	0.4982	0.4983	0.9572
Constant vs Noise	0.3828	0.4101	0.4102	0.9734
Constant vs SVHN	0.5460	0.2934	0.2935	0.9130
Constant vs TinyImagenet	0.4985	0.4895	0.4896	0.9396
Constant vs iSUN	0.4918	0.5114	0.5115	0.9552
Constant28 vs FashionMNIST	0.2245	0.3802	0.3803	0.9950
Constant28 vs KMNIST	0.1837	0.3530	0.3531	0.9975
Constant28 vs MNIST	0.1352	0.3316	0.3316	0.9998
Constant28 vs Noise28	0.1694	0.3397	0.3397	0.9993
Constant28 vs NotMNIST	0.2425	0.3705	0.3705	0.9851
Constant28 vs Omniglot	0.1674	0.3866	0.3866	0.9970
FashionMNIST vs Constant28	0.8649	0.8818	0.8402	0.6756
FashionMNIST vs KMNIST	0.8134	0.8370	0.7722	0.6818
FashionMNIST vs MNIST	0.8151	0.8399	0.7780	0.7036
FashionMNIST vs Noise28	0.8501	0.8709	0.8275	0.6978
FashionMNIST vs NotMNIST	0.7972	0.8242	0.7514	0.7004
FashionMNIST vs Omniglot	0.8232	0.8687	0.8195	0.6886
KMNIST vs Constant28	0.8769	0.8980	0.8309	0.4151
KMNIST vs FashionMNIST	0.7794	0.8321	0.7056	0.5162
KMNIST vs MNIST	0.7957	0.8415	0.7234	0.5016
KMNIST vs Noise28	0.8270	0.8614	0.7608	0.4446
KMNIST vs NotMNIST	0.8395	0.8689	0.7740	0.4189
KMNIST vs Omniglot	0.8072	0.8707	0.7756	0.4844
MNIST vs Constant28	0.8899	0.9077	0.8277	0.1921
MNIST vs FashionMNIST	0.8006	0.8519	0.7191	0.3675
MNIST vs KMNIST	0.8019	0.8526	0.7204	0.3651
MNIST vs Noise28	0.8315	0.8695	0.7533	0.3069
MNIST vs NotMNIST	0.7853	0.8438	0.7033	0.3978
MNIST vs Omniglot	0.7906	0.8687	0.7509	0.3871
Noise vs CIFAR-10	0.4695	0.5140	0.4995	0.9712
Noise vs CIFAR-100	0.4855	0.5237	0.5095	0.9711
Noise vs CelebA	0.4503	0.3421	0.3215	0.9771
Noise vs Constant	0.5471	0.5690	0.5582	0.9479
Noise vs LSUN	0.5065	0.5272	0.5125	0.9580
Noise vs SVHN	0.4046	0.2867	0.2664	0.9835
Noise vs TinyImagenet	0.4671	0.5175	0.5031	0.9757

Noise vs iSUN	0.5105	0.5569	0.5426	0.9550
Noise28 vs Constant28	0.3872	0.4492	0.4303	0.9749
Noise28 vs FashionMNIST	0.4761	0.4983	0.4815	0.9552
Noise28 vs KMNIST	0.5228	0.5213	0.5058	0.9015
Noise28 vs MNIST	0.5188	0.5200	0.5047	0.9006
Noise28 vs NotMNIST	0.5320	0.5296	0.5149	0.8942
Noise28 vs Omniglot	0.5142	0.5682	0.5543	0.9056
NotMNIST vs Constant28	0.9127	0.9310	0.9059	0.6457
NotMNIST vs FashionMNIST	0.8328	0.8610	0.7828	0.6819
NotMNIST vs KMNIST	0.8178	0.8494	0.7617	0.6815
NotMNIST vs MNIST	0.7944	0.8337	0.7345	0.7222
NotMNIST vs Noise28	0.8418	0.8696	0.7989	0.7447
NotMNIST vs Omniglot	0.8325	0.8814	0.8153	0.6784
Omniglot vs Constant28	0.5509	0.5596	0.5588	0.9834
Omniglot vs FashionMNIST	0.5860	0.5524	0.5499	0.9279
Omniglot vs KMNIST	0.5960	0.5617	0.5599	0.9142
Omniglot vs MNIST	0.5912	0.5513	0.5486	0.9154
Omniglot vs Noise28	0.5452	0.5488	0.5480	0.9676
Omniglot vs NotMNIST	0.6107	0.5739	0.5722	0.8942
SVHN vs CIFAR-10	0.8039	0.9214	0.8878	0.6753
SVHN vs CIFAR-100	0.7972	0.9185	0.8827	0.6769
SVHN vs CelebA	0.8127	0.8673	0.8090	0.6549
SVHN vs Constant	0.7449	0.9013	0.8588	0.8702
SVHN vs LSUN	0.8022	0.9205	0.8861	0.6630
SVHN vs Noise	0.7926	0.9178	0.8824	0.7623
SVHN vs TinyImagenet	0.7994	0.9209	0.8866	0.6837
SVHN vs iSUN	0.8011	0.9277	0.8967	0.6742
TinyImagenet vs CelebA	0.5579	0.4183	0.4168	0.9355
TinyImagenet vs Constant	0.3864	0.4696	0.4665	0.9944
TinyImagenet vs LSUN	0.5857	0.5850	0.5832	0.9083
TinyImagenet vs Noise	0.5237	0.5715	0.5709	0.9680
TinyImagenet vs SVHN	0.3667	0.2803	0.2778	0.9963
TinyImagenet vs iSUN	0.5712	0.5956	0.5937	0.9099
Average	0.6004	0.6422	0.6087	0.8271

Table 161: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.0004$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6601	0.5782	0.4939	0.9247
CIFAR-10 vs Constant	0.6073	0.6752	0.6125	0.9490
CIFAR-10 vs LSUN	0.6434	0.6922	0.6309	0.9309
CIFAR-10 vs Noise	0.6094	0.6859	0.6310	0.9730
CIFAR-10 vs SVHN	0.5883	0.4927	0.3887	0.9691
CIFAR-10 vs iSUN	0.6288	0.7040	0.6448	0.9386
CIFAR-100 vs CelebA	0.6199	0.5236	0.5176	0.9287
CIFAR-100 vs Constant	0.5568	0.6323	0.6304	0.9581
CIFAR-100 vs LSUN	0.6548	0.6739	0.6682	0.8900
CIFAR-100 vs Noise	0.5544	0.6455	0.6436	0.9815
CIFAR-100 vs SVHN	0.4852	0.4068	0.3997	0.9887
CIFAR-100 vs iSUN	0.6355	0.6809	0.6752	0.9020
CelebA vs CIFAR-10	0.4338	0.6217	0.6217	0.9706
CelebA vs CIFAR-100	0.4444	0.6276	0.6276	0.9659
CelebA vs Constant	0.4730	0.6554	0.6554	0.9606
CelebA vs LSUN	0.4306	0.6201	0.6202	0.9723
CelebA vs Noise	0.2773	0.5422	0.5422	0.9983
CelebA vs SVHN	0.4490	0.3912	0.3913	0.9531
CelebA vs TinyImagenet	0.4284	0.6239	0.6239	0.9686
CelebA vs iSUN	0.4177	0.6396	0.6397	0.9765
Constant vs CIFAR-10	0.4963	0.4879	0.4880	0.9459
Constant vs CIFAR-100	0.5025	0.4956	0.4957	0.9418
Constant vs CelebA	0.4982	0.3226	0.3226	0.9537
Constant vs LSUN	0.4989	0.4957	0.4958	0.9571
Constant vs Noise	0.3817	0.4083	0.4084	0.9728
Constant vs SVHN	0.5442	0.2925	0.2925	0.9135
Constant vs TinyImagenet	0.4954	0.4871	0.4872	0.9412
Constant vs iSUN	0.4889	0.5096	0.5097	0.9573
Constant28 vs FashionMNIST	0.2213	0.3782	0.3783	0.9956
Constant28 vs KMNIST	0.1792	0.3505	0.3506	0.9979
Constant28 vs MNIST	0.1300	0.3286	0.3287	0.9996
Constant28 vs Noise28	0.1685	0.3388	0.3389	0.9997
Constant28 vs NotMNIST	0.2375	0.3687	0.3688	0.9879
Constant28 vs Omniglot	0.1634	0.3841	0.3842	0.9969
FashionMNIST vs Constant28	0.8547	0.8687	0.8179	0.6053
FashionMNIST vs KMNIST	0.8169	0.8385	0.7739	0.6432
FashionMNIST vs MNIST	0.8179	0.8409	0.7791	0.6686
FashionMNIST vs Noise28	0.8471	0.8695	0.8262	0.7218
FashionMNIST vs NotMNIST	0.8011	0.8261	0.7537	0.6587
FashionMNIST vs Omniglot	0.8264	0.8701	0.8212	0.6576
KMNIST vs Constant28	0.8746	0.8968	0.8293	0.4367
KMNIST vs FashionMNIST	0.7790	0.8319	0.7054	0.5124
KMNIST vs MNIST	0.7955	0.8414	0.7231	0.4964
KMNIST vs Noise28	0.8252	0.8608	0.7600	0.4447
KMNIST vs NotMNIST	0.8392	0.8686	0.7735	0.4165
KMNIST vs Omniglot	0.8066	0.8703	0.7750	0.4818
MNIST vs Constant28	0.8894	0.9075	0.8273	0.1924
MNIST vs FashionMNIST	0.8012	0.8524	0.7198	0.3665
MNIST vs KMNIST	0.8020	0.8527	0.7205	0.3653
MNIST vs Noise28	0.8322	0.8701	0.7544	0.3050
MNIST vs NotMNIST	0.7852	0.8438	0.7031	0.3985
MNIST vs Omniglot	0.7910	0.8690	0.7513	0.3866
Noise vs CIFAR-10	0.4669	0.4998	0.4859	0.9392
Noise vs CIFAR-100	0.4780	0.5087	0.4956	0.9431
Noise vs CelebA	0.4373	0.3267	0.3067	0.9416
Noise vs Constant	0.6078	0.5995	0.5893	0.9084
Noise vs LSUN	0.5082	0.5241	0.5102	0.9461
Noise vs SVHN	0.4027	0.2598	0.2382	0.9132
Noise vs TinyImagenet	0.4601	0.5029	0.4891	0.9403

Noise vs iSUN	0.5106	0.5532	0.5397	0.9461
Noise28 vs Constant28	0.3993	0.4452	0.4265	0.9249
Noise28 vs FashionMNIST	0.4768	0.4961	0.4800	0.9478
Noise28 vs KMNIST	0.5565	0.5356	0.5209	0.8783
Noise28 vs MNIST	0.5584	0.5365	0.5220	0.8694
Noise28 vs NotMNIST	0.5681	0.5450	0.5310	0.8616
Noise28 vs Omniglot	0.5477	0.5810	0.5679	0.8711
NotMNIST vs Constant28	0.8972	0.9150	0.8770	0.6248
NotMNIST vs FashionMNIST	0.8308	0.8605	0.7826	0.7231
NotMNIST vs KMNIST	0.8163	0.8488	0.7609	0.6884
NotMNIST vs MNIST	0.7933	0.8331	0.7337	0.7238
NotMNIST vs Noise28	0.8374	0.8684	0.7982	0.8491
NotMNIST vs Omniglot	0.8313	0.8811	0.8151	0.6830
Omniglot vs Constant28	0.5126	0.5330	0.5322	0.9896
Omniglot vs FashionMNIST	0.5712	0.5457	0.5433	0.9378
Omniglot vs KMNIST	0.6018	0.5645	0.5626	0.9059
Omniglot vs MNIST	0.5969	0.5540	0.5513	0.9076
Omniglot vs Noise28	0.4911	0.5231	0.5224	0.9824
Omniglot vs NotMNIST	0.6130	0.5749	0.5733	0.8887
SVHN vs CIFAR-10	0.8077	0.9224	0.8889	0.6374
SVHN vs CIFAR-100	0.7995	0.9190	0.8830	0.6444
SVHN vs CelebA	0.8164	0.8686	0.8103	0.6176
SVHN vs Constant	0.7314	0.8950	0.8473	0.7993
SVHN vs LSUN	0.8070	0.9218	0.8875	0.6161
SVHN vs Noise	0.7894	0.9169	0.8819	0.7846
SVHN vs TinyImagenet	0.8021	0.9216	0.8874	0.6521
SVHN vs iSUN	0.8041	0.9283	0.8971	0.6390
TinyImagenet vs CelebA	0.5406	0.4063	0.4047	0.9434
TinyImagenet vs Constant	0.4169	0.4691	0.4659	0.9786
TinyImagenet vs LSUN	0.6102	0.6015	0.5998	0.8956
TinyImagenet vs Noise	0.4694	0.5366	0.5360	0.9810
TinyImagenet vs SVHN	0.2911	0.2394	0.2370	0.9959
TinyImagenet vs iSUN	0.5910	0.6085	0.6067	0.9027
Average	0.5982	0.6393	0.6056	0.8178

Table 162: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.0008$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6561	0.5743	0.4904	0.8936
CIFAR-10 vs Constant	0.6150	0.6745	0.6103	0.8956
CIFAR-10 vs LSUN	0.6416	0.6909	0.6303	0.9188
CIFAR-10 vs Noise	0.5954	0.6737	0.6160	0.9323
CIFAR-10 vs SVHN	0.5768	0.4773	0.3669	0.9212
CIFAR-10 vs iSUN	0.6264	0.7022	0.6432	0.9243
CIFAR-100 vs CelebA	0.6098	0.5153	0.5095	0.9307
CIFAR-100 vs Constant	0.5835	0.6374	0.6354	0.9324
CIFAR-100 vs LSUN	0.6663	0.6822	0.6767	0.8858
CIFAR-100 vs Noise	0.5182	0.6193	0.6176	0.9850
CIFAR-100 vs SVHN	0.4566	0.3801	0.3736	0.9854
CIFAR-100 vs iSUN	0.6446	0.6869	0.6813	0.9010
CelebA vs CIFAR-10	0.4338	0.6212	0.6213	0.9709
CelebA vs CIFAR-100	0.4450	0.6279	0.6279	0.9639
CelebA vs Constant	0.4885	0.6663	0.6663	0.9586
CelebA vs LSUN	0.4330	0.6217	0.6218	0.9714
CelebA vs Noise	0.2766	0.5398	0.5398	0.9979
CelebA vs SVHN	0.4449	0.3877	0.3878	0.9529
CelebA vs TinyImagenet	0.4282	0.6234	0.6235	0.9681
CelebA vs iSUN	0.4189	0.6402	0.6403	0.9756
Constant vs CIFAR-10	0.4948	0.4867	0.4868	0.9474
Constant vs CIFAR-100	0.5018	0.4951	0.4952	0.9443
Constant vs CelebA	0.4965	0.3215	0.3216	0.9547
Constant vs LSUN	0.4979	0.4947	0.4948	0.9575
Constant vs Noise	0.3861	0.4103	0.4104	0.9718
Constant vs SVHN	0.5418	0.2909	0.2910	0.9151
Constant vs TinyImagenet	0.4964	0.4879	0.4880	0.9441
Constant vs iSUN	0.4878	0.5088	0.5089	0.9592
Constant28 vs FashionMNIST	0.2185	0.3761	0.3762	0.9960
Constant28 vs KMNIST	0.1761	0.3486	0.3487	0.9983
Constant28 vs MNIST	0.1258	0.3265	0.3266	0.9999
Constant28 vs Noise28	0.1670	0.3380	0.3380	1.0000
Constant28 vs NotMNIST	0.2328	0.3669	0.3669	0.9896
Constant28 vs Omniglot	0.1615	0.3826	0.3827	0.9970
FashionMNIST vs Constant28	0.8510	0.8624	0.8066	0.5501
FashionMNIST vs KMNIST	0.8198	0.8398	0.7755	0.6122
FashionMNIST vs MNIST	0.8200	0.8417	0.7797	0.6397
FashionMNIST vs Noise28	0.8434	0.8670	0.8235	0.7096
FashionMNIST vs NotMNIST	0.8041	0.8273	0.7549	0.6264
FashionMNIST vs Omniglot	0.8294	0.8716	0.8231	0.6286
KMNIST vs Constant28	0.8698	0.8932	0.8229	0.4749
KMNIST vs FashionMNIST	0.7792	0.8321	0.7059	0.5114
KMNIST vs MNIST	0.7963	0.8418	0.7241	0.4965
KMNIST vs Noise28	0.8222	0.8593	0.7580	0.4713
KMNIST vs NotMNIST	0.8396	0.8688	0.7739	0.4132
KMNIST vs Omniglot	0.8068	0.8705	0.7753	0.4788
MNIST vs Constant28	0.8900	0.9080	0.8284	0.1907
MNIST vs FashionMNIST	0.8010	0.8523	0.7196	0.3671
MNIST vs KMNIST	0.8027	0.8531	0.7211	0.3645
MNIST vs Noise28	0.8311	0.8696	0.7536	0.3059
MNIST vs NotMNIST	0.7861	0.8443	0.7040	0.3970
MNIST vs Omniglot	0.7911	0.8690	0.7513	0.3869
Noise vs CIFAR-10	0.4690	0.4899	0.4736	0.9241
Noise vs CIFAR-100	0.4857	0.5027	0.4873	0.9249
Noise vs CelebA	0.4565	0.3248	0.3027	0.9198
Noise vs Constant	0.6297	0.6227	0.6123	0.9390
Noise vs LSUN	0.5130	0.5248	0.5098	0.9390
Noise vs SVHN	0.4256	0.2562	0.2304	0.8763
Noise vs TinyImagenet	0.4738	0.4975	0.4818	0.9185

Noise vs iSUN	0.5026	0.5445	0.5303	0.9424
Noise28 vs Constant28	0.4273	0.4510	0.4332	0.8726
Noise28 vs FashionMNIST	0.4855	0.4979	0.4828	0.9444
Noise28 vs KMNIST	0.5786	0.5485	0.5348	0.8871
Noise28 vs MNIST	0.5891	0.5528	0.5393	0.8781
Noise28 vs NotMNIST	0.5951	0.5614	0.5481	0.8706
Noise28 vs Omniglot	0.5754	0.5959	0.5834	0.8734
NotMNIST vs Constant28	0.8896	0.9078	0.8646	0.6056
NotMNIST vs FashionMNIST	0.8291	0.8601	0.7824	0.7433
NotMNIST vs KMNIST	0.8154	0.8486	0.7608	0.6856
NotMNIST vs MNIST	0.7932	0.8334	0.7343	0.7166
NotMNIST vs Noise28	0.8337	0.8668	0.7965	0.8851
NotMNIST vs Omniglot	0.8301	0.8807	0.8147	0.6910
Omniglot vs Constant28	0.4938	0.5143	0.5132	0.9886
Omniglot vs FashionMNIST	0.5571	0.5384	0.5360	0.9450
Omniglot vs KMNIST	0.6065	0.5667	0.5649	0.9015
Omniglot vs MNIST	0.6023	0.5568	0.5541	0.9013
Omniglot vs Noise28	0.4439	0.4983	0.4975	0.9894
Omniglot vs NotMNIST	0.6148	0.5758	0.5742	0.8815
SVHN vs CIFAR-10	0.8081	0.9224	0.8890	0.6442
SVHN vs CIFAR-100	0.7999	0.9191	0.8833	0.6501
SVHN vs CelebA	0.8168	0.8688	0.8105	0.6269
SVHN vs Constant	0.7278	0.8927	0.8421	0.7508
SVHN vs LSUN	0.8084	0.9222	0.8880	0.6157
SVHN vs Noise	0.7811	0.9140	0.8783	0.7933
SVHN vs TinyImagenet	0.8025	0.9217	0.8877	0.6586
SVHN vs iSUN	0.8059	0.9290	0.8982	0.6435
TinyImagenet vs CelebA	0.5284	0.3934	0.3919	0.9454
TinyImagenet vs Constant	0.4837	0.4922	0.4891	0.9280
TinyImagenet vs LSUN	0.6223	0.6137	0.6121	0.8968
TinyImagenet vs Noise	0.4397	0.5087	0.5081	0.9827
TinyImagenet vs SVHN	0.2903	0.2212	0.2181	0.9785
TinyImagenet vs iSUN	0.6018	0.6189	0.6172	0.9049
Average	0.5996	0.6381	0.6041	0.8123

Table 163: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.0012$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6523	0.5687	0.4834	0.8631
CIFAR-10 vs Constant	0.6254	0.6756	0.6100	0.8384
CIFAR-10 vs LSUN	0.6395	0.6891	0.6286	0.8948
CIFAR-10 vs Noise	0.5884	0.6612	0.5969	0.8884
CIFAR-10 vs SVHN	0.5699	0.4638	0.3446	0.8780
CIFAR-10 vs iSUN	0.6249	0.7005	0.6415	0.9015
CIFAR-100 vs CelebA	0.6024	0.5067	0.5008	0.9313
CIFAR-100 vs Constant	0.6129	0.6461	0.6437	0.8887
CIFAR-100 vs LSUN	0.6719	0.6866	0.6812	0.8859
CIFAR-100 vs Noise	0.4971	0.5972	0.5953	0.9773
CIFAR-100 vs SVHN	0.4501	0.3582	0.3501	0.9707
CIFAR-100 vs iSUN	0.6486	0.6902	0.6846	0.9008
CelebA vs CIFAR-10	0.4348	0.6216	0.6216	0.9701
CelebA vs CIFAR-100	0.4462	0.6286	0.6286	0.9634
CelebA vs Constant	0.5001	0.6754	0.6754	0.9567
CelebA vs LSUN	0.4348	0.6234	0.6235	0.9702
CelebA vs Noise	0.2897	0.5438	0.5438	0.9975
CelebA vs SVHN	0.4448	0.3869	0.3869	0.9544
CelebA vs TinyImagenet	0.4294	0.6237	0.6238	0.9679
CelebA vs iSUN	0.4202	0.6411	0.6412	0.9757
Constant vs CIFAR-10	0.4936	0.4858	0.4859	0.9461
Constant vs CIFAR-100	0.5009	0.4956	0.4957	0.9440
Constant vs CelebA	0.4959	0.3215	0.3216	0.9555
Constant vs LSUN	0.4970	0.4945	0.4946	0.9597
Constant vs Noise	0.3927	0.4142	0.4143	0.9707
Constant vs SVHN	0.5414	0.2905	0.2905	0.9158
Constant vs TinyImagenet	0.4966	0.4886	0.4887	0.9447
Constant vs iSUN	0.4871	0.5085	0.5086	0.9580
Constant28 vs FashionMNIST	0.2162	0.3745	0.3746	0.9962
Constant28 vs KMNIST	0.1733	0.3468	0.3469	0.9987
Constant28 vs MNIST	0.1227	0.3251	0.3252	0.9998
Constant28 vs Noise28	0.1646	0.3368	0.3368	1.0000
Constant28 vs NotMNIST	0.2291	0.3654	0.3655	0.9899
Constant28 vs Omniglot	0.1608	0.3819	0.3820	0.9983
FashionMNIST vs Constant28	0.8524	0.8620	0.8058	0.5192
FashionMNIST vs KMNIST	0.8209	0.8403	0.7757	0.6052
FashionMNIST vs MNIST	0.8213	0.8423	0.7806	0.6375
FashionMNIST vs Noise28	0.8389	0.8634	0.8194	0.6995
FashionMNIST vs NotMNIST	0.8058	0.8279	0.7558	0.6195
FashionMNIST vs Omniglot	0.8298	0.8713	0.8227	0.6217
KMNIST vs Constant28	0.8639	0.8887	0.8147	0.5001
KMNIST vs FashionMNIST	0.7795	0.8324	0.7066	0.5177
KMNIST vs MNIST	0.7968	0.8421	0.7246	0.4963
KMNIST vs Noise28	0.8184	0.8572	0.7549	0.5297
KMNIST vs NotMNIST	0.8397	0.8689	0.7740	0.4126
KMNIST vs Omniglot	0.8068	0.8705	0.7754	0.4804
MNIST vs Constant28	0.8828	0.9029	0.8185	0.2046
MNIST vs FashionMNIST	0.8008	0.8522	0.7194	0.3675
MNIST vs KMNIST	0.8028	0.8532	0.7211	0.3646
MNIST vs Noise28	0.8239	0.8654	0.7456	0.3195
MNIST vs NotMNIST	0.7862	0.8444	0.7040	0.3971
MNIST vs Omniglot	0.7919	0.8694	0.7520	0.3856
Noise vs CIFAR-10	0.4828	0.4952	0.4738	0.9171
Noise vs CIFAR-100	0.4871	0.5011	0.4793	0.9211
Noise vs CelebA	0.4681	0.3309	0.3024	0.9181
Noise vs Constant	0.6358	0.6419	0.6302	0.9510
Noise vs LSUN	0.5054	0.5203	0.5008	0.9372
Noise vs SVHN	0.4383	0.2640	0.2315	0.8709
Noise vs TinyImagenet	0.4843	0.5014	0.4791	0.9145

Noise vs iSUN	0.4998	0.5436	0.5252	0.9445
Noise28 vs Constant28	0.4446	0.4543	0.4377	0.8618
Noise28 vs FashionMNIST	0.4880	0.4968	0.4828	0.9496
Noise28 vs KMNIST	0.5794	0.5549	0.5419	0.9336
Noise28 vs MNIST	0.5983	0.5642	0.5512	0.9229
Noise28 vs NotMNIST	0.5983	0.5691	0.5567	0.9236
Noise28 vs Omniglot	0.5842	0.6057	0.5937	0.9238
NotMNIST vs Constant28	0.8835	0.9018	0.8542	0.5857
NotMNIST vs FashionMNIST	0.8273	0.8594	0.7815	0.7644
NotMNIST vs KMNIST	0.8140	0.8480	0.7600	0.6941
NotMNIST vs MNIST	0.7932	0.8337	0.7350	0.7148
NotMNIST vs Noise28	0.8293	0.8642	0.7929	0.8825
NotMNIST vs Omniglot	0.8294	0.8807	0.8149	0.6974
Omniglot vs Constant28	0.4818	0.4968	0.4953	0.9812
Omniglot vs FashionMNIST	0.5440	0.5308	0.5285	0.9502
Omniglot vs KMNIST	0.6113	0.5694	0.5676	0.8992
Omniglot vs MNIST	0.6074	0.5596	0.5570	0.8988
Omniglot vs Noise28	0.4045	0.4748	0.4740	0.9923
Omniglot vs NotMNIST	0.6164	0.5765	0.5750	0.8813
SVHN vs CIFAR-10	0.8051	0.9216	0.8877	0.6613
SVHN vs CIFAR-100	0.7967	0.9182	0.8821	0.6698
SVHN vs CelebA	0.8146	0.8678	0.8092	0.6404
SVHN vs Constant	0.7320	0.8936	0.8422	0.7155
SVHN vs LSUN	0.8057	0.9213	0.8865	0.6359
SVHN vs Noise	0.7678	0.9085	0.8693	0.7819
SVHN vs TinyImagenet	0.7990	0.9206	0.8862	0.6748
SVHN vs iSUN	0.8029	0.9280	0.8968	0.6584
TinyImagenet vs CelebA	0.5218	0.3827	0.3813	0.9408
TinyImagenet vs Constant	0.5491	0.5232	0.5199	0.8543
TinyImagenet vs LSUN	0.6197	0.6158	0.6141	0.9017
TinyImagenet vs Noise	0.4290	0.4903	0.4898	0.9687
TinyImagenet vs SVHN	0.3151	0.2153	0.2104	0.9491
TinyImagenet vs iSUN	0.6008	0.6221	0.6204	0.9104
Average	0.6002	0.6374	0.6025	0.8111

Table 164: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.0016$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6496	0.5627	0.4747	0.8479
CIFAR-10 vs Constant	0.6349	0.6778	0.6109	0.8182
CIFAR-10 vs LSUN	0.6355	0.6855	0.6242	0.8862
CIFAR-10 vs Noise	0.5832	0.6508	0.5784	0.8589
CIFAR-10 vs SVHN	0.5697	0.4566	0.3307	0.8482
CIFAR-10 vs iSUN	0.6230	0.6980	0.6382	0.8876
CIFAR-100 vs CelebA	0.5963	0.4976	0.4918	0.9214
CIFAR-100 vs Constant	0.6387	0.6557	0.6529	0.8398
CIFAR-100 vs LSUN	0.6701	0.6865	0.6811	0.8863
CIFAR-100 vs Noise	0.4863	0.5810	0.5793	0.9603
CIFAR-100 vs SVHN	0.4533	0.3407	0.3298	0.9483
CIFAR-100 vs iSUN	0.6492	0.6914	0.6861	0.8999
CelebA vs CIFAR-10	0.4360	0.6222	0.6223	0.9700
CelebA vs CIFAR-100	0.4479	0.6297	0.6297	0.9621
CelebA vs Constant	0.5089	0.6828	0.6828	0.9559
CelebA vs LSUN	0.4366	0.6249	0.6250	0.9703
CelebA vs Noise	0.3083	0.5512	0.5513	0.9968
CelebA vs SVHN	0.4475	0.3880	0.3881	0.9541
CelebA vs TinyImagenet	0.4306	0.6245	0.6246	0.9686
CelebA vs iSUN	0.4214	0.6421	0.6422	0.9761
Constant vs CIFAR-10	0.4911	0.4836	0.4837	0.9478
Constant vs CIFAR-100	0.5016	0.4965	0.4966	0.9456
Constant vs CelebA	0.4944	0.3203	0.3204	0.9555
Constant vs LSUN	0.4947	0.4922	0.4923	0.9602
Constant vs Noise	0.3990	0.4184	0.4185	0.9697
Constant vs SVHN	0.5402	0.2893	0.2894	0.9158
Constant vs TinyImagenet	0.4953	0.4878	0.4879	0.9460
Constant vs iSUN	0.4858	0.5071	0.5072	0.9592
Constant28 vs FashionMNIST	0.2147	0.3729	0.3730	0.9967
Constant28 vs KMNIST	0.1719	0.3456	0.3456	0.9984
Constant28 vs MNIST	0.1209	0.3243	0.3243	0.9997
Constant28 vs Noise28	0.1650	0.3366	0.3366	0.9999
Constant28 vs NotMNIST	0.2266	0.3643	0.3643	0.9907
Constant28 vs Omniglot	0.1611	0.3818	0.3819	0.9988
FashionMNIST vs Constant28	0.8503	0.8592	0.8011	0.5031
FashionMNIST vs KMNIST	0.8205	0.8401	0.7756	0.6046
FashionMNIST vs MNIST	0.8206	0.8419	0.7799	0.6453
FashionMNIST vs Noise28	0.8320	0.8569	0.8097	0.6871
FashionMNIST vs NotMNIST	0.8067	0.8285	0.7565	0.6156
FashionMNIST vs Omniglot	0.8299	0.8716	0.8233	0.6214
KMNIST vs Constant28	0.8542	0.8813	0.8009	0.5189
KMNIST vs FashionMNIST	0.7794	0.8324	0.7068	0.5247
KMNIST vs MNIST	0.7971	0.8423	0.7249	0.4944
KMNIST vs Noise28	0.8122	0.8534	0.7483	0.5759
KMNIST vs NotMNIST	0.8397	0.8688	0.7737	0.4112
KMNIST vs Omniglot	0.8072	0.8708	0.7760	0.4803
MNIST vs Constant28	0.8749	0.8974	0.8076	0.2206
MNIST vs FashionMNIST	0.8006	0.8522	0.7193	0.3680
MNIST vs KMNIST	0.8037	0.8537	0.7220	0.3632
MNIST vs Noise28	0.8144	0.8600	0.7350	0.3382
MNIST vs NotMNIST	0.7867	0.8447	0.7044	0.3966
MNIST vs Omniglot	0.7917	0.8694	0.7517	0.3865
Noise vs CIFAR-10	0.4824	0.5041	0.4730	0.9190
Noise vs CIFAR-100	0.4975	0.5166	0.4854	0.9273
Noise vs CelebA	0.4809	0.3498	0.3084	0.9192
Noise vs Constant	0.6288	0.6547	0.6407	0.9593
Noise vs LSUN	0.5053	0.5263	0.4989	0.9387
Noise vs SVHN	0.4566	0.2854	0.2391	0.8753
Noise vs TinyImagenet	0.4868	0.5121	0.4806	0.9161

Noise vs iSUN	0.5001	0.5507	0.5234	0.9421
Noise28 vs Constant28	0.4649	0.4639	0.4473	0.8618
Noise28 vs FashionMNIST	0.4943	0.5006	0.4865	0.9525
Noise28 vs KMNIST	0.5760	0.5598	0.5476	0.9633
Noise28 vs MNIST	0.5948	0.5704	0.5580	0.9543
Noise28 vs NotMNIST	0.5952	0.5760	0.5641	0.9593
Noise28 vs Omniglot	0.5851	0.6145	0.6030	0.9559
NotMNIST vs Constant28	0.8735	0.8925	0.8375	0.5811
NotMNIST vs FashionMNIST	0.8255	0.8584	0.7801	0.7797
NotMNIST vs KMNIST	0.8135	0.8481	0.7602	0.7060
NotMNIST vs MNIST	0.7929	0.8338	0.7351	0.7172
NotMNIST vs Noise28	0.8222	0.8589	0.7844	0.8719
NotMNIST vs Omniglot	0.8288	0.8806	0.8149	0.7086
Omniglot vs Constant28	0.4776	0.4836	0.4817	0.9727
Omniglot vs FashionMNIST	0.5319	0.5229	0.5206	0.9528
Omniglot vs KMNIST	0.6154	0.5718	0.5700	0.8991
Omniglot vs MNIST	0.6124	0.5624	0.5598	0.8956
Omniglot vs Noise28	0.3741	0.4535	0.4526	0.9938
Omniglot vs NotMNIST	0.6180	0.5773	0.5757	0.8766
SVHN vs CIFAR-10	0.7998	0.9197	0.8850	0.6840
SVHN vs CIFAR-100	0.7915	0.9163	0.8791	0.6898
SVHN vs CelebA	0.8082	0.8643	0.8039	0.6704
SVHN vs Constant	0.7317	0.8930	0.8401	0.6898
SVHN vs LSUN	0.8021	0.9203	0.8852	0.6667
SVHN vs Noise	0.7509	0.9019	0.8576	0.7778
SVHN vs TinyImagenet	0.7933	0.9186	0.8830	0.6949
SVHN vs iSUN	0.7967	0.9261	0.8937	0.6887
TinyImagenet vs CelebA	0.5175	0.3736	0.3720	0.9310
TinyImagenet vs Constant	0.5954	0.5503	0.5468	0.7985
TinyImagenet vs LSUN	0.6118	0.6135	0.6119	0.9147
TinyImagenet vs Noise	0.4272	0.4793	0.4786	0.9492
TinyImagenet vs SVHN	0.3404	0.2143	0.2078	0.9227
TinyImagenet vs iSUN	0.5962	0.6216	0.6200	0.9275
Average	0.6001	0.6374	0.6008	0.8120

Table 165: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.002$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6456	0.5566	0.4647	0.8440
CIFAR-10 vs Constant	0.6414	0.6793	0.6100	0.7996
CIFAR-10 vs LSUN	0.6334	0.6838	0.6218	0.8789
CIFAR-10 vs Noise	0.5843	0.6459	0.5670	0.8294
CIFAR-10 vs SVHN	0.5695	0.4520	0.3208	0.8241
CIFAR-10 vs iSUN	0.6190	0.6945	0.6327	0.8806
CIFAR-100 vs CelebA	0.5922	0.4885	0.4826	0.9117
CIFAR-100 vs Constant	0.6560	0.6629	0.6598	0.8058
CIFAR-100 vs LSUN	0.6662	0.6848	0.6794	0.8829
CIFAR-100 vs Noise	0.4837	0.5673	0.5649	0.9410
CIFAR-100 vs SVHN	0.4598	0.3267	0.3113	0.9246
CIFAR-100 vs iSUN	0.6439	0.6892	0.6840	0.9057
CelebA vs CIFAR-10	0.4377	0.6232	0.6233	0.9690
CelebA vs CIFAR-100	0.4495	0.6308	0.6309	0.9619
CelebA vs Constant	0.5145	0.6878	0.6878	0.9553
CelebA vs LSUN	0.4376	0.6259	0.6260	0.9697
CelebA vs Noise	0.3303	0.5608	0.5608	0.9961
CelebA vs SVHN	0.4516	0.3900	0.3901	0.9531
CelebA vs TinyImagenet	0.4318	0.6252	0.6253	0.9679
CelebA vs iSUN	0.4224	0.6426	0.6427	0.9760
Constant vs CIFAR-10	0.4902	0.4826	0.4827	0.9503
Constant vs CIFAR-100	0.5003	0.4949	0.4951	0.9464
Constant vs CelebA	0.4940	0.3198	0.3198	0.9569
Constant vs LSUN	0.4944	0.4920	0.4921	0.9608
Constant vs Noise	0.3977	0.4166	0.4167	0.9664
Constant vs SVHN	0.5392	0.2884	0.2885	0.9186
Constant vs TinyImagenet	0.4939	0.4864	0.4865	0.9459
Constant vs iSUN	0.4842	0.5064	0.5065	0.9589
Constant28 vs FashionMNIST	0.2137	0.3720	0.3721	0.9969
Constant28 vs KMNIST	0.1710	0.3448	0.3449	0.9985
Constant28 vs MNIST	0.1203	0.3240	0.3240	0.9996
Constant28 vs Noise28	0.1641	0.3364	0.3364	0.9999
Constant28 vs NotMNIST	0.2247	0.3636	0.3637	0.9909
Constant28 vs Omniglot	0.1633	0.3822	0.3822	0.9990
FashionMNIST vs Constant28	0.8471	0.8566	0.7977	0.4974
FashionMNIST vs KMNIST	0.8199	0.8399	0.7755	0.6155
FashionMNIST vs MNIST	0.8187	0.8409	0.7787	0.6509
FashionMNIST vs Noise28	0.8243	0.8494	0.7973	0.6728
FashionMNIST vs NotMNIST	0.8058	0.8280	0.7559	0.6193
FashionMNIST vs Omniglot	0.8290	0.8714	0.8232	0.6208
KMNIST vs Constant28	0.8480	0.8766	0.7917	0.5233
KMNIST vs FashionMNIST	0.7780	0.8317	0.7055	0.5356
KMNIST vs MNIST	0.7967	0.8421	0.7244	0.4937
KMNIST vs Noise28	0.8018	0.8468	0.7361	0.6114
KMNIST vs NotMNIST	0.8401	0.8691	0.7741	0.4100
KMNIST vs Omniglot	0.8072	0.8708	0.7761	0.4805
MNIST vs Constant28	0.8652	0.8908	0.7945	0.2405
MNIST vs FashionMNIST	0.7994	0.8516	0.7180	0.3703
MNIST vs KMNIST	0.8042	0.8540	0.7225	0.3626
MNIST vs Noise28	0.8015	0.8528	0.7208	0.3641
MNIST vs NotMNIST	0.7864	0.8446	0.7040	0.3976
MNIST vs Omniglot	0.7918	0.8694	0.7517	0.3865
Noise vs CIFAR-10	0.4899	0.5210	0.4791	0.9263
Noise vs CIFAR-100	0.4984	0.5281	0.4858	0.9225
Noise vs CelebA	0.4855	0.3668	0.3111	0.9185
Noise vs Constant	0.6179	0.6568	0.6390	0.9610
Noise vs LSUN	0.5056	0.5384	0.4994	0.9412
Noise vs SVHN	0.4680	0.3071	0.2452	0.8856
Noise vs TinyImagenet	0.4891	0.5254	0.4824	0.9173

Noise vs iSUN	0.4971	0.5586	0.5221	0.9459
Noise28 vs Constant28	0.4880	0.4806	0.4627	0.8683
Noise28 vs FashionMNIST	0.4976	0.5045	0.4891	0.9515
Noise28 vs KMNIST	0.5699	0.5675	0.5549	0.9740
Noise28 vs MNIST	0.5874	0.5764	0.5635	0.9690
Noise28 vs NotMNIST	0.5881	0.5817	0.5695	0.9705
Noise28 vs Omniglot	0.5777	0.6199	0.6084	0.9682
NotMNIST vs Constant28	0.8674	0.8868	0.8272	0.5812
NotMNIST vs FashionMNIST	0.8229	0.8566	0.7772	0.7940
NotMNIST vs KMNIST	0.8130	0.8480	0.7604	0.7263
NotMNIST vs MNIST	0.7927	0.8337	0.7353	0.7292
NotMNIST vs Noise28	0.8129	0.8516	0.7714	0.8534
NotMNIST vs Omniglot	0.8275	0.8799	0.8139	0.7306
Omniglot vs Constant28	0.4755	0.4720	0.4689	0.9604
Omniglot vs FashionMNIST	0.5209	0.5151	0.5129	0.9550
Omniglot vs KMNIST	0.6197	0.5745	0.5727	0.8979
Omniglot vs MNIST	0.6171	0.5653	0.5628	0.8962
Omniglot vs Noise28	0.3512	0.4357	0.4350	0.9946
Omniglot vs NotMNIST	0.6194	0.5777	0.5762	0.8735
SVHN vs CIFAR-10	0.7923	0.9170	0.8802	0.7001
SVHN vs CIFAR-100	0.7840	0.9137	0.8748	0.7079
SVHN vs CelebA	0.8004	0.8601	0.7970	0.6909
SVHN vs Constant	0.7345	0.8939	0.8407	0.6673
SVHN vs LSUN	0.7965	0.9186	0.8825	0.6897
SVHN vs Noise	0.7381	0.8969	0.8485	0.7636
SVHN vs TinyImagenet	0.7868	0.9164	0.8792	0.7101
SVHN vs iSUN	0.7896	0.9238	0.8902	0.7109
TinyImagenet vs CelebA	0.5145	0.3657	0.3637	0.9317
TinyImagenet vs Constant	0.6315	0.5776	0.5741	0.7704
TinyImagenet vs LSUN	0.6036	0.6100	0.6084	0.9283
TinyImagenet vs Noise	0.4309	0.4718	0.4707	0.9378
TinyImagenet vs SVHN	0.3711	0.2195	0.2116	0.9018
TinyImagenet vs iSUN	0.5883	0.6177	0.6161	0.9318
Average	0.5994	0.6375	0.5990	0.8128

Table 166: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.0024$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6415	0.5496	0.4520	0.8376
CIFAR-10 vs Constant	0.6456	0.6793	0.6077	0.7822
CIFAR-10 vs LSUN	0.6308	0.6808	0.6154	0.8740
CIFAR-10 vs Noise	0.5819	0.6408	0.5567	0.8147
CIFAR-10 vs SVHN	0.5724	0.4516	0.3164	0.8082
CIFAR-10 vs iSUN	0.6161	0.6912	0.6267	0.8782
CIFAR-100 vs CelebA	0.5859	0.4781	0.4718	0.9102
CIFAR-100 vs Constant	0.6702	0.6695	0.6653	0.7853
CIFAR-100 vs LSUN	0.6590	0.6812	0.6760	0.8984
CIFAR-100 vs Noise	0.4831	0.5561	0.5524	0.9282
CIFAR-100 vs SVHN	0.4659	0.3162	0.2961	0.9089
CIFAR-100 vs iSUN	0.6397	0.6871	0.6820	0.9098
CelebA vs CIFAR-10	0.4395	0.6241	0.6242	0.9696
CelebA vs CIFAR-100	0.4510	0.6321	0.6321	0.9605
CelebA vs Constant	0.5181	0.6917	0.6917	0.9554
CelebA vs LSUN	0.4389	0.6267	0.6268	0.9708
CelebA vs Noise	0.3540	0.5718	0.5719	0.9939
CelebA vs SVHN	0.4572	0.3930	0.3931	0.9531
CelebA vs TinyImagenet	0.4340	0.6265	0.6266	0.9676
CelebA vs iSUN	0.4237	0.6437	0.6438	0.9750
Constant vs CIFAR-10	0.4897	0.4819	0.4820	0.9514
Constant vs CIFAR-100	0.4999	0.4944	0.4945	0.9473
Constant vs CelebA	0.4931	0.3189	0.3190	0.9561
Constant vs LSUN	0.4929	0.4906	0.4907	0.9606
Constant vs Noise	0.4083	0.4232	0.4233	0.9681
Constant vs SVHN	0.5400	0.2891	0.2891	0.9167
Constant vs TinyImagenet	0.4936	0.4859	0.4860	0.9446
Constant vs iSUN	0.4850	0.5068	0.5069	0.9593
Constant28 vs FashionMNIST	0.2136	0.3718	0.3719	0.9968
Constant28 vs KMNIST	0.1705	0.3443	0.3444	0.9979
Constant28 vs MNIST	0.1199	0.3238	0.3239	0.9999
Constant28 vs Noise28	0.1642	0.3362	0.3362	0.9998
Constant28 vs NotMNIST	0.2230	0.3630	0.3630	0.9920
Constant28 vs Omniglot	0.1665	0.3831	0.3832	0.9975
FashionMNIST vs Constant28	0.8464	0.8562	0.7972	0.4901
FashionMNIST vs KMNIST	0.8177	0.8389	0.7745	0.6192
FashionMNIST vs MNIST	0.8176	0.8405	0.7782	0.6507
FashionMNIST vs Noise28	0.8146	0.8400	0.7810	0.6508
FashionMNIST vs NotMNIST	0.8047	0.8278	0.7553	0.6190
FashionMNIST vs Omniglot	0.8260	0.8695	0.8204	0.6249
KMNIST vs Constant28	0.8395	0.8704	0.7799	0.5335
KMNIST vs FashionMNIST	0.7760	0.8306	0.7037	0.5513
KMNIST vs MNIST	0.7972	0.8424	0.7250	0.4962
KMNIST vs Noise28	0.7915	0.8404	0.7242	0.6321
KMNIST vs NotMNIST	0.8408	0.8695	0.7750	0.4111
KMNIST vs Omniglot	0.8078	0.8711	0.7769	0.4846
MNIST vs Constant28	0.8551	0.8842	0.7814	0.2614
MNIST vs FashionMNIST	0.7981	0.8510	0.7167	0.3730
MNIST vs KMNIST	0.8048	0.8545	0.7230	0.3619
MNIST vs Noise28	0.7917	0.8477	0.7104	0.3842
MNIST vs NotMNIST	0.7867	0.8449	0.7043	0.3977
MNIST vs Omniglot	0.7928	0.8701	0.7527	0.3850
Noise vs CIFAR-10	0.4949	0.5385	0.4855	0.9276
Noise vs CIFAR-100	0.4956	0.5377	0.4855	0.9310
Noise vs CelebA	0.4967	0.3895	0.3197	0.9233
Noise vs Constant	0.6098	0.6614	0.6385	0.9659
Noise vs LSUN	0.5059	0.5504	0.5010	0.9432
Noise vs SVHN	0.4765	0.3279	0.2511	0.9010
Noise vs TinyImagenet	0.4923	0.5408	0.4869	0.9240

Noise vs iSUN	0.5048	0.5744	0.5279	0.9426
Noise28 vs Constant28	0.5009	0.4941	0.4737	0.8763
Noise28 vs FashionMNIST	0.4963	0.5084	0.4905	0.9580
Noise28 vs KMNIST	0.5627	0.5728	0.5588	0.9742
Noise28 vs MNIST	0.5805	0.5836	0.5694	0.9734
Noise28 vs NotMNIST	0.5796	0.5865	0.5728	0.9742
Noise28 vs Omniglot	0.5712	0.6263	0.6141	0.9740
NotMNIST vs Constant28	0.8587	0.8790	0.8130	0.5801
NotMNIST vs FashionMNIST	0.8219	0.8560	0.7766	0.7902
NotMNIST vs KMNIST	0.8120	0.8474	0.7596	0.7384
NotMNIST vs MNIST	0.7925	0.8337	0.7353	0.7398
NotMNIST vs Noise28	0.8017	0.8429	0.7560	0.8365
NotMNIST vs Omniglot	0.8271	0.8797	0.8139	0.7384
Omniglot vs Constant28	0.4751	0.4635	0.4599	0.9500
Omniglot vs FashionMNIST	0.5117	0.5073	0.5050	0.9557
Omniglot vs KMNIST	0.6234	0.5772	0.5754	0.8958
Omniglot vs MNIST	0.6216	0.5682	0.5655	0.8931
Omniglot vs Noise28	0.3351	0.4198	0.4188	0.9941
Omniglot vs NotMNIST	0.6203	0.5776	0.5761	0.8713
SVHN vs CIFAR-10	0.7838	0.9141	0.8757	0.7211
SVHN vs CIFAR-100	0.7744	0.9104	0.8695	0.7288
SVHN vs CelebA	0.7925	0.8558	0.7897	0.7112
SVHN vs Constant	0.7354	0.8944	0.8408	0.6642
SVHN vs LSUN	0.7895	0.9162	0.8787	0.7115
SVHN vs Noise	0.7233	0.8914	0.8382	0.7614
SVHN vs TinyImagenet	0.7772	0.9130	0.8736	0.7281
SVHN vs iSUN	0.7830	0.9219	0.8874	0.7276
TinyImagenet vs CelebA	0.5126	0.3594	0.3565	0.9287
TinyImagenet vs Constant	0.6598	0.6001	0.5963	0.7454
TinyImagenet vs LSUN	0.5947	0.6050	0.6035	0.9350
TinyImagenet vs Noise	0.4367	0.4685	0.4665	0.9336
TinyImagenet vs SVHN	0.3908	0.2235	0.2148	0.8883
TinyImagenet vs iSUN	0.5823	0.6155	0.6139	0.9444
Average	0.5987	0.6379	0.5974	0.8141

Table 167: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.0028$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6361	0.5444	0.4403	0.8334
CIFAR-10 vs Constant	0.6522	0.6836	0.6109	0.7838
CIFAR-10 vs LSUN	0.6242	0.6747	0.6053	0.8690
CIFAR-10 vs Noise	0.5838	0.6400	0.5513	0.8016
CIFAR-10 vs SVHN	0.5739	0.4514	0.3130	0.8016
CIFAR-10 vs iSUN	0.6137	0.6885	0.6208	0.8762
CIFAR-100 vs CelebA	0.5816	0.4675	0.4600	0.9056
CIFAR-100 vs Constant	0.6845	0.6767	0.6716	0.7633
CIFAR-100 vs LSUN	0.6521	0.6760	0.6707	0.9047
CIFAR-100 vs Noise	0.4832	0.5438	0.5369	0.9125
CIFAR-100 vs SVHN	0.4735	0.3098	0.2858	0.8916
CIFAR-100 vs iSUN	0.6322	0.6820	0.6769	0.9147
CelebA vs CIFAR-10	0.4410	0.6251	0.6252	0.9706
CelebA vs CIFAR-100	0.4526	0.6329	0.6330	0.9592
CelebA vs Constant	0.5194	0.6936	0.6936	0.9563
CelebA vs LSUN	0.4395	0.6277	0.6278	0.9701
CelebA vs Noise	0.3764	0.5833	0.5833	0.9918
CelebA vs SVHN	0.4623	0.3961	0.3961	0.9511
CelebA vs TinyImagenet	0.4357	0.6278	0.6279	0.9681
CelebA vs iSUN	0.4252	0.6443	0.6444	0.9758
Constant vs CIFAR-10	0.4902	0.4825	0.4825	0.9511
Constant vs CIFAR-100	0.4985	0.4932	0.4934	0.9458
Constant vs CelebA	0.4918	0.3179	0.3180	0.9560
Constant vs LSUN	0.4907	0.4889	0.4890	0.9596
Constant vs Noise	0.4098	0.4240	0.4241	0.9649
Constant vs SVHN	0.5391	0.2882	0.2883	0.9188
Constant vs TinyImagenet	0.4939	0.4861	0.4862	0.9453
Constant vs iSUN	0.4826	0.5051	0.5052	0.9604
Constant28 vs FashionMNIST	0.2132	0.3711	0.3712	0.9968
Constant28 vs KMNIST	0.1702	0.3439	0.3440	0.9983
Constant28 vs MNIST	0.1202	0.3239	0.3239	1.0000
Constant28 vs Noise28	0.1621	0.3356	0.3357	1.0000
Constant28 vs NotMNIST	0.2212	0.3623	0.3623	0.9920
Constant28 vs Omniglot	0.1702	0.3844	0.3844	0.9974
FashionMNIST vs Constant28	0.8438	0.8534	0.7923	0.4794
FashionMNIST vs KMNIST	0.8147	0.8373	0.7723	0.6355
FashionMNIST vs MNIST	0.8142	0.8385	0.7756	0.6695
FashionMNIST vs Noise28	0.8045	0.8307	0.7646	0.6552
FashionMNIST vs NotMNIST	0.8025	0.8265	0.7538	0.6367
FashionMNIST vs Omniglot	0.8229	0.8675	0.8175	0.6341
KMNIST vs Constant28	0.8325	0.8654	0.7701	0.5416
KMNIST vs FashionMNIST	0.7739	0.8294	0.7016	0.5592
KMNIST vs MNIST	0.7971	0.8423	0.7250	0.4960
KMNIST vs Noise28	0.7765	0.8313	0.7069	0.6416
KMNIST vs NotMNIST	0.8409	0.8695	0.7749	0.4098
KMNIST vs Omniglot	0.8071	0.8708	0.7762	0.4908
MNIST vs Constant28	0.8508	0.8814	0.7756	0.2710
MNIST vs FashionMNIST	0.7944	0.8491	0.7128	0.3804
MNIST vs KMNIST	0.8053	0.8548	0.7236	0.3609
MNIST vs Noise28	0.7778	0.8404	0.6960	0.4128
MNIST vs NotMNIST	0.7871	0.8451	0.7046	0.3972
MNIST vs Omniglot	0.7919	0.8696	0.7517	0.3870
Noise vs CIFAR-10	0.4966	0.5488	0.4876	0.9325
Noise vs CIFAR-100	0.4981	0.5506	0.4894	0.9275
Noise vs CelebA	0.4978	0.4035	0.3219	0.9291
Noise vs Constant	0.5956	0.6557	0.6271	0.9677
Noise vs LSUN	0.5071	0.5606	0.5014	0.9383
Noise vs SVHN	0.4825	0.3466	0.2564	0.9096
Noise vs TinyImagenet	0.4972	0.5543	0.4913	0.9239

Noise vs iSUN	0.5039	0.5836	0.5289	0.9430
Noise28 vs Constant28	0.5196	0.5152	0.4904	0.8971
Noise28 vs FashionMNIST	0.5017	0.5185	0.4958	0.9567
Noise28 vs KMNIST	0.5530	0.5750	0.5587	0.9762
Noise28 vs MNIST	0.5707	0.5889	0.5726	0.9770
Noise28 vs NotMNIST	0.5722	0.5914	0.5749	0.9772
Noise28 vs Omniglot	0.5631	0.6312	0.6171	0.9735
NotMNIST vs Constant28	0.8520	0.8732	0.8026	0.5736
NotMNIST vs FashionMNIST	0.8192	0.8541	0.7735	0.7869
NotMNIST vs KMNIST	0.8118	0.8474	0.7600	0.7445
NotMNIST vs MNIST	0.7928	0.8341	0.7361	0.7422
NotMNIST vs Noise28	0.7912	0.8349	0.7413	0.8148
NotMNIST vs Omniglot	0.8269	0.8796	0.8139	0.7342
Omniglot vs Constant28	0.4769	0.4580	0.4538	0.9335
Omniglot vs FashionMNIST	0.5034	0.4995	0.4972	0.9572
Omniglot vs KMNIST	0.6267	0.5795	0.5777	0.8944
Omniglot vs MNIST	0.6257	0.5712	0.5686	0.8889
Omniglot vs Noise28	0.3247	0.4060	0.4049	0.9904
Omniglot vs NotMNIST	0.6210	0.5773	0.5758	0.8710
SVHN vs CIFAR-10	0.7738	0.9105	0.8695	0.7375
SVHN vs CIFAR-100	0.7667	0.9078	0.8650	0.7451
SVHN vs CelebA	0.7812	0.8491	0.7783	0.7228
SVHN vs Constant	0.7414	0.8968	0.8440	0.6527
SVHN vs LSUN	0.7812	0.9133	0.8741	0.7357
SVHN vs Noise	0.7158	0.8888	0.8328	0.7512
SVHN vs TinyImagenet	0.7681	0.9098	0.8682	0.7423
SVHN vs iSUN	0.7729	0.9184	0.8812	0.7383
TinyImagenet vs CelebA	0.5118	0.3540	0.3496	0.9300
TinyImagenet vs Constant	0.6879	0.6266	0.6227	0.7265
TinyImagenet vs LSUN	0.5853	0.5991	0.5975	0.9421
TinyImagenet vs Noise	0.4417	0.4648	0.4611	0.9262
TinyImagenet vs SVHN	0.4139	0.2301	0.2204	0.8770
TinyImagenet vs iSUN	0.5732	0.6090	0.6071	0.9491
Average	0.5976	0.6380	0.5953	0.8150

Table 168: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.0032$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6334	0.5416	0.4325	0.8404
CIFAR-10 vs Constant	0.6562	0.6863	0.6120	0.7747
CIFAR-10 vs LSUN	0.6180	0.6707	0.5967	0.8716
CIFAR-10 vs Noise	0.5854	0.6414	0.5490	0.7953
CIFAR-10 vs SVHN	0.5755	0.4546	0.3115	0.7989
CIFAR-10 vs iSUN	0.6088	0.6851	0.6134	0.8736
CIFAR-100 vs CelebA	0.5782	0.4585	0.4493	0.9047
CIFAR-100 vs Constant	0.6934	0.6831	0.6779	0.7603
CIFAR-100 vs LSUN	0.6444	0.6709	0.6656	0.9085
CIFAR-100 vs Noise	0.4827	0.5352	0.5256	0.9019
CIFAR-100 vs SVHN	0.4815	0.3073	0.2799	0.8817
CIFAR-100 vs iSUN	0.6265	0.6789	0.6737	0.9191
CelebA vs CIFAR-10	0.4434	0.6265	0.6266	0.9673
CelebA vs CIFAR-100	0.4537	0.6341	0.6342	0.9598
CelebA vs Constant	0.5195	0.6949	0.6950	0.9554
CelebA vs LSUN	0.4402	0.6278	0.6279	0.9701
CelebA vs Noise	0.3967	0.5933	0.5934	0.9897
CelebA vs SVHN	0.4680	0.3994	0.3995	0.9506
CelebA vs TinyImagenet	0.4377	0.6287	0.6288	0.9669
CelebA vs iSUN	0.4258	0.6449	0.6450	0.9745
Constant vs CIFAR-10	0.4882	0.4805	0.4806	0.9516
Constant vs CIFAR-100	0.4979	0.4918	0.4919	0.9458
Constant vs CelebA	0.4936	0.3193	0.3193	0.9565
Constant vs LSUN	0.4916	0.4896	0.4897	0.9573
Constant vs Noise	0.4170	0.4294	0.4295	0.9629
Constant vs SVHN	0.5392	0.2878	0.2879	0.9156
Constant vs TinyImagenet	0.4931	0.4851	0.4851	0.9468
Constant vs iSUN	0.4835	0.5058	0.5059	0.9622
Constant28 vs FashionMNIST	0.2126	0.3704	0.3704	0.9969
Constant28 vs KMNIST	0.1708	0.3439	0.3439	0.9981
Constant28 vs MNIST	0.1213	0.3242	0.3242	0.9999
Constant28 vs Noise28	0.1630	0.3360	0.3360	1.0000
Constant28 vs NotMNIST	0.2193	0.3615	0.3616	0.9922
Constant28 vs Omniglot	0.1735	0.3855	0.3855	0.9968
FashionMNIST vs Constant28	0.8382	0.8492	0.7850	0.4888
FashionMNIST vs KMNIST	0.8115	0.8355	0.7696	0.6407
FashionMNIST vs MNIST	0.8096	0.8354	0.7704	0.6742
FashionMNIST vs Noise28	0.7966	0.8236	0.7516	0.6454
FashionMNIST vs NotMNIST	0.8002	0.8256	0.7523	0.6514
FashionMNIST vs Omniglot	0.8178	0.8642	0.8119	0.6405
KMNIST vs Constant28	0.8272	0.8618	0.7632	0.5477
KMNIST vs FashionMNIST	0.7700	0.8273	0.6977	0.5723
KMNIST vs MNIST	0.7972	0.8424	0.7251	0.5027
KMNIST vs Noise28	0.7672	0.8260	0.6964	0.6485
KMNIST vs NotMNIST	0.8407	0.8694	0.7747	0.4137
KMNIST vs Omniglot	0.8060	0.8702	0.7753	0.5038
MNIST vs Constant28	0.8454	0.8780	0.7689	0.2822
MNIST vs FashionMNIST	0.7913	0.8475	0.7097	0.3864
MNIST vs KMNIST	0.8048	0.8546	0.7230	0.3622
MNIST vs Noise28	0.7704	0.8368	0.6887	0.4281
MNIST vs NotMNIST	0.7867	0.8450	0.7042	0.3982
MNIST vs Omniglot	0.7920	0.8697	0.7519	0.3869
Noise vs CIFAR-10	0.4995	0.5604	0.4906	0.9278
Noise vs CIFAR-100	0.5003	0.5627	0.4934	0.9345
Noise vs CelebA	0.4987	0.4172	0.3245	0.9328
Noise vs Constant	0.5884	0.6575	0.6242	0.9661
Noise vs LSUN	0.5083	0.5707	0.5039	0.9411
Noise vs SVHN	0.4886	0.3633	0.2613	0.9196
Noise vs TinyImagenet	0.4953	0.5636	0.4931	0.9351

Noise vs iSUN	0.5016	0.5910	0.5278	0.9463
Noise28 vs Constant28	0.5272	0.5311	0.5013	0.9030
Noise28 vs FashionMNIST	0.5023	0.5271	0.4994	0.9568
Noise28 vs KMNIST	0.5459	0.5790	0.5596	0.9782
Noise28 vs MNIST	0.5629	0.5934	0.5749	0.9765
Noise28 vs NotMNIST	0.5616	0.5913	0.5725	0.9769
Noise28 vs Omniglot	0.5518	0.6344	0.6174	0.9747
NotMNIST vs Constant28	0.8438	0.8663	0.7897	0.5688
NotMNIST vs FashionMNIST	0.8166	0.8521	0.7701	0.7799
NotMNIST vs KMNIST	0.8113	0.8471	0.7596	0.7499
NotMNIST vs MNIST	0.7921	0.8336	0.7353	0.7430
NotMNIST vs Noise28	0.7801	0.8269	0.7264	0.8016
NotMNIST vs Omniglot	0.8266	0.8795	0.8140	0.7398
Omniglot vs Constant28	0.4780	0.4505	0.4458	0.9143
Omniglot vs FashionMNIST	0.4970	0.4928	0.4906	0.9573
Omniglot vs KMNIST	0.6293	0.5815	0.5797	0.8942
Omniglot vs MNIST	0.6292	0.5740	0.5714	0.8879
Omniglot vs Noise28	0.3182	0.3947	0.3934	0.9875
Omniglot vs NotMNIST	0.6219	0.5772	0.5758	0.8698
SVHN vs CIFAR-10	0.7651	0.9074	0.8643	0.7543
SVHN vs CIFAR-100	0.7602	0.9056	0.8613	0.7549
SVHN vs CelebA	0.7723	0.8440	0.7699	0.7360
SVHN vs Constant	0.7365	0.8951	0.8409	0.6594
SVHN vs LSUN	0.7723	0.9101	0.8689	0.7514
SVHN vs Noise	0.7076	0.8859	0.8275	0.7527
SVHN vs TinyImagenet	0.7592	0.9066	0.8628	0.7533
SVHN vs iSUN	0.7645	0.9157	0.8768	0.7540
TinyImagenet vs CelebA	0.5119	0.3522	0.3463	0.9258
TinyImagenet vs Constant	0.6998	0.6413	0.6369	0.7373
TinyImagenet vs LSUN	0.5783	0.5939	0.5919	0.9422
TinyImagenet vs Noise	0.4467	0.4638	0.4584	0.9205
TinyImagenet vs SVHN	0.4313	0.2365	0.2256	0.8725
TinyImagenet vs iSUN	0.5681	0.6069	0.6045	0.9489
Average	0.5963	0.6383	0.5935	0.8168

Table 169: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.0036$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6295	0.5406	0.4264	0.8396
CIFAR-10 vs Constant	0.6587	0.6887	0.6118	0.7823
CIFAR-10 vs LSUN	0.6160	0.6701	0.5923	0.8780
CIFAR-10 vs Noise	0.5853	0.6425	0.5459	0.7896
CIFAR-10 vs SVHN	0.5806	0.4585	0.3128	0.7941
CIFAR-10 vs iSUN	0.6074	0.6850	0.6099	0.8772
CIFAR-100 vs CelebA	0.5731	0.4483	0.4365	0.9066
CIFAR-100 vs Constant	0.6991	0.6869	0.6804	0.7566
CIFAR-100 vs LSUN	0.6373	0.6659	0.6603	0.9178
CIFAR-100 vs Noise	0.4827	0.5274	0.5142	0.8941
CIFAR-100 vs SVHN	0.4873	0.3050	0.2751	0.8751
CIFAR-100 vs iSUN	0.6217	0.6748	0.6693	0.9228
CelebA vs CIFAR-10	0.4449	0.6275	0.6276	0.9669
CelebA vs CIFAR-100	0.4552	0.6351	0.6352	0.9600
CelebA vs Constant	0.5182	0.6947	0.6948	0.9565
CelebA vs LSUN	0.4417	0.6287	0.6288	0.9690
CelebA vs Noise	0.4175	0.6047	0.6047	0.9877
CelebA vs SVHN	0.4734	0.4026	0.4027	0.9493
CelebA vs TinyImagenet	0.4401	0.6306	0.6306	0.9662
CelebA vs iSUN	0.4277	0.6459	0.6459	0.9741
Constant vs CIFAR-10	0.4903	0.4827	0.4828	0.9518
Constant vs CIFAR-100	0.4984	0.4928	0.4930	0.9491
Constant vs CelebA	0.4931	0.3187	0.3188	0.9534
Constant vs LSUN	0.4889	0.4876	0.4877	0.9584
Constant vs Noise	0.4235	0.4329	0.4330	0.9627
Constant vs SVHN	0.5385	0.2873	0.2873	0.9165
Constant vs TinyImagenet	0.4921	0.4842	0.4843	0.9503
Constant vs iSUN	0.4832	0.5057	0.5058	0.9600
Constant28 vs FashionMNIST	0.2127	0.3701	0.3702	0.9967
Constant28 vs KMNIST	0.1713	0.3441	0.3442	0.9983
Constant28 vs MNIST	0.1226	0.3246	0.3246	0.9998
Constant28 vs Noise28	0.1633	0.3363	0.3363	0.9999
Constant28 vs NotMNIST	0.2190	0.3615	0.3615	0.9920
Constant28 vs Omniglot	0.1762	0.3863	0.3864	0.9970
FashionMNIST vs Constant28	0.8393	0.8500	0.7860	0.4784
FashionMNIST vs KMNIST	0.8073	0.8328	0.7653	0.6630
FashionMNIST vs MNIST	0.8053	0.8325	0.7657	0.6871
FashionMNIST vs Noise28	0.7885	0.8168	0.7385	0.6459
FashionMNIST vs NotMNIST	0.7953	0.8223	0.7468	0.6558
FashionMNIST vs Omniglot	0.8121	0.8604	0.8057	0.6545
KMNIST vs Constant28	0.8261	0.8609	0.7615	0.5570
KMNIST vs FashionMNIST	0.7678	0.8260	0.6953	0.5876
KMNIST vs MNIST	0.7972	0.8424	0.7252	0.5092
KMNIST vs Noise28	0.7565	0.8199	0.6845	0.6460
KMNIST vs NotMNIST	0.8413	0.8698	0.7754	0.4170
KMNIST vs Omniglot	0.8053	0.8699	0.7748	0.5180
MNIST vs Constant28	0.8362	0.8724	0.7576	0.3014
MNIST vs FashionMNIST	0.7852	0.8443	0.7034	0.3989
MNIST vs KMNIST	0.8042	0.8543	0.7223	0.3637
MNIST vs Noise28	0.7623	0.8328	0.6807	0.4449
MNIST vs NotMNIST	0.7874	0.8453	0.7048	0.3971
MNIST vs Omniglot	0.7916	0.8696	0.7515	0.3879
Noise vs CIFAR-10	0.4997	0.5710	0.4932	0.9299
Noise vs CIFAR-100	0.5034	0.5724	0.4965	0.9342
Noise vs CelebA	0.5008	0.4300	0.3276	0.9364
Noise vs Constant	0.5824	0.6561	0.6179	0.9685
Noise vs LSUN	0.5025	0.5748	0.5014	0.9495
Noise vs SVHN	0.4916	0.3776	0.2657	0.9293
Noise vs TinyImagenet	0.4970	0.5733	0.4963	0.9350

Noise vs iSUN	0.5026	0.5977	0.5289	0.9470
Noise28 vs Constant28	0.5339	0.5445	0.5105	0.9077
Noise28 vs FashionMNIST	0.5003	0.5326	0.4995	0.9581
Noise28 vs KMNIST	0.5409	0.5827	0.5599	0.9784
Noise28 vs MNIST	0.5527	0.5937	0.5723	0.9759
Noise28 vs NotMNIST	0.5540	0.5938	0.5714	0.9768
Noise28 vs Omniglot	0.5465	0.6371	0.6178	0.9760
NotMNIST vs Constant28	0.8425	0.8647	0.7865	0.5575
NotMNIST vs FashionMNIST	0.8118	0.8483	0.7634	0.7738
NotMNIST vs KMNIST	0.8102	0.8464	0.7586	0.7491
NotMNIST vs MNIST	0.7920	0.8336	0.7354	0.7463
NotMNIST vs Noise28	0.7711	0.8206	0.7149	0.7925
NotMNIST vs Omniglot	0.8256	0.8788	0.8130	0.7373
Omniglot vs Constant28	0.4812	0.4472	0.4423	0.9004
Omniglot vs FashionMNIST	0.4911	0.4860	0.4837	0.9583
Omniglot vs KMNIST	0.6315	0.5835	0.5817	0.8966
Omniglot vs MNIST	0.6316	0.5760	0.5735	0.8888
Omniglot vs Noise28	0.3147	0.3848	0.3831	0.9822
Omniglot vs NotMNIST	0.6227	0.5770	0.5756	0.8709
SVHN vs CIFAR-10	0.7557	0.9039	0.8584	0.7617
SVHN vs CIFAR-100	0.7505	0.9020	0.8555	0.7678
SVHN vs CelebA	0.7626	0.8387	0.7609	0.7520
SVHN vs Constant	0.7426	0.8973	0.8442	0.6474
SVHN vs LSUN	0.7627	0.9066	0.8630	0.7679
SVHN vs Noise	0.7048	0.8849	0.8255	0.7476
SVHN vs TinyImagenet	0.7499	0.9034	0.8572	0.7660
SVHN vs iSUN	0.7557	0.9128	0.8719	0.7656
TinyImagenet vs CelebA	0.5113	0.3485	0.3406	0.9241
TinyImagenet vs Constant	0.7133	0.6578	0.6529	0.7224
TinyImagenet vs LSUN	0.5728	0.5913	0.5889	0.9478
TinyImagenet vs Noise	0.4501	0.4637	0.4559	0.9233
TinyImagenet vs SVHN	0.4495	0.2444	0.2318	0.8656
TinyImagenet vs iSUN	0.5620	0.6029	0.6000	0.9523
Average	0.5952	0.6385	0.5918	0.8188

Table 170: The detailed performance for indicator ODIN with $T = 1$, $\epsilon = 0.004$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6465	0.5102	0.5103	0.9260
CIFAR-10 vs Constant	0.6131	0.6238	0.6238	0.9538
CIFAR-10 vs LSUN	0.6066	0.6262	0.6263	0.9500
CIFAR-10 vs Noise	0.6281	0.6533	0.6534	0.9514
CIFAR-10 vs SVHN	0.6272	0.4226	0.4227	0.9384
CIFAR-10 vs iSUN	0.5935	0.6403	0.6404	0.9552
CIFAR-100 vs CelebA	0.6925	0.5777	0.5777	0.8476
CIFAR-100 vs Constant	0.6600	0.6992	0.6993	0.8972
CIFAR-100 vs LSUN	0.6638	0.6863	0.6863	0.9026
CIFAR-100 vs Noise	0.7033	0.7381	0.7381	0.8779
CIFAR-100 vs SVHN	0.6754	0.5136	0.5137	0.8870
CIFAR-100 vs iSUN	0.6407	0.6900	0.6901	0.9116
CelebA vs CIFAR-10	0.4262	0.6163	0.6164	0.9706
CelebA vs CIFAR-100	0.4345	0.6205	0.6205	0.9689
CelebA vs Constant	0.4484	0.6387	0.6387	0.9667
CelebA vs LSUN	0.4099	0.6065	0.6065	0.9765
CelebA vs Noise	0.3373	0.5748	0.5748	0.9958
CelebA vs SVHN	0.4746	0.4044	0.4044	0.9457
CelebA vs TinyImagenet	0.4227	0.6195	0.6195	0.9696
CelebA vs iSUN	0.4012	0.6294	0.6295	0.9778
Constant vs CIFAR-10	0.5024	0.4932	0.4933	0.9467
Constant vs CIFAR-100	0.5096	0.5027	0.5029	0.9396
Constant vs CelebA	0.5071	0.3288	0.3289	0.9479
Constant vs LSUN	0.5062	0.5022	0.5023	0.9532
Constant vs Noise	0.4055	0.4254	0.4255	0.9677
Constant vs SVHN	0.5502	0.2968	0.2969	0.9105
Constant vs TinyImagenet	0.5009	0.4920	0.4921	0.9398
Constant vs iSUN	0.4970	0.5161	0.5162	0.9535
Constant28 vs FashionMNIST	0.2304	0.3823	0.3823	0.9929
Constant28 vs KMNIST	0.1913	0.3561	0.3562	0.9959
Constant28 vs MNIST	0.1434	0.3355	0.3356	0.9992
Constant28 vs Noise28	0.1739	0.3423	0.3423	0.9991
Constant28 vs NotMNIST	0.2503	0.3729	0.3730	0.9806
Constant28 vs Omniglot	0.1774	0.3915	0.3916	0.9963
FashionMNIST vs Constant28	0.8613	0.8581	0.8581	0.5545
FashionMNIST vs KMNIST	0.7661	0.7636	0.7636	0.8027
FashionMNIST vs MNIST	0.7670	0.7772	0.7773	0.8168
FashionMNIST vs Noise28	0.8085	0.8199	0.8199	0.7615
FashionMNIST vs NotMNIST	0.7472	0.7223	0.7223	0.8020
FashionMNIST vs Omniglot	0.7777	0.8073	0.8074	0.7864
KMNIST vs Constant28	0.8486	0.7547	0.7547	0.5451
KMNIST vs FashionMNIST	0.7432	0.6578	0.6579	0.6655
KMNIST vs MNIST	0.7689	0.7068	0.7069	0.7001
KMNIST vs Noise28	0.8130	0.7594	0.7595	0.6306
KMNIST vs NotMNIST	0.8088	0.7459	0.7460	0.6450
KMNIST vs Omniglot	0.7827	0.7588	0.7589	0.6809
MNIST vs Constant28	0.9024	0.8921	0.8922	0.3334
MNIST vs FashionMNIST	0.7652	0.6663	0.6664	0.5386
MNIST vs KMNIST	0.7586	0.6503	0.6504	0.5302
MNIST vs Noise28	0.7959	0.6939	0.6940	0.4810
MNIST vs NotMNIST	0.7465	0.6371	0.6372	0.5446
MNIST vs Omniglot	0.7450	0.6816	0.6817	0.5359
Noise vs CIFAR-10	0.5348	0.5246	0.5248	0.9416
Noise vs CIFAR-100	0.5412	0.5316	0.5318	0.9395
Noise vs CelebA	0.5118	0.3410	0.3411	0.9463
Noise vs Constant	0.5929	0.5803	0.5804	0.9076
Noise vs LSUN	0.5232	0.5187	0.5188	0.9429
Noise vs SVHN	0.5836	0.3325	0.3326	0.9125
Noise vs TinyImagenet	0.5356	0.5321	0.5323	0.9368

Noise vs iSUN	0.5328	0.5509	0.5510	0.9424
Noise28 vs Constant28	0.4536	0.4629	0.4630	0.9678
Noise28 vs FashionMNIST	0.4716	0.4758	0.4759	0.9570
Noise28 vs KMNIST	0.4916	0.4951	0.4952	0.9509
Noise28 vs MNIST	0.4930	0.5013	0.5014	0.9543
Noise28 vs NotMNIST	0.5002	0.5042	0.5043	0.9501
Noise28 vs Omniglot	0.4925	0.5498	0.5499	0.9515
NotMNIST vs Constant28	0.8775	0.8846	0.8846	0.6217
NotMNIST vs FashionMNIST	0.7831	0.7391	0.7392	0.8061
NotMNIST vs KMNIST	0.7453	0.6834	0.6835	0.8232
NotMNIST vs MNIST	0.7217	0.6471	0.6472	0.8530
NotMNIST vs Noise28	0.7842	0.7348	0.7349	0.8075
NotMNIST vs Omniglot	0.7595	0.7456	0.7457	0.8342
Omniglot vs Constant28	0.6894	0.6081	0.6082	0.8181
Omniglot vs FashionMNIST	0.6116	0.5452	0.5453	0.8602
Omniglot vs KMNIST	0.5946	0.5566	0.5566	0.9302
Omniglot vs MNIST	0.5924	0.5474	0.5475	0.9269
Omniglot vs Noise28	0.6160	0.5650	0.5650	0.8860
Omniglot vs NotMNIST	0.6262	0.5612	0.5613	0.8607
SVHN vs CIFAR-10	0.7613	0.8675	0.8675	0.8154
SVHN vs CIFAR-100	0.7553	0.8597	0.8598	0.8119
SVHN vs CelebA	0.7707	0.7880	0.7881	0.8097
SVHN vs Constant	0.7596	0.8698	0.8698	0.8084
SVHN vs LSUN	0.7592	0.8640	0.8640	0.8094
SVHN vs Noise	0.7577	0.8640	0.8640	0.8106
SVHN vs TinyImagenet	0.7550	0.8608	0.8609	0.8085
SVHN vs iSUN	0.7578	0.8743	0.8744	0.8109
TinyImagenet vs CelebA	0.6410	0.4883	0.4884	0.8649
TinyImagenet vs Constant	0.5509	0.5631	0.5632	0.9380
TinyImagenet vs LSUN	0.5975	0.6104	0.6104	0.9197
TinyImagenet vs Noise	0.6488	0.6670	0.6670	0.8918
TinyImagenet vs SVHN	0.6147	0.4063	0.4064	0.9012
TinyImagenet vs iSUN	0.5777	0.6179	0.6180	0.9340
Average	0.6068	0.6098	0.6099	0.8566

Table 171: The detailed performance for indicator ODIN with $T = 10, \epsilon = 0$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6367	0.5068	0.5069	0.9355
CIFAR-10 vs Constant	0.5639	0.6056	0.6057	0.9761
CIFAR-10 vs LSUN	0.6023	0.6247	0.6247	0.9545
CIFAR-10 vs Noise	0.5947	0.6384	0.6385	0.9742
CIFAR-10 vs SVHN	0.5828	0.4098	0.4099	0.9702
CIFAR-10 vs iSUN	0.5888	0.6385	0.6386	0.9594
CIFAR-100 vs CelebA	0.6834	0.5684	0.5685	0.8550
CIFAR-100 vs Constant	0.6196	0.6658	0.6658	0.9229
CIFAR-100 vs LSUN	0.6658	0.6878	0.6878	0.8958
CIFAR-100 vs Noise	0.6775	0.7179	0.7179	0.9014
CIFAR-100 vs SVHN	0.6321	0.4739	0.4740	0.9239
CIFAR-100 vs iSUN	0.6424	0.6910	0.6910	0.9076
CelebA vs CIFAR-10	0.4264	0.6163	0.6163	0.9707
CelebA vs CIFAR-100	0.4355	0.6210	0.6211	0.9682
CelebA vs Constant	0.4518	0.6407	0.6407	0.9660
CelebA vs LSUN	0.4145	0.6092	0.6093	0.9744
CelebA vs Noise	0.3076	0.5578	0.5579	0.9970
CelebA vs SVHN	0.4628	0.3971	0.3971	0.9494
CelebA vs TinyImagenet	0.4223	0.6193	0.6194	0.9685
CelebA vs iSUN	0.4039	0.6310	0.6311	0.9770
Constant vs CIFAR-10	0.4970	0.4879	0.4880	0.9455
Constant vs CIFAR-100	0.5037	0.4960	0.4961	0.9399
Constant vs CelebA	0.4997	0.3234	0.3234	0.9518
Constant vs LSUN	0.5007	0.4971	0.4972	0.9569
Constant vs Noise	0.3809	0.4086	0.4087	0.9735
Constant vs SVHN	0.5449	0.2925	0.2925	0.9128
Constant vs TinyImagenet	0.4960	0.4874	0.4875	0.9398
Constant vs iSUN	0.4904	0.5100	0.5101	0.9559
Constant28 vs FashionMNIST	0.2255	0.3806	0.3807	0.9951
Constant28 vs KMNIST	0.1841	0.3531	0.3532	0.9974
Constant28 vs MNIST	0.1358	0.3316	0.3317	0.9996
Constant28 vs Noise28	0.1698	0.3397	0.3398	0.9994
Constant28 vs NotMNIST	0.2433	0.3709	0.3710	0.9852
Constant28 vs Omniglot	0.1681	0.3868	0.3868	0.9967
FashionMNIST vs Constant28	0.8233	0.8276	0.8276	0.6877
FashionMNIST vs KMNIST	0.7642	0.7622	0.7622	0.8026
FashionMNIST vs MNIST	0.7646	0.7760	0.7760	0.8209
FashionMNIST vs Noise28	0.7951	0.8113	0.8113	0.7941
FashionMNIST vs NotMNIST	0.7460	0.7209	0.7210	0.8002
FashionMNIST vs Omniglot	0.7743	0.8058	0.8059	0.7918
KMNIST vs Constant28	0.8275	0.7404	0.7404	0.6576
KMNIST vs FashionMNIST	0.7367	0.6558	0.6560	0.6908
KMNIST vs MNIST	0.7650	0.7053	0.7054	0.7152
KMNIST vs Noise28	0.7999	0.7582	0.7583	0.6923
KMNIST vs NotMNIST	0.8058	0.7447	0.7448	0.6541
KMNIST vs Omniglot	0.7780	0.7576	0.7577	0.6998
MNIST vs Constant28	0.8773	0.8696	0.8696	0.4139
MNIST vs FashionMNIST	0.7579	0.6648	0.6649	0.5672
MNIST vs KMNIST	0.7548	0.6491	0.6492	0.5449
MNIST vs Noise28	0.7798	0.6893	0.6894	0.5421
MNIST vs NotMNIST	0.7431	0.6364	0.6364	0.5597
MNIST vs Omniglot	0.7406	0.6803	0.6804	0.5525
Noise vs CIFAR-10	0.5117	0.5125	0.5126	0.9573
Noise vs CIFAR-100	0.5185	0.5187	0.5188	0.9530
Noise vs CelebA	0.4833	0.3265	0.3266	0.9661
Noise vs Constant	0.5891	0.5819	0.5820	0.9205
Noise vs LSUN	0.5215	0.5169	0.5170	0.9449
Noise vs SVHN	0.5005	0.2878	0.2880	0.9718
Noise vs TinyImagenet	0.5133	0.5198	0.5199	0.9594

Noise vs iSUN	0.5281	0.5486	0.5487	0.9457
Noise28 vs Constant28	0.3974	0.4356	0.4357	0.9876
Noise28 vs FashionMNIST	0.4670	0.4728	0.4729	0.9599
Noise28 vs KMNIST	0.5089	0.5055	0.5056	0.9383
Noise28 vs MNIST	0.5135	0.5156	0.5157	0.9408
Noise28 vs NotMNIST	0.5193	0.5163	0.5164	0.9362
Noise28 vs Omniglot	0.5094	0.5612	0.5613	0.9383
NotMNIST vs Constant28	0.8145	0.8022	0.8022	0.7132
NotMNIST vs FashionMNIST	0.7727	0.7322	0.7323	0.8334
NotMNIST vs KMNIST	0.7387	0.6786	0.6787	0.8358
NotMNIST vs MNIST	0.7170	0.6442	0.6443	0.8629
NotMNIST vs Noise28	0.7604	0.7191	0.7193	0.8637
NotMNIST vs Omniglot	0.7517	0.7402	0.7403	0.8477
Omniglot vs Constant28	0.6350	0.5535	0.5536	0.8869
Omniglot vs FashionMNIST	0.6025	0.5368	0.5369	0.8673
Omniglot vs KMNIST	0.5970	0.5582	0.5582	0.9286
Omniglot vs MNIST	0.5942	0.5486	0.5486	0.9265
Omniglot vs Noise28	0.5863	0.5386	0.5386	0.9101
Omniglot vs NotMNIST	0.6259	0.5600	0.5601	0.8607
SVHN vs CIFAR-10	0.7607	0.8669	0.8669	0.8068
SVHN vs CIFAR-100	0.7530	0.8584	0.8585	0.8051
SVHN vs CelebA	0.7689	0.7847	0.7848	0.7998
SVHN vs Constant	0.6299	0.8162	0.8162	0.9636
SVHN vs LSUN	0.7603	0.8638	0.8638	0.7934
SVHN vs Noise	0.7392	0.8584	0.8584	0.8421
SVHN vs TinyImagenet	0.7515	0.8593	0.8593	0.8039
SVHN vs iSUN	0.7563	0.8734	0.8734	0.8011
TinyImagenet vs CelebA	0.6296	0.4774	0.4775	0.8751
TinyImagenet vs Constant	0.4886	0.5192	0.5192	0.9702
TinyImagenet vs LSUN	0.6049	0.6160	0.6160	0.9144
TinyImagenet vs Noise	0.6245	0.6469	0.6469	0.9109
TinyImagenet vs SVHN	0.5322	0.3432	0.3432	0.9540
TinyImagenet vs iSUN	0.5843	0.6226	0.6226	0.9273
Average	0.5929	0.6009	0.6009	0.8729

Table 172: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.0004$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6283	0.5036	0.5037	0.9425
CIFAR-10 vs Constant	0.5596	0.6014	0.6014	0.9758
CIFAR-10 vs LSUN	0.5987	0.6231	0.6232	0.9569
CIFAR-10 vs Noise	0.5681	0.6254	0.6255	0.9853
CIFAR-10 vs SVHN	0.5521	0.3997	0.3998	0.9811
CIFAR-10 vs iSUN	0.5847	0.6364	0.6365	0.9626
CIFAR-100 vs CelebA	0.6750	0.5599	0.5599	0.8651
CIFAR-100 vs Constant	0.6155	0.6602	0.6602	0.9196
CIFAR-100 vs LSUN	0.6674	0.6889	0.6889	0.8940
CIFAR-100 vs Noise	0.6541	0.6996	0.6996	0.9242
CIFAR-100 vs SVHN	0.5972	0.4418	0.4418	0.9449
CIFAR-100 vs iSUN	0.6434	0.6916	0.6916	0.9082
CelebA vs CIFAR-10	0.4270	0.6164	0.6165	0.9702
CelebA vs CIFAR-100	0.4368	0.6217	0.6217	0.9663
CelebA vs Constant	0.4635	0.6486	0.6486	0.9634
CelebA vs LSUN	0.4181	0.6114	0.6115	0.9731
CelebA vs Noise	0.2933	0.5488	0.5489	0.9975
CelebA vs SVHN	0.4557	0.3925	0.3926	0.9489
CelebA vs TinyImagenet	0.4225	0.6195	0.6196	0.9666
CelebA vs iSUN	0.4062	0.6324	0.6324	0.9762
Constant vs CIFAR-10	0.4968	0.4880	0.4881	0.9462
Constant vs CIFAR-100	0.5017	0.4948	0.4949	0.9429
Constant vs CelebA	0.4973	0.3219	0.3219	0.9539
Constant vs LSUN	0.4984	0.4952	0.4953	0.9571
Constant vs Noise	0.3784	0.4064	0.4065	0.9736
Constant vs SVHN	0.5435	0.2920	0.2920	0.9134
Constant vs TinyImagenet	0.4951	0.4868	0.4869	0.9430
Constant vs iSUN	0.4878	0.5087	0.5088	0.9584
Constant28 vs FashionMNIST	0.2219	0.3786	0.3787	0.9957
Constant28 vs KMNIST	0.1797	0.3506	0.3507	0.9979
Constant28 vs MNIST	0.1307	0.3287	0.3288	0.9996
Constant28 vs Noise28	0.1692	0.3391	0.3392	0.9996
Constant28 vs NotMNIST	0.2382	0.3691	0.3691	0.9880
Constant28 vs Omniglot	0.1636	0.3841	0.3842	0.9970
FashionMNIST vs Constant28	0.8089	0.8120	0.8120	0.7226
FashionMNIST vs KMNIST	0.7624	0.7605	0.7606	0.8025
FashionMNIST vs MNIST	0.7630	0.7749	0.7749	0.8241
FashionMNIST vs Noise28	0.7821	0.8022	0.8022	0.8220
FashionMNIST vs NotMNIST	0.7450	0.7193	0.7194	0.7969
FashionMNIST vs Omniglot	0.7722	0.8048	0.8048	0.7969
KMNIST vs Constant28	0.8152	0.7313	0.7313	0.7010
KMNIST vs FashionMNIST	0.7303	0.6540	0.6541	0.7096
KMNIST vs MNIST	0.7614	0.7039	0.7040	0.7246
KMNIST vs Noise28	0.7863	0.7568	0.7569	0.7479
KMNIST vs NotMNIST	0.8031	0.7437	0.7438	0.6606
KMNIST vs Omniglot	0.7737	0.7566	0.7567	0.7130
MNIST vs Constant28	0.8625	0.8556	0.8557	0.4627
MNIST vs FashionMNIST	0.7507	0.6635	0.6636	0.5953
MNIST vs KMNIST	0.7509	0.6479	0.6480	0.5602
MNIST vs Noise28	0.7629	0.6847	0.6848	0.6003
MNIST vs NotMNIST	0.7401	0.6358	0.6359	0.5702
MNIST vs Omniglot	0.7364	0.6790	0.6791	0.5682
Noise vs CIFAR-10	0.4948	0.5028	0.5029	0.9615
Noise vs CIFAR-100	0.4998	0.5058	0.5059	0.9631
Noise vs CelebA	0.4654	0.3183	0.3184	0.9714
Noise vs Constant	0.6083	0.5930	0.5931	0.8973
Noise vs LSUN	0.5118	0.5095	0.5097	0.9499
Noise vs SVHN	0.4564	0.2650	0.2651	0.9836
Noise vs TinyImagenet	0.4949	0.5092	0.5093	0.9681

Noise vs iSUN	0.5211	0.5444	0.5445	0.9471
Noise28 vs Constant28	0.3926	0.4322	0.4323	0.9817
Noise28 vs FashionMNIST	0.4649	0.4706	0.4707	0.9589
Noise28 vs KMNIST	0.5216	0.5123	0.5124	0.9278
Noise28 vs MNIST	0.5305	0.5270	0.5271	0.9273
Noise28 vs NotMNIST	0.5336	0.5247	0.5249	0.9217
Noise28 vs Omniglot	0.5248	0.5712	0.5714	0.9249
NotMNIST vs Constant28	0.7815	0.7451	0.7451	0.7302
NotMNIST vs FashionMNIST	0.7627	0.7253	0.7254	0.8562
NotMNIST vs KMNIST	0.7324	0.6739	0.6740	0.8485
NotMNIST vs MNIST	0.7128	0.6416	0.6417	0.8704
NotMNIST vs Noise28	0.7359	0.7029	0.7030	0.9059
NotMNIST vs Omniglot	0.7447	0.7352	0.7353	0.8611
Omniglot vs Constant28	0.6109	0.5301	0.5302	0.9152
Omniglot vs FashionMNIST	0.5938	0.5287	0.5288	0.8759
Omniglot vs KMNIST	0.5984	0.5590	0.5591	0.9272
Omniglot vs MNIST	0.5956	0.5495	0.5496	0.9258
Omniglot vs Noise28	0.5573	0.5135	0.5136	0.9248
Omniglot vs NotMNIST	0.6249	0.5584	0.5584	0.8607
SVHN vs CIFAR-10	0.7590	0.8658	0.8658	0.7967
SVHN vs CIFAR-100	0.7498	0.8566	0.8566	0.7957
SVHN vs CelebA	0.7661	0.7806	0.7806	0.7844
SVHN vs Constant	0.6170	0.7989	0.7989	0.9538
SVHN vs LSUN	0.7603	0.8630	0.8630	0.7785
SVHN vs Noise	0.7216	0.8527	0.8528	0.8667
SVHN vs TinyImagenet	0.7470	0.8571	0.8572	0.7980
SVHN vs iSUN	0.7535	0.8719	0.8720	0.7932
TinyImagenet vs CelebA	0.6194	0.4677	0.4678	0.8826
TinyImagenet vs Constant	0.4924	0.5201	0.5202	0.9676
TinyImagenet vs LSUN	0.6105	0.6205	0.6205	0.9124
TinyImagenet vs Noise	0.6029	0.6290	0.6291	0.9265
TinyImagenet vs SVHN	0.4770	0.3037	0.3037	0.9735
TinyImagenet vs iSUN	0.5894	0.6262	0.6263	0.9236
Average	0.5860	0.5958	0.5959	0.8794

Table 173: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.0008$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6215	0.4995	0.4996	0.9467
CIFAR-10 vs Constant	0.5639	0.5975	0.5975	0.9707
CIFAR-10 vs LSUN	0.5956	0.6212	0.6213	0.9580
CIFAR-10 vs Noise	0.5479	0.6120	0.6120	0.9895
CIFAR-10 vs SVHN	0.5320	0.3846	0.3846	0.9852
CIFAR-10 vs iSUN	0.5813	0.6339	0.6340	0.9646
CIFAR-100 vs CelebA	0.6671	0.5517	0.5517	0.8687
CIFAR-100 vs Constant	0.6195	0.6610	0.6610	0.9130
CIFAR-100 vs LSUN	0.6685	0.6898	0.6899	0.8911
CIFAR-100 vs Noise	0.6329	0.6828	0.6829	0.9360
CIFAR-100 vs SVHN	0.5704	0.4167	0.4168	0.9549
CIFAR-100 vs iSUN	0.6442	0.6921	0.6921	0.9060
CelebA vs CIFAR-10	0.4279	0.6168	0.6169	0.9706
CelebA vs CIFAR-100	0.4377	0.6223	0.6223	0.9648
CelebA vs Constant	0.4748	0.6566	0.6566	0.9611
CelebA vs LSUN	0.4209	0.6133	0.6133	0.9719
CelebA vs Noise	0.2890	0.5454	0.5455	0.9972
CelebA vs SVHN	0.4517	0.3898	0.3899	0.9497
CelebA vs TinyImagenet	0.4228	0.6197	0.6198	0.9655
CelebA vs iSUN	0.4083	0.6337	0.6338	0.9751
Constant vs CIFAR-10	0.4929	0.4851	0.4852	0.9483
Constant vs CIFAR-100	0.5014	0.4948	0.4949	0.9441
Constant vs CelebA	0.4954	0.3206	0.3207	0.9556
Constant vs LSUN	0.4976	0.4946	0.4947	0.9584
Constant vs Noise	0.3849	0.4088	0.4089	0.9726
Constant vs SVHN	0.5424	0.2912	0.2913	0.9152
Constant vs TinyImagenet	0.4929	0.4849	0.4850	0.9449
Constant vs iSUN	0.4885	0.5094	0.5095	0.9578
Constant28 vs FashionMNIST	0.2197	0.3766	0.3767	0.9961
Constant28 vs KMNIST	0.1764	0.3485	0.3486	0.9984
Constant28 vs MNIST	0.1262	0.3266	0.3266	0.9999
Constant28 vs Noise28	0.1684	0.3383	0.3384	0.9999
Constant28 vs NotMNIST	0.2339	0.3673	0.3674	0.9896
Constant28 vs Omniglot	0.1619	0.3828	0.3828	0.9975
FashionMNIST vs Constant28	0.8010	0.8002	0.8003	0.7417
FashionMNIST vs KMNIST	0.7605	0.7586	0.7586	0.7996
FashionMNIST vs MNIST	0.7615	0.7737	0.7737	0.8254
FashionMNIST vs Noise28	0.7697	0.7930	0.7930	0.8422
FashionMNIST vs NotMNIST	0.7438	0.7175	0.7176	0.7940
FashionMNIST vs Omniglot	0.7702	0.8035	0.8036	0.7991
KMNIST vs Constant28	0.8056	0.7237	0.7238	0.7251
KMNIST vs FashionMNIST	0.7240	0.6522	0.6523	0.7268
KMNIST vs MNIST	0.7579	0.7026	0.7027	0.7345
KMNIST vs Noise28	0.7724	0.7547	0.7548	0.8002
KMNIST vs NotMNIST	0.8005	0.7427	0.7428	0.6670
KMNIST vs Omniglot	0.7695	0.7556	0.7557	0.7265
MNIST vs Constant28	0.8504	0.8433	0.8433	0.4995
MNIST vs FashionMNIST	0.7434	0.6620	0.6621	0.6214
MNIST vs KMNIST	0.7471	0.6467	0.6468	0.5724
MNIST vs Noise28	0.7455	0.6792	0.6793	0.6542
MNIST vs NotMNIST	0.7370	0.6352	0.6353	0.5821
MNIST vs Omniglot	0.7323	0.6777	0.6778	0.5796
Noise vs CIFAR-10	0.4878	0.4997	0.4998	0.9622
Noise vs CIFAR-100	0.4922	0.5006	0.5007	0.9628
Noise vs CelebA	0.4611	0.3160	0.3161	0.9711
Noise vs Constant	0.6267	0.6025	0.6026	0.8707
Noise vs LSUN	0.5008	0.5019	0.5020	0.9529
Noise vs SVHN	0.4384	0.2545	0.2546	0.9810
Noise vs TinyImagenet	0.4878	0.5036	0.5037	0.9653

Noise vs iSUN	0.5168	0.5422	0.5423	0.9485
Noise28 vs Constant28	0.3951	0.4300	0.4301	0.9741
Noise28 vs FashionMNIST	0.4615	0.4674	0.4675	0.9591
Noise28 vs KMNIST	0.5307	0.5171	0.5172	0.9196
Noise28 vs MNIST	0.5446	0.5357	0.5358	0.9149
Noise28 vs NotMNIST	0.5430	0.5298	0.5299	0.9135
Noise28 vs Omniglot	0.5379	0.5798	0.5799	0.9139
NotMNIST vs Constant28	0.7601	0.7025	0.7025	0.7329
NotMNIST vs FashionMNIST	0.7527	0.7181	0.7182	0.8753
NotMNIST vs KMNIST	0.7261	0.6692	0.6693	0.8571
NotMNIST vs MNIST	0.7088	0.6391	0.6392	0.8777
NotMNIST vs Noise28	0.7115	0.6863	0.6865	0.9316
NotMNIST vs Omniglot	0.7379	0.7302	0.7303	0.8715
Omniglot vs Constant28	0.5950	0.5151	0.5152	0.9324
Omniglot vs FashionMNIST	0.5857	0.5214	0.5215	0.8813
Omniglot vs KMNIST	0.5993	0.5595	0.5596	0.9264
Omniglot vs MNIST	0.5969	0.5505	0.5506	0.9250
Omniglot vs Noise28	0.5302	0.4908	0.4909	0.9380
Omniglot vs NotMNIST	0.6238	0.5566	0.5567	0.8597
SVHN vs CIFAR-10	0.7561	0.8640	0.8640	0.7888
SVHN vs CIFAR-100	0.7454	0.8541	0.8541	0.7890
SVHN vs CelebA	0.7620	0.7751	0.7752	0.7786
SVHN vs Constant	0.6196	0.7886	0.7886	0.9382
SVHN vs LSUN	0.7590	0.8616	0.8617	0.7686
SVHN vs Noise	0.7052	0.8463	0.8463	0.8810
SVHN vs TinyImagenet	0.7418	0.8542	0.8543	0.7933
SVHN vs iSUN	0.7499	0.8699	0.8699	0.7857
TinyImagenet vs CelebA	0.6104	0.4593	0.4593	0.8902
TinyImagenet vs Constant	0.5096	0.5304	0.5305	0.9599
TinyImagenet vs LSUN	0.6149	0.6241	0.6241	0.9106
TinyImagenet vs Noise	0.5841	0.6136	0.6136	0.9363
TinyImagenet vs SVHN	0.4428	0.2800	0.2801	0.9800
TinyImagenet vs iSUN	0.5936	0.6293	0.6293	0.9204
Average	0.5815	0.5920	0.5921	0.8831

Table 174: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.0012$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6157	0.4932	0.4933	0.9464
CIFAR-10 vs Constant	0.5719	0.5964	0.5965	0.9652
CIFAR-10 vs LSUN	0.5928	0.6184	0.6185	0.9587
CIFAR-10 vs Noise	0.5330	0.5964	0.5964	0.9906
CIFAR-10 vs SVHN	0.5195	0.3644	0.3644	0.9870
CIFAR-10 vs iSUN	0.5781	0.6309	0.6309	0.9643
CIFAR-100 vs CelebA	0.6599	0.5441	0.5441	0.8779
CIFAR-100 vs Constant	0.6263	0.6641	0.6641	0.9069
CIFAR-100 vs LSUN	0.6691	0.6902	0.6903	0.8924
CIFAR-100 vs Noise	0.6144	0.6680	0.6680	0.9480
CIFAR-100 vs SVHN	0.5501	0.3967	0.3967	0.9616
CIFAR-100 vs iSUN	0.6447	0.6923	0.6923	0.9072
CelebA vs CIFAR-10	0.4289	0.6173	0.6174	0.9700
CelebA vs CIFAR-100	0.4390	0.6230	0.6231	0.9629
CelebA vs Constant	0.4844	0.6637	0.6637	0.9585
CelebA vs LSUN	0.4234	0.6149	0.6150	0.9705
CelebA vs Noise	0.2914	0.5456	0.5457	0.9966
CelebA vs SVHN	0.4499	0.3885	0.3885	0.9485
CelebA vs TinyImagenet	0.4234	0.6202	0.6203	0.9663
CelebA vs iSUN	0.4101	0.6348	0.6349	0.9748
Constant vs CIFAR-10	0.4919	0.4842	0.4843	0.9474
Constant vs CIFAR-100	0.5007	0.4954	0.4955	0.9445
Constant vs CelebA	0.4939	0.3200	0.3201	0.9565
Constant vs LSUN	0.4961	0.4934	0.4935	0.9596
Constant vs Noise	0.3813	0.4075	0.4076	0.9723
Constant vs SVHN	0.5401	0.2893	0.2893	0.9163
Constant vs TinyImagenet	0.4946	0.4868	0.4869	0.9451
Constant vs iSUN	0.4858	0.5072	0.5073	0.9582
Constant28 vs FashionMNIST	0.2172	0.3749	0.3750	0.9962
Constant28 vs KMNIST	0.1737	0.3469	0.3470	0.9986
Constant28 vs MNIST	0.1229	0.3251	0.3252	0.9999
Constant28 vs Noise28	0.1663	0.3373	0.3373	0.9999
Constant28 vs NotMNIST	0.2300	0.3658	0.3659	0.9901
Constant28 vs Omniglot	0.1616	0.3822	0.3822	0.9984
FashionMNIST vs Constant28	0.7958	0.7897	0.7897	0.7518
FashionMNIST vs KMNIST	0.7584	0.7564	0.7565	0.8039
FashionMNIST vs MNIST	0.7597	0.7721	0.7721	0.8284
FashionMNIST vs Noise28	0.7583	0.7832	0.7832	0.8578
FashionMNIST vs NotMNIST	0.7424	0.7154	0.7154	0.7946
FashionMNIST vs Omniglot	0.7681	0.8020	0.8020	0.8035
KMNIST vs Constant28	0.7972	0.7169	0.7170	0.7396
KMNIST vs FashionMNIST	0.7177	0.6503	0.6505	0.7425
KMNIST vs MNIST	0.7544	0.7013	0.7014	0.7423
KMNIST vs Noise28	0.7589	0.7520	0.7521	0.8385
KMNIST vs NotMNIST	0.7979	0.7416	0.7417	0.6763
KMNIST vs Omniglot	0.7654	0.7546	0.7547	0.7375
MNIST vs Constant28	0.8388	0.8314	0.8315	0.5288
MNIST vs FashionMNIST	0.7361	0.6606	0.6607	0.6450
MNIST vs KMNIST	0.7432	0.6456	0.6456	0.5868
MNIST vs Noise28	0.7283	0.6723	0.6724	0.7005
MNIST vs NotMNIST	0.7339	0.6348	0.6348	0.5934
MNIST vs Omniglot	0.7282	0.6764	0.6764	0.5942
Noise vs CIFAR-10	0.4744	0.4878	0.4879	0.9640
Noise vs CIFAR-100	0.4834	0.4934	0.4935	0.9604
Noise vs CelebA	0.4537	0.3101	0.3102	0.9693
Noise vs Constant	0.6340	0.6012	0.6014	0.8546
Noise vs LSUN	0.4984	0.4999	0.5000	0.9504
Noise vs SVHN	0.4293	0.2466	0.2467	0.9779
Noise vs TinyImagenet	0.4785	0.4936	0.4938	0.9622

Noise vs iSUN	0.5044	0.5299	0.5300	0.9513
Noise28 vs Constant28	0.3956	0.4267	0.4268	0.9656
Noise28 vs FashionMNIST	0.4609	0.4660	0.4661	0.9562
Noise28 vs KMNIST	0.5384	0.5208	0.5209	0.9140
Noise28 vs MNIST	0.5557	0.5418	0.5419	0.9081
Noise28 vs NotMNIST	0.5517	0.5342	0.5343	0.9073
Noise28 vs Omniglot	0.5481	0.5856	0.5857	0.9057
NotMNIST vs Constant28	0.7439	0.6715	0.6716	0.7350
NotMNIST vs FashionMNIST	0.7429	0.7109	0.7110	0.8889
NotMNIST vs KMNIST	0.7197	0.6645	0.6646	0.8641
NotMNIST vs MNIST	0.7048	0.6366	0.6367	0.8842
NotMNIST vs Noise28	0.6883	0.6698	0.6699	0.9515
NotMNIST vs Omniglot	0.7310	0.7251	0.7253	0.8827
Omniglot vs Constant28	0.5826	0.5034	0.5036	0.9407
Omniglot vs FashionMNIST	0.5781	0.5144	0.5145	0.8873
Omniglot vs KMNIST	0.6002	0.5599	0.5600	0.9255
Omniglot vs MNIST	0.5981	0.5513	0.5514	0.9234
Omniglot vs Noise28	0.5056	0.4708	0.4709	0.9490
Omniglot vs NotMNIST	0.6227	0.5549	0.5550	0.8580
SVHN vs CIFAR-10	0.7526	0.8615	0.8616	0.7821
SVHN vs CIFAR-100	0.7406	0.8509	0.8510	0.7826
SVHN vs CelebA	0.7569	0.7690	0.7691	0.7711
SVHN vs Constant	0.6230	0.7838	0.7838	0.9226
SVHN vs LSUN	0.7563	0.8595	0.8596	0.7581
SVHN vs Noise	0.6903	0.8386	0.8386	0.8901
SVHN vs TinyImagenet	0.7358	0.8506	0.8507	0.7897
SVHN vs iSUN	0.7451	0.8672	0.8672	0.7788
TinyImagenet vs CelebA	0.6029	0.4520	0.4520	0.8963
TinyImagenet vs Constant	0.5317	0.5444	0.5445	0.9469
TinyImagenet vs LSUN	0.6184	0.6272	0.6272	0.9082
TinyImagenet vs Noise	0.5685	0.6007	0.6007	0.9454
TinyImagenet vs SVHN	0.4228	0.2659	0.2660	0.9833
TinyImagenet vs iSUN	0.5968	0.6318	0.6319	0.9184
Average	0.5775	0.5881	0.5882	0.8860

Table 175: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.0016$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6108	0.4847	0.4848	0.9474
CIFAR-10 vs Constant	0.5816	0.5939	0.5940	0.9556
CIFAR-10 vs LSUN	0.5904	0.6150	0.6151	0.9586
CIFAR-10 vs Noise	0.5218	0.5797	0.5798	0.9901
CIFAR-10 vs SVHN	0.5119	0.3432	0.3432	0.9865
CIFAR-10 vs iSUN	0.5754	0.6269	0.6270	0.9658
CIFAR-100 vs CelebA	0.6535	0.5369	0.5370	0.8830
CIFAR-100 vs Constant	0.6342	0.6681	0.6681	0.8958
CIFAR-100 vs LSUN	0.6695	0.6906	0.6906	0.8914
CIFAR-100 vs Noise	0.5981	0.6546	0.6546	0.9541
CIFAR-100 vs SVHN	0.5352	0.3813	0.3814	0.9654
CIFAR-100 vs iSUN	0.6449	0.6923	0.6923	0.9070
CelebA vs CIFAR-10	0.4296	0.6177	0.6178	0.9694
CelebA vs CIFAR-100	0.4402	0.6238	0.6239	0.9622
CelebA vs Constant	0.4920	0.6695	0.6695	0.9590
CelebA vs LSUN	0.4250	0.6162	0.6162	0.9705
CelebA vs Noise	0.2975	0.5480	0.5480	0.9964
CelebA vs SVHN	0.4495	0.3880	0.3881	0.9484
CelebA vs TinyImagenet	0.4242	0.6208	0.6209	0.9661
CelebA vs iSUN	0.4113	0.6357	0.6358	0.9747
Constant vs CIFAR-10	0.4903	0.4833	0.4834	0.9491
Constant vs CIFAR-100	0.4991	0.4937	0.4939	0.9448
Constant vs CelebA	0.4927	0.3185	0.3186	0.9547
Constant vs LSUN	0.4939	0.4917	0.4918	0.9604
Constant vs Noise	0.3875	0.4107	0.4108	0.9721
Constant vs SVHN	0.5393	0.2886	0.2886	0.9158
Constant vs TinyImagenet	0.4946	0.4868	0.4869	0.9460
Constant vs iSUN	0.4847	0.5063	0.5064	0.9591
Constant28 vs FashionMNIST	0.2158	0.3733	0.3734	0.9968
Constant28 vs KMNIST	0.1720	0.3456	0.3456	0.9985
Constant28 vs MNIST	0.1212	0.3243	0.3244	0.9998
Constant28 vs Noise28	0.1670	0.3373	0.3373	1.0000
Constant28 vs NotMNIST	0.2274	0.3647	0.3647	0.9907
Constant28 vs Omniglot	0.1622	0.3820	0.3821	0.9986
FashionMNIST vs Constant28	0.7923	0.7797	0.7797	0.7540
FashionMNIST vs KMNIST	0.7560	0.7538	0.7538	0.8069
FashionMNIST vs MNIST	0.7579	0.7703	0.7704	0.8322
FashionMNIST vs Noise28	0.7477	0.7729	0.7729	0.8709
FashionMNIST vs NotMNIST	0.7407	0.7130	0.7130	0.7952
FashionMNIST vs Omniglot	0.7659	0.8003	0.8003	0.8093
KMNIST vs Constant28	0.7888	0.7099	0.7099	0.7484
KMNIST vs FashionMNIST	0.7115	0.6486	0.6487	0.7578
KMNIST vs MNIST	0.7510	0.6999	0.7000	0.7499
KMNIST vs Noise28	0.7455	0.7481	0.7482	0.8677
KMNIST vs NotMNIST	0.7953	0.7406	0.7407	0.6816
KMNIST vs Omniglot	0.7613	0.7535	0.7536	0.7496
MNIST vs Constant28	0.8277	0.8191	0.8192	0.5593
MNIST vs FashionMNIST	0.7291	0.6591	0.6592	0.6659
MNIST vs KMNIST	0.7393	0.6444	0.6445	0.5992
MNIST vs Noise28	0.7122	0.6640	0.6641	0.7433
MNIST vs NotMNIST	0.7309	0.6342	0.6343	0.6033
MNIST vs Omniglot	0.7242	0.6751	0.6751	0.6069
Noise vs CIFAR-10	0.4704	0.4836	0.4837	0.9623
Noise vs CIFAR-100	0.4778	0.4870	0.4871	0.9570
Noise vs CelebA	0.4506	0.3068	0.3069	0.9641
Noise vs Constant	0.6450	0.6059	0.6060	0.8420
Noise vs LSUN	0.4998	0.5022	0.5023	0.9493
Noise vs SVHN	0.4281	0.2437	0.2438	0.9731
Noise vs TinyImagenet	0.4741	0.4882	0.4883	0.9596

Noise vs iSUN	0.5024	0.5271	0.5273	0.9460
Noise28 vs Constant28	0.3974	0.4246	0.4247	0.9584
Noise28 vs FashionMNIST	0.4625	0.4668	0.4669	0.9558
Noise28 vs KMNIST	0.5450	0.5244	0.5245	0.9093
Noise28 vs MNIST	0.5628	0.5451	0.5452	0.9057
Noise28 vs NotMNIST	0.5586	0.5389	0.5390	0.9045
Noise28 vs Omniglot	0.5541	0.5894	0.5895	0.9057
NotMNIST vs Constant28	0.7297	0.6456	0.6456	0.7312
NotMNIST vs FashionMNIST	0.7333	0.7032	0.7033	0.8997
NotMNIST vs KMNIST	0.7134	0.6597	0.6598	0.8701
NotMNIST vs MNIST	0.7008	0.6340	0.6341	0.8894
NotMNIST vs Noise28	0.6662	0.6532	0.6533	0.9646
NotMNIST vs Omniglot	0.7243	0.7201	0.7202	0.8890
Omniglot vs Constant28	0.5722	0.4941	0.4942	0.9478
Omniglot vs FashionMNIST	0.5709	0.5078	0.5079	0.8920
Omniglot vs KMNIST	0.6010	0.5603	0.5604	0.9258
Omniglot vs MNIST	0.5993	0.5521	0.5522	0.9238
Omniglot vs Noise28	0.4831	0.4529	0.4530	0.9560
Omniglot vs NotMNIST	0.6216	0.5532	0.5533	0.8576
SVHN vs CIFAR-10	0.7479	0.8581	0.8582	0.7805
SVHN vs CIFAR-100	0.7346	0.8470	0.8470	0.7785
SVHN vs CelebA	0.7509	0.7622	0.7622	0.7698
SVHN vs Constant	0.6322	0.7815	0.7815	0.8955
SVHN vs LSUN	0.7526	0.8569	0.8569	0.7534
SVHN vs Noise	0.6764	0.8294	0.8294	0.8978
SVHN vs TinyImagenet	0.7290	0.8461	0.8461	0.7868
SVHN vs iSUN	0.7397	0.8641	0.8642	0.7762
TinyImagenet vs CelebA	0.5967	0.4459	0.4459	0.8991
TinyImagenet vs Constant	0.5558	0.5610	0.5611	0.9321
TinyImagenet vs LSUN	0.6210	0.6295	0.6295	0.9064
TinyImagenet vs Noise	0.5554	0.5899	0.5899	0.9514
TinyImagenet vs SVHN	0.4121	0.2581	0.2582	0.9841
TinyImagenet vs iSUN	0.5993	0.6338	0.6339	0.9193
Average	0.5747	0.5849	0.5850	0.8881

Table 176: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.002$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6064	0.4730	0.4731	0.9452
CIFAR-10 vs Constant	0.5918	0.5935	0.5936	0.9413
CIFAR-10 vs LSUN	0.5879	0.6102	0.6102	0.9580
CIFAR-10 vs Noise	0.5133	0.5620	0.5621	0.9879
CIFAR-10 vs SVHN	0.5074	0.3242	0.3243	0.9841
CIFAR-10 vs iSUN	0.5725	0.6218	0.6218	0.9649
CIFAR-100 vs CelebA	0.6476	0.5303	0.5303	0.8863
CIFAR-100 vs Constant	0.6428	0.6728	0.6729	0.8849
CIFAR-100 vs LSUN	0.6695	0.6906	0.6906	0.8906
CIFAR-100 vs Noise	0.5843	0.6428	0.6429	0.9600
CIFAR-100 vs SVHN	0.5242	0.3684	0.3684	0.9677
CIFAR-100 vs iSUN	0.6450	0.6922	0.6923	0.9069
CelebA vs CIFAR-10	0.4309	0.6185	0.6186	0.9683
CelebA vs CIFAR-100	0.4412	0.6245	0.6246	0.9628
CelebA vs Constant	0.4981	0.6745	0.6745	0.9577
CelebA vs LSUN	0.4264	0.6172	0.6173	0.9695
CelebA vs Noise	0.3058	0.5517	0.5518	0.9962
CelebA vs SVHN	0.4501	0.3883	0.3883	0.9490
CelebA vs TinyImagenet	0.4251	0.6214	0.6215	0.9666
CelebA vs iSUN	0.4128	0.6367	0.6368	0.9736
Constant vs CIFAR-10	0.4893	0.4818	0.4819	0.9516
Constant vs CIFAR-100	0.4997	0.4942	0.4943	0.9463
Constant vs CelebA	0.4936	0.3195	0.3196	0.9569
Constant vs LSUN	0.4924	0.4898	0.4899	0.9620
Constant vs Noise	0.3946	0.4148	0.4149	0.9691
Constant vs SVHN	0.5386	0.2878	0.2879	0.9174
Constant vs TinyImagenet	0.4930	0.4853	0.4854	0.9465
Constant vs iSUN	0.4851	0.5068	0.5069	0.9593
Constant28 vs FashionMNIST	0.2149	0.3726	0.3727	0.9969
Constant28 vs KMNIST	0.1713	0.3448	0.3449	0.9983
Constant28 vs MNIST	0.1206	0.3240	0.3241	0.9998
Constant28 vs Noise28	0.1652	0.3365	0.3366	0.9999
Constant28 vs NotMNIST	0.2254	0.3639	0.3639	0.9911
Constant28 vs Omniglot	0.1639	0.3825	0.3825	0.9988
FashionMNIST vs Constant28	0.7908	0.7717	0.7718	0.7516
FashionMNIST vs KMNIST	0.7534	0.7509	0.7509	0.8105
FashionMNIST vs MNIST	0.7556	0.7681	0.7681	0.8398
FashionMNIST vs Noise28	0.7378	0.7617	0.7617	0.8800
FashionMNIST vs NotMNIST	0.7387	0.7101	0.7102	0.7966
FashionMNIST vs Omniglot	0.7633	0.7980	0.7981	0.8129
KMNIST vs Constant28	0.7813	0.7033	0.7033	0.7581
KMNIST vs FashionMNIST	0.7053	0.6468	0.6469	0.7722
KMNIST vs MNIST	0.7475	0.6985	0.6986	0.7588
KMNIST vs Noise28	0.7328	0.7428	0.7429	0.8915
KMNIST vs NotMNIST	0.7927	0.7395	0.7396	0.6883
KMNIST vs Omniglot	0.7572	0.7524	0.7526	0.7602
MNIST vs Constant28	0.8173	0.8071	0.8072	0.5885
MNIST vs FashionMNIST	0.7222	0.6572	0.6573	0.6899
MNIST vs KMNIST	0.7353	0.6431	0.6432	0.6113
MNIST vs Noise28	0.6971	0.6547	0.6548	0.7737
MNIST vs NotMNIST	0.7279	0.6337	0.6337	0.6135
MNIST vs Omniglot	0.7202	0.6737	0.6738	0.6191
Noise vs CIFAR-10	0.4743	0.4848	0.4850	0.9578
Noise vs CIFAR-100	0.4761	0.4848	0.4849	0.9535
Noise vs CelebA	0.4533	0.3083	0.3084	0.9604
Noise vs Constant	0.6496	0.6075	0.6077	0.8359
Noise vs LSUN	0.5002	0.5019	0.5020	0.9484
Noise vs SVHN	0.4303	0.2425	0.2426	0.9700
Noise vs TinyImagenet	0.4729	0.4872	0.4873	0.9556

Noise vs iSUN	0.5007	0.5258	0.5259	0.9485
Noise28 vs Constant28	0.3988	0.4239	0.4240	0.9570
Noise28 vs FashionMNIST	0.4646	0.4683	0.4684	0.9542
Noise28 vs KMNIST	0.5489	0.5264	0.5265	0.9087
Noise28 vs MNIST	0.5684	0.5474	0.5475	0.9008
Noise28 vs NotMNIST	0.5632	0.5410	0.5411	0.8987
Noise28 vs Omniglot	0.5586	0.5922	0.5924	0.9004
NotMNIST vs Constant28	0.7195	0.6284	0.6285	0.7263
NotMNIST vs FashionMNIST	0.7240	0.6957	0.6958	0.9068
NotMNIST vs KMNIST	0.7072	0.6550	0.6551	0.8772
NotMNIST vs MNIST	0.6969	0.6314	0.6316	0.8916
NotMNIST vs Noise28	0.6459	0.6366	0.6367	0.9729
NotMNIST vs Omniglot	0.7175	0.7150	0.7151	0.8945
Omniglot vs Constant28	0.5638	0.4861	0.4863	0.9525
Omniglot vs FashionMNIST	0.5641	0.5016	0.5017	0.8955
Omniglot vs KMNIST	0.6017	0.5606	0.5606	0.9254
Omniglot vs MNIST	0.6003	0.5528	0.5529	0.9225
Omniglot vs Noise28	0.4628	0.4373	0.4374	0.9617
Omniglot vs NotMNIST	0.6207	0.5517	0.5518	0.8573
SVHN vs CIFAR-10	0.7421	0.8544	0.8545	0.7751
SVHN vs CIFAR-100	0.7278	0.8426	0.8426	0.7715
SVHN vs CelebA	0.7438	0.7548	0.7549	0.7664
SVHN vs Constant	0.6375	0.7782	0.7782	0.8665
SVHN vs LSUN	0.7476	0.8536	0.8537	0.7469
SVHN vs Noise	0.6626	0.8187	0.8187	0.9001
SVHN vs TinyImagenet	0.7215	0.8411	0.8411	0.7840
SVHN vs iSUN	0.7336	0.8608	0.8608	0.7710
TinyImagenet vs CelebA	0.5912	0.4404	0.4405	0.9027
TinyImagenet vs Constant	0.5800	0.5786	0.5786	0.9136
TinyImagenet vs LSUN	0.6228	0.6312	0.6313	0.9054
TinyImagenet vs Noise	0.5446	0.5808	0.5808	0.9549
TinyImagenet vs SVHN	0.4086	0.2536	0.2537	0.9836
TinyImagenet vs iSUN	0.6009	0.6352	0.6353	0.9179
Average	0.5723	0.5821	0.5821	0.8894

Table 177: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.0024$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.6023	0.4603	0.4604	0.9438
CIFAR-10 vs Constant	0.6017	0.5918	0.5919	0.9326
CIFAR-10 vs LSUN	0.5853	0.6042	0.6043	0.9575
CIFAR-10 vs Noise	0.5064	0.5451	0.5451	0.9835
CIFAR-10 vs SVHN	0.5045	0.3081	0.3081	0.9797
CIFAR-10 vs iSUN	0.5694	0.6154	0.6155	0.9636
CIFAR-100 vs CelebA	0.6424	0.5241	0.5242	0.8924
CIFAR-100 vs Constant	0.6515	0.6785	0.6785	0.8760
CIFAR-100 vs LSUN	0.6691	0.6903	0.6903	0.8923
CIFAR-100 vs Noise	0.5721	0.6324	0.6324	0.9662
CIFAR-100 vs SVHN	0.5165	0.3584	0.3585	0.9702
CIFAR-100 vs iSUN	0.6446	0.6918	0.6918	0.9068
CelebA vs CIFAR-10	0.4319	0.6191	0.6192	0.9677
CelebA vs CIFAR-100	0.4423	0.6253	0.6254	0.9618
CelebA vs Constant	0.5025	0.6782	0.6782	0.9579
CelebA vs LSUN	0.4277	0.6183	0.6183	0.9691
CelebA vs Noise	0.3166	0.5572	0.5572	0.9956
CelebA vs SVHN	0.4513	0.3889	0.3889	0.9493
CelebA vs TinyImagenet	0.4258	0.6220	0.6220	0.9660
CelebA vs iSUN	0.4141	0.6375	0.6375	0.9722
Constant vs CIFAR-10	0.4910	0.4835	0.4836	0.9501
Constant vs CIFAR-100	0.4990	0.4930	0.4931	0.9486
Constant vs CelebA	0.4918	0.3182	0.3183	0.9563
Constant vs LSUN	0.4914	0.4890	0.4891	0.9609
Constant vs Noise	0.4028	0.4197	0.4198	0.9674
Constant vs SVHN	0.5395	0.2885	0.2885	0.9184
Constant vs TinyImagenet	0.4926	0.4849	0.4850	0.9464
Constant vs iSUN	0.4824	0.5047	0.5048	0.9599
Constant28 vs FashionMNIST	0.2144	0.3719	0.3720	0.9969
Constant28 vs KMNIST	0.1710	0.3444	0.3444	0.9979
Constant28 vs MNIST	0.1206	0.3239	0.3240	1.0000
Constant28 vs Noise28	0.1651	0.3365	0.3365	0.9999
Constant28 vs NotMNIST	0.2242	0.3634	0.3635	0.9916
Constant28 vs Omniglot	0.1677	0.3835	0.3836	0.9978
FashionMNIST vs Constant28	0.7895	0.7631	0.7632	0.7460
FashionMNIST vs KMNIST	0.7505	0.7474	0.7474	0.8124
FashionMNIST vs MNIST	0.7530	0.7652	0.7653	0.8444
FashionMNIST vs Noise28	0.7284	0.7499	0.7499	0.8857
FashionMNIST vs NotMNIST	0.7362	0.7071	0.7072	0.7947
FashionMNIST vs Omniglot	0.7604	0.7953	0.7953	0.8164
KMNIST vs Constant28	0.7742	0.6969	0.6970	0.7673
KMNIST vs FashionMNIST	0.6992	0.6448	0.6449	0.7851
KMNIST vs MNIST	0.7440	0.6972	0.6973	0.7680
KMNIST vs Noise28	0.7204	0.7356	0.7357	0.9127
KMNIST vs NotMNIST	0.7901	0.7384	0.7385	0.6945
KMNIST vs Omniglot	0.7532	0.7514	0.7515	0.7720
MNIST vs Constant28	0.8062	0.7936	0.7936	0.6114
MNIST vs FashionMNIST	0.7154	0.6550	0.6551	0.7112
MNIST vs KMNIST	0.7314	0.6419	0.6420	0.6237
MNIST vs Noise28	0.6830	0.6434	0.6435	0.7987
MNIST vs NotMNIST	0.7250	0.6330	0.6331	0.6219
MNIST vs Omniglot	0.7161	0.6723	0.6723	0.6346
Noise vs CIFAR-10	0.4735	0.4826	0.4827	0.9553
Noise vs CIFAR-100	0.4799	0.4855	0.4857	0.9493
Noise vs CelebA	0.4594	0.3109	0.3110	0.9581
Noise vs Constant	0.6604	0.6138	0.6139	0.8319
Noise vs LSUN	0.4992	0.5001	0.5003	0.9488
Noise vs SVHN	0.4368	0.2429	0.2430	0.9665
Noise vs TinyImagenet	0.4755	0.4865	0.4866	0.9526

Noise vs iSUN	0.5043	0.5278	0.5279	0.9470
Noise28 vs Constant28	0.4007	0.4234	0.4234	0.9492
Noise28 vs FashionMNIST	0.4640	0.4679	0.4680	0.9541
Noise28 vs KMNIST	0.5505	0.5270	0.5272	0.9037
Noise28 vs MNIST	0.5726	0.5497	0.5498	0.8961
Noise28 vs NotMNIST	0.5650	0.5419	0.5420	0.8977
Noise28 vs Omniglot	0.5600	0.5928	0.5929	0.8975
NotMNIST vs Constant28	0.7100	0.6142	0.6143	0.7244
NotMNIST vs FashionMNIST	0.7149	0.6878	0.6879	0.9145
NotMNIST vs KMNIST	0.7010	0.6503	0.6504	0.8815
NotMNIST vs MNIST	0.6930	0.6289	0.6290	0.8951
NotMNIST vs Noise28	0.6272	0.6200	0.6200	0.9778
NotMNIST vs Omniglot	0.7109	0.7098	0.7099	0.9010
Omniglot vs Constant28	0.5570	0.4799	0.4800	0.9543
Omniglot vs FashionMNIST	0.5579	0.4958	0.4959	0.8997
Omniglot vs KMNIST	0.6023	0.5608	0.5609	0.9257
Omniglot vs MNIST	0.6013	0.5535	0.5536	0.9219
Omniglot vs Noise28	0.4450	0.4237	0.4238	0.9667
Omniglot vs NotMNIST	0.6197	0.5501	0.5502	0.8574
SVHN vs CIFAR-10	0.7354	0.8501	0.8501	0.7733
SVHN vs CIFAR-100	0.7206	0.8377	0.8377	0.7685
SVHN vs CelebA	0.7355	0.7467	0.7467	0.7654
SVHN vs Constant	0.6471	0.7800	0.7800	0.8438
SVHN vs LSUN	0.7419	0.8502	0.8502	0.7413
SVHN vs Noise	0.6487	0.8072	0.8072	0.9000
SVHN vs TinyImagenet	0.7137	0.8357	0.8357	0.7809
SVHN vs iSUN	0.7261	0.8567	0.8567	0.7691
TinyImagenet vs CelebA	0.5869	0.4362	0.4362	0.9050
TinyImagenet vs Constant	0.6027	0.5950	0.5951	0.8922
TinyImagenet vs LSUN	0.6243	0.6326	0.6327	0.9057
TinyImagenet vs Noise	0.5365	0.5733	0.5734	0.9596
TinyImagenet vs SVHN	0.4088	0.2522	0.2523	0.9818
TinyImagenet vs iSUN	0.6026	0.6366	0.6366	0.9173
Average	0.5704	0.5794	0.5794	0.8905

Table 178: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.0028$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5982	0.4471	0.4472	0.9416
CIFAR-10 vs Constant	0.6114	0.5925	0.5926	0.9157
CIFAR-10 vs LSUN	0.5824	0.5974	0.5975	0.9553
CIFAR-10 vs Noise	0.5004	0.5303	0.5303	0.9784
CIFAR-10 vs SVHN	0.5027	0.2960	0.2961	0.9726
CIFAR-10 vs iSUN	0.5660	0.6086	0.6086	0.9611
CIFAR-100 vs CelebA	0.6376	0.5184	0.5185	0.8953
CIFAR-100 vs Constant	0.6606	0.6843	0.6844	0.8674
CIFAR-100 vs LSUN	0.6688	0.6899	0.6899	0.8936
CIFAR-100 vs Noise	0.5623	0.6234	0.6234	0.9697
CIFAR-100 vs SVHN	0.5117	0.3504	0.3504	0.9698
CIFAR-100 vs iSUN	0.6443	0.6913	0.6914	0.9083
CelebA vs CIFAR-10	0.4335	0.6202	0.6202	0.9681
CelebA vs CIFAR-100	0.4434	0.6262	0.6263	0.9612
CelebA vs Constant	0.5060	0.6812	0.6812	0.9591
CelebA vs LSUN	0.4287	0.6190	0.6190	0.9683
CelebA vs Noise	0.3283	0.5632	0.5633	0.9936
CelebA vs SVHN	0.4534	0.3901	0.3901	0.9479
CelebA vs TinyImagenet	0.4269	0.6227	0.6228	0.9658
CelebA vs iSUN	0.4153	0.6383	0.6383	0.9724
Constant vs CIFAR-10	0.4900	0.4821	0.4822	0.9515
Constant vs CIFAR-100	0.4985	0.4930	0.4931	0.9474
Constant vs CelebA	0.4903	0.3168	0.3169	0.9566
Constant vs LSUN	0.4913	0.4887	0.4888	0.9598
Constant vs Noise	0.4036	0.4192	0.4193	0.9665
Constant vs SVHN	0.5386	0.2877	0.2878	0.9167
Constant vs TinyImagenet	0.4924	0.4846	0.4847	0.9454
Constant vs iSUN	0.4842	0.5060	0.5061	0.9591
Constant28 vs FashionMNIST	0.2133	0.3711	0.3712	0.9968
Constant28 vs KMNIST	0.1702	0.3439	0.3439	0.9985
Constant28 vs MNIST	0.1208	0.3240	0.3240	0.9999
Constant28 vs Noise28	0.1633	0.3360	0.3360	0.9998
Constant28 vs NotMNIST	0.2217	0.3624	0.3625	0.9919
Constant28 vs Omniglot	0.1705	0.3842	0.3842	0.9969
FashionMNIST vs Constant28	0.7900	0.7581	0.7581	0.7359
FashionMNIST vs KMNIST	0.7472	0.7437	0.7438	0.8135
FashionMNIST vs MNIST	0.7497	0.7618	0.7618	0.8464
FashionMNIST vs Noise28	0.7195	0.7379	0.7379	0.8868
FashionMNIST vs NotMNIST	0.7333	0.7036	0.7037	0.7930
FashionMNIST vs Omniglot	0.7572	0.7923	0.7923	0.8162
KMNIST vs Constant28	0.7670	0.6899	0.6900	0.7733
KMNIST vs FashionMNIST	0.6933	0.6427	0.6428	0.7974
KMNIST vs MNIST	0.7406	0.6958	0.6959	0.7748
KMNIST vs Noise28	0.7087	0.7275	0.7276	0.9279
KMNIST vs NotMNIST	0.7876	0.7373	0.7374	0.7026
KMNIST vs Omniglot	0.7491	0.7502	0.7503	0.7835
MNIST vs Constant28	0.7963	0.7818	0.7818	0.6267
MNIST vs FashionMNIST	0.7090	0.6526	0.6527	0.7308
MNIST vs KMNIST	0.7276	0.6406	0.6407	0.6348
MNIST vs Noise28	0.6698	0.6310	0.6311	0.8118
MNIST vs NotMNIST	0.7221	0.6324	0.6325	0.6312
MNIST vs Omniglot	0.7121	0.6708	0.6709	0.6446
Noise vs CIFAR-10	0.4752	0.4813	0.4814	0.9522
Noise vs CIFAR-100	0.4823	0.4855	0.4856	0.9507
Noise vs CelebA	0.4644	0.3119	0.3120	0.9557
Noise vs Constant	0.6688	0.6201	0.6203	0.8272
Noise vs LSUN	0.5016	0.5005	0.5006	0.9473
Noise vs SVHN	0.4478	0.2457	0.2457	0.9635
Noise vs TinyImagenet	0.4774	0.4859	0.4860	0.9538

Noise vs iSUN	0.5038	0.5260	0.5261	0.9499
Noise28 vs Constant28	0.4024	0.4233	0.4234	0.9474
Noise28 vs FashionMNIST	0.4666	0.4701	0.4702	0.9528
Noise28 vs KMNIST	0.5506	0.5266	0.5267	0.9025
Noise28 vs MNIST	0.5745	0.5505	0.5506	0.8982
Noise28 vs NotMNIST	0.5670	0.5431	0.5432	0.8971
Noise28 vs Omniglot	0.5613	0.5940	0.5942	0.8972
NotMNIST vs Constant28	0.7014	0.6021	0.6022	0.7212
NotMNIST vs FashionMNIST	0.7062	0.6798	0.6799	0.9206
NotMNIST vs KMNIST	0.6948	0.6454	0.6455	0.8857
NotMNIST vs MNIST	0.6891	0.6263	0.6264	0.8994
NotMNIST vs Noise28	0.6108	0.6037	0.6038	0.9827
NotMNIST vs Omniglot	0.7043	0.7045	0.7046	0.9038
Omniglot vs Constant28	0.5521	0.4757	0.4758	0.9580
Omniglot vs FashionMNIST	0.5520	0.4904	0.4905	0.9036
Omniglot vs KMNIST	0.6029	0.5610	0.5611	0.9262
Omniglot vs MNIST	0.6023	0.5542	0.5543	0.9224
Omniglot vs Noise28	0.4290	0.4117	0.4118	0.9696
Omniglot vs NotMNIST	0.6189	0.5487	0.5488	0.8579
SVHN vs CIFAR-10	0.7279	0.8457	0.8457	0.7732
SVHN vs CIFAR-100	0.7122	0.8324	0.8325	0.7686
SVHN vs CelebA	0.7262	0.7383	0.7383	0.7662
SVHN vs Constant	0.6550	0.7802	0.7802	0.8134
SVHN vs LSUN	0.7344	0.8458	0.8458	0.7443
SVHN vs Noise	0.6363	0.7964	0.7964	0.8955
SVHN vs TinyImagenet	0.7050	0.8299	0.8299	0.7817
SVHN vs iSUN	0.7183	0.8526	0.8527	0.7690
TinyImagenet vs CelebA	0.5836	0.4326	0.4326	0.9070
TinyImagenet vs Constant	0.6254	0.6131	0.6132	0.8699
TinyImagenet vs LSUN	0.6252	0.6337	0.6338	0.9058
TinyImagenet vs Noise	0.5302	0.5680	0.5680	0.9602
TinyImagenet vs SVHN	0.4127	0.2527	0.2528	0.9808
TinyImagenet vs iSUN	0.6031	0.6371	0.6372	0.9181
Average	0.5686	0.5768	0.5769	0.8911

Table 179: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.0032$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5938	0.4339	0.4339	0.9399
CIFAR-10 vs Constant	0.6204	0.5948	0.5949	0.9038
CIFAR-10 vs LSUN	0.5790	0.5898	0.5899	0.9523
CIFAR-10 vs Noise	0.4952	0.5176	0.5176	0.9689
CIFAR-10 vs SVHN	0.5017	0.2866	0.2867	0.9626
CIFAR-10 vs iSUN	0.5626	0.6016	0.6017	0.9587
CIFAR-100 vs CelebA	0.6335	0.5127	0.5127	0.8981
CIFAR-100 vs Constant	0.6697	0.6907	0.6907	0.8544
CIFAR-100 vs LSUN	0.6681	0.6893	0.6893	0.8924
CIFAR-100 vs Noise	0.5538	0.6155	0.6155	0.9711
CIFAR-100 vs SVHN	0.5084	0.3438	0.3439	0.9705
CIFAR-100 vs iSUN	0.6438	0.6906	0.6907	0.9100
CelebA vs CIFAR-10	0.4343	0.6207	0.6207	0.9679
CelebA vs CIFAR-100	0.4444	0.6269	0.6270	0.9615
CelebA vs Constant	0.5086	0.6837	0.6837	0.9577
CelebA vs LSUN	0.4295	0.6197	0.6198	0.9681
CelebA vs Noise	0.3411	0.5697	0.5697	0.9919
CelebA vs SVHN	0.4554	0.3913	0.3914	0.9474
CelebA vs TinyImagenet	0.4273	0.6233	0.6233	0.9651
CelebA vs iSUN	0.4165	0.6390	0.6391	0.9724
Constant vs CIFAR-10	0.4867	0.4796	0.4797	0.9535
Constant vs CIFAR-100	0.4975	0.4918	0.4920	0.9487
Constant vs CelebA	0.4914	0.3177	0.3177	0.9563
Constant vs LSUN	0.4899	0.4880	0.4881	0.9612
Constant vs Noise	0.4116	0.4274	0.4275	0.9630
Constant vs SVHN	0.5380	0.2870	0.2871	0.9165
Constant vs TinyImagenet	0.4944	0.4859	0.4860	0.9485
Constant vs iSUN	0.4822	0.5048	0.5049	0.9610
Constant28 vs FashionMNIST	0.2133	0.3706	0.3707	0.9969
Constant28 vs KMNIST	0.1710	0.3440	0.3440	0.9985
Constant28 vs MNIST	0.1222	0.3243	0.3244	0.9999
Constant28 vs Noise28	0.1640	0.3363	0.3364	0.9999
Constant28 vs NotMNIST	0.2206	0.3620	0.3621	0.9922
Constant28 vs Omniglot	0.1744	0.3856	0.3857	0.9970
FashionMNIST vs Constant28	0.7903	0.7519	0.7519	0.7223
FashionMNIST vs KMNIST	0.7436	0.7398	0.7398	0.8158
FashionMNIST vs MNIST	0.7460	0.7577	0.7577	0.8450
FashionMNIST vs Noise28	0.7111	0.7252	0.7253	0.8879
FashionMNIST vs NotMNIST	0.7300	0.7000	0.7001	0.7923
FashionMNIST vs Omniglot	0.7534	0.7886	0.7887	0.8171
KMNIST vs Constant28	0.7610	0.6843	0.6844	0.7843
KMNIST vs FashionMNIST	0.6875	0.6405	0.6406	0.8088
KMNIST vs MNIST	0.7372	0.6944	0.6945	0.7828
KMNIST vs Noise28	0.6974	0.7173	0.7174	0.9387
KMNIST vs NotMNIST	0.7850	0.7361	0.7362	0.7101
KMNIST vs Omniglot	0.7451	0.7489	0.7490	0.7914
MNIST vs Constant28	0.7867	0.7691	0.7691	0.6380
MNIST vs FashionMNIST	0.7029	0.6497	0.6498	0.7488
MNIST vs KMNIST	0.7238	0.6394	0.6394	0.6462
MNIST vs Noise28	0.6571	0.6175	0.6176	0.8239
MNIST vs NotMNIST	0.7193	0.6317	0.6318	0.6397
MNIST vs Omniglot	0.7084	0.6693	0.6694	0.6556
Noise vs CIFAR-10	0.4767	0.4812	0.4814	0.9516
Noise vs CIFAR-100	0.4877	0.4880	0.4881	0.9455
Noise vs CelebA	0.4709	0.3148	0.3149	0.9526
Noise vs Constant	0.6727	0.6214	0.6215	0.8211
Noise vs LSUN	0.5016	0.4999	0.5000	0.9476
Noise vs SVHN	0.4567	0.2482	0.2483	0.9604
Noise vs TinyImagenet	0.4807	0.4860	0.4861	0.9487

Noise vs iSUN	0.5077	0.5276	0.5277	0.9488
Noise28 vs Constant28	0.4060	0.4246	0.4247	0.9406
Noise28 vs FashionMNIST	0.4694	0.4720	0.4721	0.9491
Noise28 vs KMNIST	0.5516	0.5287	0.5288	0.9012
Noise28 vs MNIST	0.5750	0.5504	0.5505	0.8943
Noise28 vs NotMNIST	0.5673	0.5427	0.5429	0.8944
Noise28 vs Omniglot	0.5632	0.5958	0.5959	0.8943
NotMNIST vs Constant28	0.6934	0.5913	0.5914	0.7204
NotMNIST vs FashionMNIST	0.6978	0.6717	0.6718	0.9241
NotMNIST vs KMNIST	0.6887	0.6406	0.6407	0.8902
NotMNIST vs MNIST	0.6853	0.6237	0.6238	0.9023
NotMNIST vs Noise28	0.5961	0.5881	0.5881	0.9864
NotMNIST vs Omniglot	0.6976	0.6990	0.6991	0.9085
Omniglot vs Constant28	0.5476	0.4716	0.4717	0.9593
Omniglot vs FashionMNIST	0.5466	0.4854	0.4855	0.9068
Omniglot vs KMNIST	0.6036	0.5613	0.5614	0.9254
Omniglot vs MNIST	0.6032	0.5548	0.5549	0.9230
Omniglot vs Noise28	0.4150	0.4016	0.4017	0.9719
Omniglot vs NotMNIST	0.6180	0.5471	0.5472	0.8575
SVHN vs CIFAR-10	0.7196	0.8406	0.8407	0.7737
SVHN vs CIFAR-100	0.7039	0.8274	0.8275	0.7664
SVHN vs CelebA	0.7164	0.7301	0.7301	0.7685
SVHN vs Constant	0.6658	0.7844	0.7844	0.7807
SVHN vs LSUN	0.7265	0.8416	0.8416	0.7465
SVHN vs Noise	0.6236	0.7859	0.7859	0.8892
SVHN vs TinyImagenet	0.6965	0.8245	0.8245	0.7796
SVHN vs iSUN	0.7098	0.8483	0.8483	0.7712
TinyImagenet vs CelebA	0.5804	0.4294	0.4294	0.9097
TinyImagenet vs Constant	0.6484	0.6305	0.6305	0.8402
TinyImagenet vs LSUN	0.6251	0.6341	0.6341	0.9048
TinyImagenet vs Noise	0.5248	0.5632	0.5632	0.9611
TinyImagenet vs SVHN	0.4189	0.2543	0.2544	0.9782
TinyImagenet vs iSUN	0.6036	0.6379	0.6379	0.9148
Average	0.5671	0.5745	0.5746	0.8909

Table 180: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.0036$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5894	0.4218	0.4219	0.9372
CIFAR-10 vs Constant	0.6296	0.5965	0.5966	0.8895
CIFAR-10 vs LSUN	0.5752	0.5820	0.5821	0.9500
CIFAR-10 vs Noise	0.4906	0.5072	0.5073	0.9588
CIFAR-10 vs SVHN	0.5008	0.2802	0.2804	0.9514
CIFAR-10 vs iSUN	0.5585	0.5940	0.5940	0.9557
CIFAR-100 vs CelebA	0.6298	0.5076	0.5077	0.9012
CIFAR-100 vs Constant	0.6793	0.6963	0.6964	0.8438
CIFAR-100 vs LSUN	0.6674	0.6886	0.6886	0.8936
CIFAR-100 vs Noise	0.5468	0.6086	0.6086	0.9731
CIFAR-100 vs SVHN	0.5073	0.3383	0.3384	0.9701
CIFAR-100 vs iSUN	0.6430	0.6897	0.6898	0.9101
CelebA vs CIFAR-10	0.4356	0.6216	0.6216	0.9663
CelebA vs CIFAR-100	0.4456	0.6278	0.6278	0.9613
CelebA vs Constant	0.5105	0.6854	0.6854	0.9587
CelebA vs LSUN	0.4299	0.6202	0.6203	0.9684
CelebA vs Noise	0.3522	0.5757	0.5757	0.9919
CelebA vs SVHN	0.4578	0.3928	0.3928	0.9462
CelebA vs TinyImagenet	0.4284	0.6241	0.6241	0.9653
CelebA vs iSUN	0.4171	0.6396	0.6396	0.9723
Constant vs CIFAR-10	0.4879	0.4801	0.4802	0.9528
Constant vs CIFAR-100	0.4968	0.4910	0.4911	0.9479
Constant vs CelebA	0.4914	0.3179	0.3179	0.9568
Constant vs LSUN	0.4902	0.4885	0.4886	0.9604
Constant vs Noise	0.4157	0.4280	0.4281	0.9643
Constant vs SVHN	0.5383	0.2872	0.2873	0.9179
Constant vs TinyImagenet	0.4928	0.4846	0.4847	0.9501
Constant vs iSUN	0.4827	0.5050	0.5051	0.9607
Constant28 vs FashionMNIST	0.2135	0.3706	0.3707	0.9966
Constant28 vs KMNIST	0.1709	0.3439	0.3439	0.9981
Constant28 vs MNIST	0.1235	0.3248	0.3248	0.9999
Constant28 vs Noise28	0.1640	0.3365	0.3366	1.0000
Constant28 vs NotMNIST	0.2196	0.3617	0.3618	0.9919
Constant28 vs Omniglot	0.1773	0.3865	0.3866	0.9965
FashionMNIST vs Constant28	0.7903	0.7468	0.7468	0.7133
FashionMNIST vs KMNIST	0.7395	0.7353	0.7353	0.8150
FashionMNIST vs MNIST	0.7417	0.7534	0.7534	0.8487
FashionMNIST vs Noise28	0.7028	0.7128	0.7128	0.8893
FashionMNIST vs NotMNIST	0.7264	0.6962	0.6962	0.7922
FashionMNIST vs Omniglot	0.7492	0.7847	0.7848	0.8190
KMNIST vs Constant28	0.7544	0.6776	0.6777	0.7899
KMNIST vs FashionMNIST	0.6819	0.6382	0.6383	0.8193
KMNIST vs MNIST	0.7338	0.6928	0.6929	0.7879
KMNIST vs Noise28	0.6869	0.7069	0.7070	0.9443
KMNIST vs NotMNIST	0.7825	0.7350	0.7351	0.7141
KMNIST vs Omniglot	0.7412	0.7477	0.7478	0.7990
MNIST vs Constant28	0.7774	0.7556	0.7556	0.6451
MNIST vs FashionMNIST	0.6970	0.6463	0.6464	0.7620
MNIST vs KMNIST	0.7200	0.6380	0.6380	0.6557
MNIST vs Noise28	0.6457	0.6043	0.6045	0.8294
MNIST vs NotMNIST	0.7166	0.6309	0.6310	0.6488
MNIST vs Omniglot	0.7045	0.6677	0.6677	0.6667
Noise vs CIFAR-10	0.4828	0.4844	0.4845	0.9489
Noise vs CIFAR-100	0.4920	0.4905	0.4906	0.9456
Noise vs CelebA	0.4730	0.3155	0.3156	0.9504
Noise vs Constant	0.6759	0.6240	0.6241	0.8184
Noise vs LSUN	0.5048	0.5019	0.5020	0.9465
Noise vs SVHN	0.4687	0.2524	0.2524	0.9578
Noise vs TinyImagenet	0.4849	0.4884	0.4885	0.9487

Noise vs iSUN	0.5085	0.5279	0.5280	0.9485
Noise28 vs Constant28	0.4089	0.4255	0.4256	0.9373
Noise28 vs FashionMNIST	0.4716	0.4737	0.4738	0.9490
Noise28 vs KMNIST	0.5500	0.5276	0.5277	0.9029
Noise28 vs MNIST	0.5746	0.5504	0.5506	0.8962
Noise28 vs NotMNIST	0.5673	0.5428	0.5429	0.8952
Noise28 vs Omniglot	0.5623	0.5955	0.5957	0.8968
NotMNIST vs Constant28	0.6865	0.5831	0.5832	0.7201
NotMNIST vs FashionMNIST	0.6900	0.6633	0.6634	0.9291
NotMNIST vs KMNIST	0.6827	0.6357	0.6358	0.8946
NotMNIST vs MNIST	0.6816	0.6211	0.6212	0.9039
NotMNIST vs Noise28	0.5833	0.5735	0.5736	0.9867
NotMNIST vs Omniglot	0.6914	0.6938	0.6939	0.9109
Omniglot vs Constant28	0.5449	0.4687	0.4688	0.9600
Omniglot vs FashionMNIST	0.5414	0.4805	0.4807	0.9107
Omniglot vs KMNIST	0.6040	0.5614	0.5615	0.9258
Omniglot vs MNIST	0.6041	0.5554	0.5555	0.9220
Omniglot vs Noise28	0.4024	0.3926	0.3927	0.9754
Omniglot vs NotMNIST	0.6171	0.5456	0.5458	0.8575
SVHN vs CIFAR-10	0.7106	0.8356	0.8356	0.7750
SVHN vs CIFAR-100	0.6949	0.8221	0.8221	0.7739
SVHN vs CelebA	0.7055	0.7210	0.7210	0.7765
SVHN vs Constant	0.6718	0.7868	0.7869	0.7605
SVHN vs LSUN	0.7177	0.8370	0.8370	0.7496
SVHN vs Noise	0.6116	0.7769	0.7769	0.8861
SVHN vs TinyImagenet	0.6868	0.8186	0.8186	0.7839
SVHN vs iSUN	0.7006	0.8437	0.8438	0.7745
TinyImagenet vs CelebA	0.5782	0.4269	0.4270	0.9097
TinyImagenet vs Constant	0.6682	0.6474	0.6474	0.8164
TinyImagenet vs LSUN	0.6254	0.6347	0.6347	0.9031
TinyImagenet vs Noise	0.5208	0.5593	0.5594	0.9610
TinyImagenet vs SVHN	0.4265	0.2571	0.2572	0.9741
TinyImagenet vs iSUN	0.6041	0.6382	0.6383	0.9147
Average	0.5655	0.5723	0.5724	0.8913

Table 181: The detailed performance for indicator ODIN with $T = 10$, $\epsilon = 0.004$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5834	0.4325	0.4326	0.9429
CIFAR-10 vs Constant	0.5590	0.5686	0.5686	0.9672
CIFAR-10 vs LSUN	0.5424	0.5600	0.5602	0.9618
CIFAR-10 vs Noise	0.5602	0.5895	0.5896	0.9660
CIFAR-10 vs SVHN	0.5738	0.3586	0.3587	0.9491
CIFAR-10 vs iSUN	0.5305	0.5786	0.5787	0.9664
CIFAR-100 vs CelebA	0.6871	0.5626	0.5627	0.8438
CIFAR-100 vs Constant	0.6541	0.6885	0.6886	0.8950
CIFAR-100 vs LSUN	0.6569	0.6782	0.6782	0.9054
CIFAR-100 vs Noise	0.6970	0.7300	0.7300	0.8785
CIFAR-100 vs SVHN	0.6676	0.4946	0.4946	0.8865
CIFAR-100 vs iSUN	0.6334	0.6819	0.6820	0.9160
CelebA vs CIFAR-10	0.4254	0.6156	0.6157	0.9705
CelebA vs CIFAR-100	0.4337	0.6197	0.6198	0.9685
CelebA vs Constant	0.4480	0.6372	0.6373	0.9662
CelebA vs LSUN	0.4090	0.6057	0.6058	0.9763
CelebA vs Noise	0.3364	0.5748	0.5748	0.9959
CelebA vs SVHN	0.4743	0.4036	0.4036	0.9454
CelebA vs TinyImagenet	0.4220	0.6189	0.6190	0.9696
CelebA vs iSUN	0.4000	0.6286	0.6287	0.9778
Constant vs CIFAR-10	0.5024	0.4932	0.4933	0.9466
Constant vs CIFAR-100	0.5095	0.5027	0.5028	0.9397
Constant vs CelebA	0.5071	0.3288	0.3288	0.9484
Constant vs LSUN	0.5059	0.5020	0.5021	0.9536
Constant vs Noise	0.4059	0.4254	0.4255	0.9685
Constant vs SVHN	0.5503	0.2968	0.2968	0.9101
Constant vs TinyImagenet	0.5008	0.4920	0.4921	0.9396
Constant vs iSUN	0.4970	0.5160	0.5161	0.9536
Constant28 vs FashionMNIST	0.2304	0.3822	0.3824	0.9927
Constant28 vs KMNIST	0.1912	0.3561	0.3562	0.9959
Constant28 vs MNIST	0.1435	0.3355	0.3357	0.9991
Constant28 vs Noise28	0.1740	0.3423	0.3424	0.9992
Constant28 vs NotMNIST	0.2505	0.3730	0.3731	0.9805
Constant28 vs Omniglot	0.1773	0.3914	0.3916	0.9965
FashionMNIST vs Constant28	0.8092	0.7855	0.7855	0.6040
FashionMNIST vs KMNIST	0.6946	0.6796	0.6797	0.8412
FashionMNIST vs MNIST	0.6953	0.6908	0.6909	0.8597
FashionMNIST vs Noise28	0.7302	0.7267	0.7268	0.8147
FashionMNIST vs NotMNIST	0.6785	0.6401	0.6402	0.8380
FashionMNIST vs Omniglot	0.7073	0.7303	0.7304	0.8286
KMNIST vs Constant28	0.8035	0.7120	0.7120	0.6403
KMNIST vs FashionMNIST	0.6977	0.6131	0.6132	0.7376
KMNIST vs MNIST	0.7104	0.6493	0.6494	0.7907
KMNIST vs Noise28	0.7655	0.7058	0.7059	0.7279
KMNIST vs NotMNIST	0.7483	0.6809	0.6809	0.7475
KMNIST vs Omniglot	0.7308	0.7106	0.7107	0.7778
MNIST vs Constant28	0.8245	0.7724	0.7725	0.4682
MNIST vs FashionMNIST	0.6916	0.6019	0.6020	0.6784
MNIST vs KMNIST	0.6844	0.5854	0.5855	0.6604
MNIST vs Noise28	0.7189	0.6181	0.6181	0.6226
MNIST vs NotMNIST	0.6867	0.5851	0.5852	0.6470
MNIST vs Omniglot	0.6793	0.6263	0.6263	0.6489
Noise vs CIFAR-10	0.5379	0.5247	0.5249	0.9399
Noise vs CIFAR-100	0.5453	0.5326	0.5328	0.9355
Noise vs CelebA	0.5134	0.3400	0.3401	0.9473
Noise vs Constant	0.5985	0.5785	0.5786	0.9055
Noise vs LSUN	0.5263	0.5192	0.5194	0.9431
Noise vs SVHN	0.5941	0.3350	0.3350	0.9025
Noise vs TinyImagenet	0.5404	0.5341	0.5342	0.9371

Noise vs iSUN	0.5364	0.5515	0.5517	0.9376
Noise28 vs Constant28	0.4345	0.4545	0.4546	0.9687
Noise28 vs FashionMNIST	0.4678	0.4720	0.4721	0.9588
Noise28 vs KMNIST	0.4909	0.4941	0.4942	0.9506
Noise28 vs MNIST	0.4977	0.5054	0.5055	0.9552
Noise28 vs NotMNIST	0.4996	0.5043	0.5044	0.9522
Noise28 vs Omniglot	0.4964	0.5534	0.5535	0.9514
NotMNIST vs Constant28	0.7967	0.7643	0.7644	0.6585
NotMNIST vs FashionMNIST	0.7175	0.6616	0.6617	0.8512
NotMNIST vs KMNIST	0.6775	0.6117	0.6118	0.8658
NotMNIST vs MNIST	0.6660	0.5951	0.5952	0.8891
NotMNIST vs Noise28	0.7181	0.6578	0.6579	0.8517
NotMNIST vs Omniglot	0.6850	0.6717	0.6718	0.8830
Omniglot vs Constant28	0.6856	0.6017	0.6018	0.8267
Omniglot vs FashionMNIST	0.6032	0.5302	0.5303	0.8577
Omniglot vs KMNIST	0.5873	0.5481	0.5482	0.9325
Omniglot vs MNIST	0.5853	0.5395	0.5396	0.9319
Omniglot vs Noise28	0.6065	0.5467	0.5468	0.8829
Omniglot vs NotMNIST	0.6180	0.5412	0.5413	0.8597
SVHN vs CIFAR-10	0.6934	0.8271	0.8271	0.8652
SVHN vs CIFAR-100	0.6911	0.8215	0.8216	0.8631
SVHN vs CelebA	0.6985	0.7203	0.7204	0.8749
SVHN vs Constant	0.6894	0.8242	0.8242	0.8636
SVHN vs LSUN	0.6933	0.8239	0.8240	0.8606
SVHN vs Noise	0.6908	0.8232	0.8232	0.8639
SVHN vs TinyImagenet	0.6902	0.8223	0.8223	0.8599
SVHN vs iSUN	0.6925	0.8378	0.8379	0.8610
TinyImagenet vs CelebA	0.6408	0.4808	0.4809	0.8593
TinyImagenet vs Constant	0.5496	0.5611	0.5612	0.9379
TinyImagenet vs LSUN	0.5961	0.6072	0.6073	0.9197
TinyImagenet vs Noise	0.6503	0.6679	0.6680	0.8918
TinyImagenet vs SVHN	0.6152	0.4014	0.4014	0.9000
TinyImagenet vs iSUN	0.5753	0.6160	0.6160	0.9342
Average	0.5792	0.5813	0.5814	0.8819

Table 182: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5733	0.4222	0.4223	0.9499
CIFAR-10 vs Constant	0.5203	0.5442	0.5443	0.9797
CIFAR-10 vs LSUN	0.5367	0.5542	0.5544	0.9643
CIFAR-10 vs Noise	0.5319	0.5692	0.5692	0.9792
CIFAR-10 vs SVHN	0.5389	0.3367	0.3368	0.9710
CIFAR-10 vs iSUN	0.5247	0.5729	0.5730	0.9689
CIFAR-100 vs CelebA	0.6784	0.5537	0.5537	0.8503
CIFAR-100 vs Constant	0.6185	0.6578	0.6578	0.9155
CIFAR-100 vs LSUN	0.6577	0.6788	0.6788	0.8995
CIFAR-100 vs Noise	0.6739	0.7115	0.7116	0.9001
CIFAR-100 vs SVHN	0.6293	0.4591	0.4591	0.9199
CIFAR-100 vs iSUN	0.6338	0.6821	0.6822	0.9107
CelebA vs CIFAR-10	0.4259	0.6157	0.6158	0.9705
CelebA vs CIFAR-100	0.4349	0.6203	0.6204	0.9676
CelebA vs Constant	0.4515	0.6393	0.6393	0.9664
CelebA vs LSUN	0.4135	0.6083	0.6084	0.9746
CelebA vs Noise	0.3092	0.5590	0.5590	0.9972
CelebA vs SVHN	0.4633	0.3969	0.3969	0.9490
CelebA vs TinyImagenet	0.4217	0.6189	0.6189	0.9688
CelebA vs iSUN	0.4028	0.6302	0.6303	0.9777
Constant vs CIFAR-10	0.4970	0.4878	0.4879	0.9445
Constant vs CIFAR-100	0.5030	0.4952	0.4953	0.9417
Constant vs CelebA	0.4992	0.3231	0.3232	0.9523
Constant vs LSUN	0.5004	0.4966	0.4968	0.9566
Constant vs Noise	0.3787	0.4070	0.4071	0.9724
Constant vs SVHN	0.5452	0.2927	0.2928	0.9120
Constant vs TinyImagenet	0.4968	0.4882	0.4883	0.9409
Constant vs iSUN	0.4898	0.5096	0.5097	0.9554
Constant28 vs FashionMNIST	0.2256	0.3806	0.3807	0.9950
Constant28 vs KMNIST	0.1842	0.3531	0.3533	0.9976
Constant28 vs MNIST	0.1360	0.3317	0.3319	0.9997
Constant28 vs Noise28	0.1699	0.3397	0.3399	0.9995
Constant28 vs NotMNIST	0.2435	0.3710	0.3711	0.9853
Constant28 vs Omniglot	0.1680	0.3868	0.3869	0.9970
FashionMNIST vs Constant28	0.7750	0.7532	0.7532	0.6995
FashionMNIST vs KMNIST	0.6907	0.6754	0.6755	0.8432
FashionMNIST vs MNIST	0.6906	0.6869	0.6870	0.8645
FashionMNIST vs Noise28	0.7152	0.7146	0.7146	0.8360
FashionMNIST vs NotMNIST	0.6755	0.6362	0.6364	0.8389
FashionMNIST vs Omniglot	0.7016	0.7259	0.7260	0.8349
KMNIST vs Constant28	0.7765	0.6888	0.6889	0.6965
KMNIST vs FashionMNIST	0.6896	0.6073	0.6074	0.7509
KMNIST vs MNIST	0.7054	0.6448	0.6449	0.7981
KMNIST vs Noise28	0.7488	0.6946	0.6947	0.7706
KMNIST vs NotMNIST	0.7445	0.6767	0.6768	0.7514
KMNIST vs Omniglot	0.7247	0.7060	0.7061	0.7876
MNIST vs Constant28	0.7920	0.7400	0.7401	0.5398
MNIST vs FashionMNIST	0.6816	0.5949	0.5950	0.6976
MNIST vs KMNIST	0.6788	0.5809	0.5810	0.6711
MNIST vs Noise28	0.6980	0.6021	0.6022	0.6675
MNIST vs NotMNIST	0.6816	0.5811	0.5812	0.6540
MNIST vs Omniglot	0.6729	0.6218	0.6219	0.6608
Noise vs CIFAR-10	0.5221	0.5155	0.5156	0.9526
Noise vs CIFAR-100	0.5272	0.5213	0.5215	0.9510
Noise vs CelebA	0.4933	0.3291	0.3292	0.9622
Noise vs Constant	0.5920	0.5753	0.5754	0.9194
Noise vs LSUN	0.5207	0.5151	0.5152	0.9439
Noise vs SVHN	0.5318	0.2998	0.2999	0.9623
Noise vs TinyImagenet	0.5225	0.5230	0.5231	0.9559

Noise vs iSUN	0.5343	0.5512	0.5513	0.9433
Noise28 vs Constant28	0.3944	0.4304	0.4305	0.9802
Noise28 vs FashionMNIST	0.4639	0.4694	0.4695	0.9602
Noise28 vs KMNIST	0.5033	0.5022	0.5023	0.9429
Noise28 vs MNIST	0.5131	0.5178	0.5179	0.9465
Noise28 vs NotMNIST	0.5131	0.5135	0.5136	0.9434
Noise28 vs Omniglot	0.5093	0.5629	0.5630	0.9446
NotMNIST vs Constant28	0.7462	0.6927	0.6927	0.7246
NotMNIST vs FashionMNIST	0.7056	0.6508	0.6509	0.8712
NotMNIST vs KMNIST	0.6704	0.6055	0.6056	0.8718
NotMNIST vs MNIST	0.6605	0.5909	0.5910	0.8959
NotMNIST vs Noise28	0.6935	0.6365	0.6366	0.8907
NotMNIST vs Omniglot	0.6765	0.6647	0.6648	0.8926
Omniglot vs Constant28	0.6391	0.5546	0.5548	0.8801
Omniglot vs FashionMNIST	0.5954	0.5231	0.5232	0.8661
Omniglot vs KMNIST	0.5892	0.5494	0.5495	0.9316
Omniglot vs MNIST	0.5866	0.5404	0.5405	0.9308
Omniglot vs Noise28	0.5813	0.5241	0.5242	0.9025
Omniglot vs NotMNIST	0.6175	0.5401	0.5402	0.8580
SVHN vs CIFAR-10	0.6892	0.8231	0.8231	0.8633
SVHN vs CIFAR-100	0.6855	0.8168	0.8169	0.8611
SVHN vs CelebA	0.6932	0.7128	0.7129	0.8719
SVHN vs Constant	0.5752	0.7652	0.7652	0.9668
SVHN vs LSUN	0.6910	0.8206	0.8206	0.8536
SVHN vs Noise	0.6703	0.8115	0.8116	0.8867
SVHN vs TinyImagenet	0.6835	0.8172	0.8172	0.8606
SVHN vs iSUN	0.6876	0.8336	0.8337	0.8597
TinyImagenet vs CelebA	0.6309	0.4716	0.4717	0.8676
TinyImagenet vs Constant	0.4967	0.5231	0.5231	0.9662
TinyImagenet vs LSUN	0.6018	0.6118	0.6119	0.9157
TinyImagenet vs Noise	0.6293	0.6501	0.6501	0.9066
TinyImagenet vs SVHN	0.5447	0.3470	0.3471	0.9476
TinyImagenet vs iSUN	0.5803	0.6195	0.6196	0.9289
Average	0.5661	0.5712	0.5713	0.8943

Table 183: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0.0004$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5644	0.4120	0.4122	0.9531
CIFAR-10 vs Constant	0.5149	0.5374	0.5375	0.9787
CIFAR-10 vs LSUN	0.5316	0.5481	0.5482	0.9659
CIFAR-10 vs Noise	0.5097	0.5507	0.5507	0.9865
CIFAR-10 vs SVHN	0.5147	0.3200	0.3201	0.9797
CIFAR-10 vs iSUN	0.5195	0.5669	0.5671	0.9699
CIFAR-100 vs CelebA	0.6701	0.5452	0.5452	0.8574
CIFAR-100 vs Constant	0.6139	0.6520	0.6520	0.9155
CIFAR-100 vs LSUN	0.6580	0.6789	0.6790	0.8989
CIFAR-100 vs Noise	0.6524	0.6942	0.6942	0.9166
CIFAR-100 vs SVHN	0.5982	0.4307	0.4307	0.9378
CIFAR-100 vs iSUN	0.6339	0.6821	0.6821	0.9105
CelebA vs CIFAR-10	0.4267	0.6160	0.6161	0.9704
CelebA vs CIFAR-100	0.4361	0.6210	0.6210	0.9660
CelebA vs Constant	0.4627	0.6468	0.6468	0.9631
CelebA vs LSUN	0.4171	0.6106	0.6106	0.9727
CelebA vs Noise	0.2959	0.5505	0.5505	0.9975
CelebA vs SVHN	0.4567	0.3927	0.3927	0.9478
CelebA vs TinyImagenet	0.4220	0.6191	0.6192	0.9662
CelebA vs iSUN	0.4052	0.6316	0.6317	0.9762
Constant vs CIFAR-10	0.4947	0.4863	0.4864	0.9474
Constant vs CIFAR-100	0.5020	0.4952	0.4954	0.9428
Constant vs CelebA	0.4973	0.3218	0.3219	0.9538
Constant vs LSUN	0.4990	0.4958	0.4958	0.9577
Constant vs Noise	0.3794	0.4066	0.4067	0.9730
Constant vs SVHN	0.5438	0.2919	0.2919	0.9118
Constant vs TinyImagenet	0.4941	0.4863	0.4864	0.9417
Constant vs iSUN	0.4863	0.5075	0.5076	0.9583
Constant28 vs FashionMNIST	0.2225	0.3786	0.3788	0.9956
Constant28 vs KMNIST	0.1798	0.3507	0.3508	0.9979
Constant28 vs MNIST	0.1304	0.3286	0.3288	0.9997
Constant28 vs Noise28	0.1695	0.3392	0.3393	0.9996
Constant28 vs NotMNIST	0.2383	0.3690	0.3692	0.9879
Constant28 vs Omniglot	0.1642	0.3843	0.3845	0.9971
FashionMNIST vs Constant28	0.7618	0.7387	0.7388	0.7396
FashionMNIST vs KMNIST	0.6869	0.6712	0.6713	0.8461
FashionMNIST vs MNIST	0.6867	0.6834	0.6834	0.8686
FashionMNIST vs Noise28	0.7007	0.7026	0.7027	0.8564
FashionMNIST vs NotMNIST	0.6726	0.6325	0.6326	0.8371
FashionMNIST vs Omniglot	0.6971	0.7222	0.7223	0.8379
KMNIST vs Constant28	0.7617	0.6757	0.6758	0.7201
KMNIST vs FashionMNIST	0.6820	0.6020	0.6021	0.7611
KMNIST vs MNIST	0.7008	0.6407	0.6408	0.8044
KMNIST vs Noise28	0.7324	0.6836	0.6837	0.8071
KMNIST vs NotMNIST	0.7410	0.6729	0.6730	0.7544
KMNIST vs Omniglot	0.7193	0.7019	0.7020	0.7944
MNIST vs Constant28	0.7740	0.7221	0.7223	0.5778
MNIST vs FashionMNIST	0.6722	0.5885	0.5886	0.7137
MNIST vs KMNIST	0.6733	0.5767	0.5768	0.6817
MNIST vs Noise28	0.6779	0.5873	0.5874	0.7029
MNIST vs NotMNIST	0.6769	0.5774	0.5775	0.6616
MNIST vs Omniglot	0.6671	0.6178	0.6179	0.6710
Noise vs CIFAR-10	0.5063	0.5073	0.5074	0.9602
Noise vs CIFAR-100	0.5127	0.5118	0.5119	0.9578
Noise vs CelebA	0.4769	0.3217	0.3217	0.9695
Noise vs Constant	0.6026	0.5793	0.5794	0.9010
Noise vs LSUN	0.5131	0.5097	0.5098	0.9519
Noise vs SVHN	0.4963	0.2809	0.2810	0.9785
Noise vs TinyImagenet	0.5090	0.5160	0.5161	0.9642

Noise vs iSUN	0.5226	0.5430	0.5431	0.9487
Noise28 vs Constant28	0.3895	0.4273	0.4274	0.9761
Noise28 vs FashionMNIST	0.4613	0.4676	0.4677	0.9590
Noise28 vs KMNIST	0.5113	0.5073	0.5074	0.9352
Noise28 vs MNIST	0.5243	0.5255	0.5256	0.9375
Noise28 vs NotMNIST	0.5218	0.5192	0.5193	0.9351
Noise28 vs Omniglot	0.5200	0.5705	0.5706	0.9356
NotMNIST vs Constant28	0.7205	0.6526	0.6526	0.7388
NotMNIST vs FashionMNIST	0.6945	0.6407	0.6408	0.8853
NotMNIST vs KMNIST	0.6636	0.5996	0.5998	0.8792
NotMNIST vs MNIST	0.6557	0.5871	0.5872	0.9029
NotMNIST vs Noise28	0.6695	0.6164	0.6165	0.9192
NotMNIST vs Omniglot	0.6691	0.6586	0.6587	0.9009
Omniglot vs Constant28	0.6186	0.5345	0.5347	0.9075
Omniglot vs FashionMNIST	0.5880	0.5163	0.5164	0.8722
Omniglot vs KMNIST	0.5902	0.5500	0.5501	0.9309
Omniglot vs MNIST	0.5878	0.5413	0.5414	0.9301
Omniglot vs Noise28	0.5566	0.5028	0.5029	0.9187
Omniglot vs NotMNIST	0.6166	0.5388	0.5389	0.8587
SVHN vs CIFAR-10	0.6846	0.8188	0.8189	0.8632
SVHN vs CIFAR-100	0.6796	0.8120	0.8121	0.8576
SVHN vs CelebA	0.6875	0.7052	0.7053	0.8676
SVHN vs Constant	0.5600	0.7540	0.7541	0.9578
SVHN vs LSUN	0.6878	0.8170	0.8170	0.8470
SVHN vs Noise	0.6513	0.8006	0.8007	0.9022
SVHN vs TinyImagenet	0.6767	0.8118	0.8119	0.8601
SVHN vs iSUN	0.6823	0.8293	0.8293	0.8549
TinyImagenet vs CelebA	0.6220	0.4634	0.4635	0.8745
TinyImagenet vs Constant	0.4992	0.5236	0.5237	0.9640
TinyImagenet vs LSUN	0.6063	0.6156	0.6156	0.9127
TinyImagenet vs Noise	0.6103	0.6344	0.6344	0.9187
TinyImagenet vs SVHN	0.4968	0.3124	0.3124	0.9662
TinyImagenet vs iSUN	0.5846	0.6228	0.6228	0.9244
Average	0.5589	0.5651	0.5652	0.8995

Table 184: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0.0008$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5569	0.4023	0.4024	0.9579
CIFAR-10 vs Constant	0.5162	0.5332	0.5332	0.9747
CIFAR-10 vs LSUN	0.5271	0.5418	0.5419	0.9679
CIFAR-10 vs Noise	0.4937	0.5354	0.5354	0.9893
CIFAR-10 vs SVHN	0.4989	0.3074	0.3075	0.9837
CIFAR-10 vs iSUN	0.5150	0.5610	0.5611	0.9708
CIFAR-100 vs CelebA	0.6624	0.5373	0.5374	0.8665
CIFAR-100 vs Constant	0.6162	0.6517	0.6517	0.9104
CIFAR-100 vs LSUN	0.6581	0.6790	0.6791	0.8981
CIFAR-100 vs Noise	0.6330	0.6787	0.6787	0.9332
CIFAR-100 vs SVHN	0.5737	0.4080	0.4080	0.9489
CIFAR-100 vs iSUN	0.6337	0.6818	0.6818	0.9106
CelebA vs CIFAR-10	0.4276	0.6164	0.6165	0.9703
CelebA vs CIFAR-100	0.4375	0.6217	0.6218	0.9643
CelebA vs Constant	0.4734	0.6542	0.6543	0.9615
CelebA vs LSUN	0.4201	0.6125	0.6125	0.9711
CelebA vs Noise	0.2915	0.5470	0.5471	0.9970
CelebA vs SVHN	0.4529	0.3902	0.3902	0.9483
CelebA vs TinyImagenet	0.4226	0.6195	0.6196	0.9654
CelebA vs iSUN	0.4074	0.6329	0.6330	0.9755
Constant vs CIFAR-10	0.4939	0.4856	0.4857	0.9468
Constant vs CIFAR-100	0.5015	0.4944	0.4946	0.9437
Constant vs CelebA	0.4954	0.3208	0.3208	0.9552
Constant vs LSUN	0.4971	0.4943	0.4944	0.9600
Constant vs Noise	0.3838	0.4088	0.4089	0.9740
Constant vs SVHN	0.5420	0.2909	0.2909	0.9155
Constant vs TinyImagenet	0.4935	0.4853	0.4854	0.9438
Constant vs iSUN	0.4862	0.5075	0.5076	0.9593
Constant28 vs FashionMNIST	0.2195	0.3766	0.3767	0.9961
Constant28 vs KMNIST	0.1765	0.3486	0.3488	0.9983
Constant28 vs MNIST	0.1263	0.3266	0.3268	0.9998
Constant28 vs Noise28	0.1684	0.3383	0.3385	0.9998
Constant28 vs NotMNIST	0.2339	0.3673	0.3675	0.9895
Constant28 vs Omniglot	0.1626	0.3830	0.3831	0.9971
FashionMNIST vs Constant28	0.7539	0.7280	0.7281	0.7492
FashionMNIST vs KMNIST	0.6832	0.6671	0.6672	0.8479
FashionMNIST vs MNIST	0.6829	0.6799	0.6800	0.8704
FashionMNIST vs Noise28	0.6873	0.6911	0.6911	0.8692
FashionMNIST vs NotMNIST	0.6697	0.6288	0.6290	0.8353
FashionMNIST vs Omniglot	0.6929	0.7186	0.7187	0.8410
KMNIST vs Constant28	0.7505	0.6655	0.6656	0.7355
KMNIST vs FashionMNIST	0.6746	0.5969	0.5970	0.7724
KMNIST vs MNIST	0.6965	0.6368	0.6369	0.8086
KMNIST vs Noise28	0.7167	0.6731	0.6732	0.8385
KMNIST vs NotMNIST	0.7376	0.6692	0.6693	0.7599
KMNIST vs Omniglot	0.7141	0.6980	0.6981	0.8045
MNIST vs Constant28	0.7600	0.7082	0.7083	0.6083
MNIST vs FashionMNIST	0.6632	0.5824	0.5825	0.7290
MNIST vs KMNIST	0.6681	0.5726	0.5727	0.6902
MNIST vs Noise28	0.6589	0.5739	0.5740	0.7335
MNIST vs NotMNIST	0.6724	0.5739	0.5740	0.6698
MNIST vs Omniglot	0.6615	0.6139	0.6140	0.6787
Noise vs CIFAR-10	0.4986	0.5024	0.5025	0.9621
Noise vs CIFAR-100	0.4994	0.5039	0.5040	0.9616
Noise vs CelebA	0.4726	0.3192	0.3193	0.9707
Noise vs Constant	0.6102	0.5815	0.5816	0.8823
Noise vs LSUN	0.5047	0.5037	0.5039	0.9527
Noise vs SVHN	0.4722	0.2685	0.2686	0.9803
Noise vs TinyImagenet	0.4999	0.5093	0.5094	0.9663

Noise vs iSUN	0.5187	0.5410	0.5411	0.9496
Noise28 vs Constant28	0.3859	0.4242	0.4243	0.9697
Noise28 vs FashionMNIST	0.4578	0.4653	0.4654	0.9586
Noise28 vs KMNIST	0.5165	0.5102	0.5103	0.9288
Noise28 vs MNIST	0.5316	0.5294	0.5295	0.9292
Noise28 vs NotMNIST	0.5268	0.5219	0.5220	0.9248
Noise28 vs Omniglot	0.5280	0.5750	0.5751	0.9285
NotMNIST vs Constant28	0.7035	0.6256	0.6256	0.7422
NotMNIST vs FashionMNIST	0.6840	0.6312	0.6313	0.8975
NotMNIST vs KMNIST	0.6571	0.5940	0.5942	0.8864
NotMNIST vs MNIST	0.6511	0.5836	0.5837	0.9069
NotMNIST vs Noise28	0.6470	0.5981	0.5982	0.9379
NotMNIST vs Omniglot	0.6621	0.6527	0.6529	0.9078
Omniglot vs Constant28	0.6048	0.5214	0.5216	0.9220
Omniglot vs FashionMNIST	0.5809	0.5100	0.5101	0.8775
Omniglot vs KMNIST	0.5910	0.5504	0.5505	0.9304
Omniglot vs MNIST	0.5888	0.5420	0.5421	0.9295
Omniglot vs Noise28	0.5335	0.4835	0.4836	0.9307
Omniglot vs NotMNIST	0.6155	0.5374	0.5375	0.8581
SVHN vs CIFAR-10	0.6795	0.8144	0.8144	0.8608
SVHN vs CIFAR-100	0.6736	0.8073	0.8073	0.8558
SVHN vs CelebA	0.6814	0.6975	0.6976	0.8648
SVHN vs Constant	0.5590	0.7498	0.7499	0.9471
SVHN vs LSUN	0.6840	0.8132	0.8132	0.8423
SVHN vs Noise	0.6347	0.7908	0.7909	0.9119
SVHN vs TinyImagenet	0.6697	0.8065	0.8066	0.8589
SVHN vs iSUN	0.6766	0.8248	0.8248	0.8521
TinyImagenet vs CelebA	0.6140	0.4561	0.4561	0.8807
TinyImagenet vs Constant	0.5139	0.5325	0.5325	0.9585
TinyImagenet vs LSUN	0.6099	0.6187	0.6188	0.9101
TinyImagenet vs Noise	0.5940	0.6207	0.6208	0.9289
TinyImagenet vs SVHN	0.4661	0.2906	0.2907	0.9745
TinyImagenet vs iSUN	0.5880	0.6251	0.6252	0.9227
Average	0.5536	0.5603	0.5604	0.9027

Table 185: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0.0012$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5506	0.3933	0.3934	0.9604
CIFAR-10 vs Constant	0.5202	0.5311	0.5312	0.9703
CIFAR-10 vs LSUN	0.5232	0.5359	0.5360	0.9696
CIFAR-10 vs Noise	0.4832	0.5241	0.5242	0.9917
CIFAR-10 vs SVHN	0.4894	0.2981	0.2982	0.9851
CIFAR-10 vs iSUN	0.5111	0.5551	0.5553	0.9734
CIFAR-100 vs CelebA	0.6553	0.5300	0.5300	0.8711
CIFAR-100 vs Constant	0.6212	0.6534	0.6534	0.9044
CIFAR-100 vs LSUN	0.6578	0.6788	0.6788	0.8972
CIFAR-100 vs Noise	0.6154	0.6645	0.6646	0.9443
CIFAR-100 vs SVHN	0.5546	0.3904	0.3904	0.9561
CIFAR-100 vs iSUN	0.6333	0.6814	0.6814	0.9110
CelebA vs CIFAR-10	0.4287	0.6170	0.6171	0.9703
CelebA vs CIFAR-100	0.4386	0.6225	0.6225	0.9632
CelebA vs Constant	0.4827	0.6610	0.6611	0.9594
CelebA vs LSUN	0.4224	0.6140	0.6141	0.9704
CelebA vs Noise	0.2935	0.5469	0.5469	0.9966
CelebA vs SVHN	0.4512	0.3889	0.3890	0.9488
CelebA vs TinyImagenet	0.4231	0.6199	0.6200	0.9661
CelebA vs iSUN	0.4093	0.6341	0.6342	0.9742
Constant vs CIFAR-10	0.4921	0.4839	0.4840	0.9466
Constant vs CIFAR-100	0.5014	0.4952	0.4953	0.9449
Constant vs CelebA	0.4953	0.3207	0.3208	0.9547
Constant vs LSUN	0.4972	0.4945	0.4946	0.9596
Constant vs Noise	0.3866	0.4097	0.4098	0.9706
Constant vs SVHN	0.5400	0.2892	0.2893	0.9146
Constant vs TinyImagenet	0.4946	0.4867	0.4868	0.9461
Constant vs iSUN	0.4853	0.5073	0.5074	0.9598
Constant28 vs FashionMNIST	0.2173	0.3748	0.3750	0.9962
Constant28 vs KMNIST	0.1738	0.3469	0.3471	0.9986
Constant28 vs MNIST	0.1232	0.3252	0.3253	0.9999
Constant28 vs Noise28	0.1661	0.3373	0.3375	1.0000
Constant28 vs NotMNIST	0.2301	0.3659	0.3660	0.9900
Constant28 vs Omniglot	0.1609	0.3819	0.3821	0.9983
FashionMNIST vs Constant28	0.7486	0.7193	0.7194	0.7548
FashionMNIST vs KMNIST	0.6794	0.6630	0.6631	0.8494
FashionMNIST vs MNIST	0.6791	0.6763	0.6764	0.8722
FashionMNIST vs Noise28	0.6751	0.6800	0.6801	0.8823
FashionMNIST vs NotMNIST	0.6668	0.6252	0.6253	0.8359
FashionMNIST vs Omniglot	0.6888	0.7149	0.7150	0.8419
KMNIST vs Constant28	0.7413	0.6568	0.6569	0.7447
KMNIST vs FashionMNIST	0.6674	0.5921	0.5922	0.7821
KMNIST vs MNIST	0.6922	0.6330	0.6331	0.8137
KMNIST vs Noise28	0.7019	0.6629	0.6630	0.8663
KMNIST vs NotMNIST	0.7342	0.6655	0.6656	0.7650
KMNIST vs Omniglot	0.7091	0.6942	0.6943	0.8107
MNIST vs Constant28	0.7472	0.6959	0.6961	0.6370
MNIST vs FashionMNIST	0.6545	0.5767	0.5768	0.7449
MNIST vs KMNIST	0.6629	0.5687	0.5687	0.6981
MNIST vs Noise28	0.6414	0.5620	0.5621	0.7622
MNIST vs NotMNIST	0.6681	0.5706	0.5706	0.6764
MNIST vs Omniglot	0.6560	0.6102	0.6103	0.6880
Noise vs CIFAR-10	0.4886	0.4947	0.4948	0.9615
Noise vs CIFAR-100	0.4934	0.4993	0.4994	0.9636
Noise vs CelebA	0.4669	0.3157	0.3158	0.9694
Noise vs Constant	0.6138	0.5789	0.5790	0.8790
Noise vs LSUN	0.5027	0.5022	0.5024	0.9524
Noise vs SVHN	0.4578	0.2601	0.2601	0.9788
Noise vs TinyImagenet	0.4875	0.5002	0.5003	0.9641

Noise vs iSUN	0.5111	0.5327	0.5328	0.9483
Noise28 vs Constant28	0.3828	0.4209	0.4210	0.9618
Noise28 vs FashionMNIST	0.4576	0.4652	0.4653	0.9608
Noise28 vs KMNIST	0.5200	0.5114	0.5116	0.9256
Noise28 vs MNIST	0.5376	0.5319	0.5320	0.9243
Noise28 vs NotMNIST	0.5312	0.5238	0.5240	0.9217
Noise28 vs Omniglot	0.5343	0.5781	0.5782	0.9213
NotMNIST vs Constant28	0.6903	0.6063	0.6063	0.7440
NotMNIST vs FashionMNIST	0.6740	0.6222	0.6224	0.9052
NotMNIST vs KMNIST	0.6507	0.5886	0.5887	0.8917
NotMNIST vs MNIST	0.6465	0.5802	0.5803	0.9085
NotMNIST vs Noise28	0.6260	0.5816	0.5817	0.9532
NotMNIST vs Omniglot	0.6552	0.6471	0.6473	0.9116
Omniglot vs Constant28	0.5938	0.5112	0.5114	0.9323
Omniglot vs FashionMNIST	0.5743	0.5040	0.5042	0.8823
Omniglot vs KMNIST	0.5917	0.5507	0.5508	0.9303
Omniglot vs MNIST	0.5898	0.5427	0.5428	0.9291
Omniglot vs Noise28	0.5121	0.4661	0.4662	0.9411
Omniglot vs NotMNIST	0.6145	0.5359	0.5360	0.8586
SVHN vs CIFAR-10	0.6743	0.8099	0.8099	0.8581
SVHN vs CIFAR-100	0.6675	0.8026	0.8027	0.8523
SVHN vs CelebA	0.6750	0.6900	0.6901	0.8625
SVHN vs Constant	0.5636	0.7493	0.7493	0.9322
SVHN vs LSUN	0.6797	0.8092	0.8092	0.8385
SVHN vs Noise	0.6206	0.7820	0.7820	0.9185
SVHN vs TinyImagenet	0.6629	0.8013	0.8014	0.8583
SVHN vs iSUN	0.6706	0.8202	0.8203	0.8475
TinyImagenet vs CelebA	0.6073	0.4500	0.4501	0.8865
TinyImagenet vs Constant	0.5317	0.5448	0.5449	0.9465
TinyImagenet vs LSUN	0.6126	0.6211	0.6212	0.9126
TinyImagenet vs Noise	0.5800	0.6090	0.6090	0.9390
TinyImagenet vs SVHN	0.4471	0.2776	0.2777	0.9786
TinyImagenet vs iSUN	0.5905	0.6272	0.6273	0.9224
Average	0.5492	0.5562	0.5563	0.9050

Table 186: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0.0016$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5456	0.3851	0.3852	0.9619
CIFAR-10 vs Constant	0.5252	0.5287	0.5289	0.9669
CIFAR-10 vs LSUN	0.5200	0.5302	0.5303	0.9689
CIFAR-10 vs Noise	0.4769	0.5162	0.5163	0.9918
CIFAR-10 vs SVHN	0.4838	0.2913	0.2914	0.9846
CIFAR-10 vs iSUN	0.5083	0.5500	0.5501	0.9736
CIFAR-100 vs CelebA	0.6487	0.5230	0.5231	0.8778
CIFAR-100 vs Constant	0.6268	0.6567	0.6567	0.8937
CIFAR-100 vs LSUN	0.6572	0.6783	0.6783	0.8970
CIFAR-100 vs Noise	0.6003	0.6520	0.6520	0.9507
CIFAR-100 vs SVHN	0.5402	0.3764	0.3765	0.9604
CIFAR-100 vs iSUN	0.6326	0.6807	0.6808	0.9114
CelebA vs CIFAR-10	0.4298	0.6176	0.6177	0.9686
CelebA vs CIFAR-100	0.4397	0.6233	0.6233	0.9620
CelebA vs Constant	0.4902	0.6668	0.6668	0.9593
CelebA vs LSUN	0.4243	0.6153	0.6154	0.9700
CelebA vs Noise	0.2996	0.5493	0.5494	0.9961
CelebA vs SVHN	0.4508	0.3884	0.3885	0.9478
CelebA vs TinyImagenet	0.4241	0.6205	0.6206	0.9651
CelebA vs iSUN	0.4109	0.6352	0.6353	0.9741
Constant vs CIFAR-10	0.4906	0.4833	0.4834	0.9481
Constant vs CIFAR-100	0.4997	0.4947	0.4949	0.9455
Constant vs CelebA	0.4926	0.3189	0.3190	0.9556
Constant vs LSUN	0.4938	0.4918	0.4919	0.9608
Constant vs Noise	0.3879	0.4105	0.4106	0.9707
Constant vs SVHN	0.5386	0.2880	0.2881	0.9162
Constant vs TinyImagenet	0.4935	0.4861	0.4862	0.9472
Constant vs iSUN	0.4842	0.5060	0.5061	0.9590
Constant28 vs FashionMNIST	0.2159	0.3735	0.3737	0.9967
Constant28 vs KMNIST	0.1719	0.3455	0.3457	0.9986
Constant28 vs MNIST	0.1211	0.3242	0.3244	0.9999
Constant28 vs Noise28	0.1658	0.3368	0.3369	1.0000
Constant28 vs NotMNIST	0.2273	0.3646	0.3647	0.9908
Constant28 vs Omniglot	0.1622	0.3820	0.3822	0.9988
FashionMNIST vs Constant28	0.7448	0.7122	0.7123	0.7587
FashionMNIST vs KMNIST	0.6757	0.6589	0.6590	0.8507
FashionMNIST vs MNIST	0.6752	0.6727	0.6728	0.8761
FashionMNIST vs Noise28	0.6642	0.6699	0.6699	0.8912
FashionMNIST vs NotMNIST	0.6637	0.6215	0.6216	0.8374
FashionMNIST vs Omniglot	0.6846	0.7112	0.7113	0.8467
KMNIST vs Constant28	0.7322	0.6482	0.6483	0.7540
KMNIST vs FashionMNIST	0.6605	0.5874	0.5875	0.7925
KMNIST vs MNIST	0.6880	0.6292	0.6293	0.8192
KMNIST vs Noise28	0.6880	0.6531	0.6532	0.8867
KMNIST vs NotMNIST	0.7310	0.6620	0.6621	0.7710
KMNIST vs Omniglot	0.7042	0.6905	0.6906	0.8188
MNIST vs Constant28	0.7359	0.6847	0.6849	0.6677
MNIST vs FashionMNIST	0.6462	0.5713	0.5714	0.7578
MNIST vs KMNIST	0.6579	0.5648	0.5649	0.7059
MNIST vs Noise28	0.6253	0.5516	0.5517	0.7853
MNIST vs NotMNIST	0.6639	0.5673	0.5674	0.6815
MNIST vs Omniglot	0.6507	0.6067	0.6067	0.6944
Noise vs CIFAR-10	0.4807	0.4890	0.4891	0.9617
Noise vs CIFAR-100	0.4834	0.4905	0.4906	0.9608
Noise vs CelebA	0.4652	0.3146	0.3147	0.9662
Noise vs Constant	0.6112	0.5730	0.5731	0.8728
Noise vs LSUN	0.4995	0.5001	0.5002	0.9503
Noise vs SVHN	0.4493	0.2544	0.2545	0.9768
Noise vs TinyImagenet	0.4809	0.4946	0.4947	0.9621

Noise vs iSUN	0.5086	0.5310	0.5311	0.9496
Noise28 vs Constant28	0.3816	0.4192	0.4193	0.9576
Noise28 vs FashionMNIST	0.4594	0.4666	0.4667	0.9588
Noise28 vs KMNIST	0.5235	0.5133	0.5134	0.9256
Noise28 vs MNIST	0.5410	0.5328	0.5329	0.9228
Noise28 vs NotMNIST	0.5347	0.5253	0.5254	0.9195
Noise28 vs Omniglot	0.5372	0.5790	0.5792	0.9203
NotMNIST vs Constant28	0.6799	0.5914	0.5914	0.7449
NotMNIST vs FashionMNIST	0.6645	0.6137	0.6139	0.9122
NotMNIST vs KMNIST	0.6445	0.5834	0.5835	0.8940
NotMNIST vs MNIST	0.6420	0.5768	0.5769	0.9116
NotMNIST vs Noise28	0.6070	0.5667	0.5668	0.9623
NotMNIST vs Omniglot	0.6486	0.6417	0.6418	0.9161
Omniglot vs Constant28	0.5854	0.5034	0.5035	0.9401
Omniglot vs FashionMNIST	0.5680	0.4985	0.4986	0.8866
Omniglot vs KMNIST	0.5922	0.5510	0.5510	0.9294
Omniglot vs MNIST	0.5907	0.5434	0.5435	0.9292
Omniglot vs Noise28	0.4927	0.4508	0.4509	0.9484
Omniglot vs NotMNIST	0.6135	0.5345	0.5346	0.8581
SVHN vs CIFAR-10	0.6691	0.8054	0.8054	0.8544
SVHN vs CIFAR-100	0.6613	0.7981	0.7982	0.8470
SVHN vs CelebA	0.6685	0.6829	0.6829	0.8588
SVHN vs Constant	0.5677	0.7496	0.7497	0.9159
SVHN vs LSUN	0.6749	0.8051	0.8052	0.8355
SVHN vs Noise	0.6082	0.7742	0.7743	0.9187
SVHN vs TinyImagenet	0.6562	0.7964	0.7964	0.8569
SVHN vs iSUN	0.6646	0.8159	0.8159	0.8449
TinyImagenet vs CelebA	0.6012	0.4446	0.4446	0.8927
TinyImagenet vs Constant	0.5519	0.5582	0.5582	0.9365
TinyImagenet vs LSUN	0.6144	0.6230	0.6230	0.9112
TinyImagenet vs Noise	0.5683	0.5992	0.5992	0.9464
TinyImagenet vs SVHN	0.4368	0.2697	0.2698	0.9791
TinyImagenet vs iSUN	0.5921	0.6287	0.6287	0.9231
Average	0.5456	0.5526	0.5527	0.9068

Table 187: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0.002$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5415	0.3779	0.3780	0.9624
CIFAR-10 vs Constant	0.5308	0.5287	0.5288	0.9615
CIFAR-10 vs LSUN	0.5174	0.5253	0.5254	0.9696
CIFAR-10 vs Noise	0.4735	0.5113	0.5114	0.9889
CIFAR-10 vs SVHN	0.4812	0.2866	0.2867	0.9820
CIFAR-10 vs iSUN	0.5060	0.5451	0.5452	0.9738
CIFAR-100 vs CelebA	0.6426	0.5167	0.5168	0.8839
CIFAR-100 vs Constant	0.6334	0.6601	0.6601	0.8858
CIFAR-100 vs LSUN	0.6565	0.6777	0.6777	0.8977
CIFAR-100 vs Noise	0.5870	0.6410	0.6410	0.9563
CIFAR-100 vs SVHN	0.5297	0.3658	0.3658	0.9639
CIFAR-100 vs iSUN	0.6317	0.6800	0.6800	0.9126
CelebA vs CIFAR-10	0.4309	0.6183	0.6184	0.9686
CelebA vs CIFAR-100	0.4407	0.6240	0.6241	0.9623
CelebA vs Constant	0.4962	0.6715	0.6716	0.9584
CelebA vs LSUN	0.4258	0.6165	0.6166	0.9694
CelebA vs Noise	0.3076	0.5530	0.5530	0.9959
CelebA vs SVHN	0.4513	0.3886	0.3887	0.9489
CelebA vs TinyImagenet	0.4249	0.6212	0.6213	0.9665
CelebA vs iSUN	0.4124	0.6361	0.6362	0.9723
Constant vs CIFAR-10	0.4885	0.4808	0.4809	0.9509
Constant vs CIFAR-100	0.4995	0.4943	0.4944	0.9473
Constant vs CelebA	0.4926	0.3188	0.3188	0.9564
Constant vs LSUN	0.4914	0.4888	0.4889	0.9619
Constant vs Noise	0.3950	0.4156	0.4157	0.9679
Constant vs SVHN	0.5388	0.2879	0.2880	0.9152
Constant vs TinyImagenet	0.4921	0.4849	0.4850	0.9477
Constant vs iSUN	0.4826	0.5046	0.5047	0.9606
Constant28 vs FashionMNIST	0.2151	0.3727	0.3729	0.9969
Constant28 vs KMNIST	0.1715	0.3449	0.3450	0.9980
Constant28 vs MNIST	0.1207	0.3240	0.3242	0.9998
Constant28 vs Noise28	0.1656	0.3367	0.3368	0.9999
Constant28 vs NotMNIST	0.2255	0.3639	0.3640	0.9906
Constant28 vs Omniglot	0.1651	0.3828	0.3829	0.9988
FashionMNIST vs Constant28	0.7421	0.7065	0.7065	0.7586
FashionMNIST vs KMNIST	0.6720	0.6548	0.6549	0.8525
FashionMNIST vs MNIST	0.6713	0.6691	0.6692	0.8800
FashionMNIST vs Noise28	0.6545	0.6604	0.6604	0.8984
FashionMNIST vs NotMNIST	0.6607	0.6179	0.6180	0.8365
FashionMNIST vs Omniglot	0.6804	0.7076	0.7077	0.8512
KMNIST vs Constant28	0.7247	0.6408	0.6409	0.7605
KMNIST vs FashionMNIST	0.6538	0.5829	0.5830	0.8020
KMNIST vs MNIST	0.6839	0.6255	0.6256	0.8245
KMNIST vs Noise28	0.6750	0.6437	0.6438	0.9048
KMNIST vs NotMNIST	0.7278	0.6585	0.6586	0.7756
KMNIST vs Omniglot	0.6994	0.6868	0.6869	0.8275
MNIST vs Constant28	0.7248	0.6742	0.6743	0.6940
MNIST vs FashionMNIST	0.6383	0.5662	0.5663	0.7690
MNIST vs KMNIST	0.6529	0.5611	0.5611	0.7132
MNIST vs Noise28	0.6109	0.5426	0.5427	0.8039
MNIST vs NotMNIST	0.6598	0.5642	0.5643	0.6875
MNIST vs Omniglot	0.6456	0.6032	0.6033	0.7045
Noise vs CIFAR-10	0.4797	0.4879	0.4880	0.9600
Noise vs CIFAR-100	0.4809	0.4888	0.4889	0.9577
Noise vs CelebA	0.4654	0.3146	0.3147	0.9637
Noise vs Constant	0.6178	0.5753	0.5754	0.8700
Noise vs LSUN	0.4967	0.4989	0.4990	0.9515
Noise vs SVHN	0.4472	0.2516	0.2517	0.9752
Noise vs TinyImagenet	0.4792	0.4933	0.4934	0.9606

Noise vs iSUN	0.5070	0.5297	0.5298	0.9518
Noise28 vs Constant28	0.3786	0.4166	0.4167	0.9537
Noise28 vs FashionMNIST	0.4617	0.4682	0.4683	0.9586
Noise28 vs KMNIST	0.5270	0.5153	0.5154	0.9251
Noise28 vs MNIST	0.5443	0.5333	0.5335	0.9189
Noise28 vs NotMNIST	0.5381	0.5270	0.5272	0.9193
Noise28 vs Omniglot	0.5388	0.5792	0.5794	0.9237
NotMNIST vs Constant28	0.6709	0.5796	0.5797	0.7467
NotMNIST vs FashionMNIST	0.6554	0.6057	0.6058	0.9192
NotMNIST vs KMNIST	0.6384	0.5783	0.5784	0.8982
NotMNIST vs MNIST	0.6376	0.5735	0.5736	0.9155
NotMNIST vs Noise28	0.5898	0.5536	0.5537	0.9701
NotMNIST vs Omniglot	0.6421	0.6364	0.6366	0.9192
Omniglot vs Constant28	0.5776	0.4962	0.4963	0.9452
Omniglot vs FashionMNIST	0.5621	0.4932	0.4933	0.8905
Omniglot vs KMNIST	0.5927	0.5512	0.5513	0.9301
Omniglot vs MNIST	0.5915	0.5440	0.5441	0.9297
Omniglot vs Noise28	0.4751	0.4374	0.4375	0.9546
Omniglot vs NotMNIST	0.6126	0.5332	0.5333	0.8582
SVHN vs CIFAR-10	0.6635	0.8011	0.8011	0.8553
SVHN vs CIFAR-100	0.6553	0.7939	0.7939	0.8450
SVHN vs CelebA	0.6620	0.6763	0.6763	0.8586
SVHN vs Constant	0.5753	0.7522	0.7522	0.9036
SVHN vs LSUN	0.6697	0.8012	0.8012	0.8345
SVHN vs Noise	0.5971	0.7672	0.7673	0.9201
SVHN vs TinyImagenet	0.6498	0.7917	0.7918	0.8561
SVHN vs iSUN	0.6583	0.8118	0.8119	0.8444
TinyImagenet vs CelebA	0.5963	0.4402	0.4402	0.8958
TinyImagenet vs Constant	0.5723	0.5738	0.5738	0.9204
TinyImagenet vs LSUN	0.6160	0.6245	0.6246	0.9115
TinyImagenet vs Noise	0.5584	0.5910	0.5910	0.9498
TinyImagenet vs SVHN	0.4328	0.2660	0.2661	0.9787
TinyImagenet vs iSUN	0.5936	0.6299	0.6299	0.9241
Average	0.5430	0.5499	0.5500	0.9085

Table 188: The detailed performance for indicator ODIN with $T = 100$, $\epsilon = 0.0024$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5383	0.3720	0.3721	0.9622
CIFAR-10 vs Constant	0.5363	0.5282	0.5283	0.9544
CIFAR-10 vs LSUN	0.5154	0.5210	0.5211	0.9685
CIFAR-10 vs Noise	0.4720	0.5075	0.5076	0.9841
CIFAR-10 vs SVHN	0.4805	0.2830	0.2831	0.9801
CIFAR-10 vs iSUN	0.5042	0.5413	0.5414	0.9728
CIFAR-100 vs CelebA	0.6372	0.5110	0.5110	0.8882
CIFAR-100 vs Constant	0.6402	0.6648	0.6648	0.8791
CIFAR-100 vs LSUN	0.6554	0.6768	0.6768	0.9012
CIFAR-100 vs Noise	0.5753	0.6312	0.6313	0.9622
CIFAR-100 vs SVHN	0.5217	0.3574	0.3575	0.9657
CIFAR-100 vs iSUN	0.6307	0.6792	0.6792	0.9114
CelebA vs CIFAR-10	0.4320	0.6190	0.6191	0.9674
CelebA vs CIFAR-100	0.4423	0.6250	0.6250	0.9612
CelebA vs Constant	0.5005	0.6752	0.6753	0.9579
CelebA vs LSUN	0.4268	0.6174	0.6175	0.9683
CelebA vs Noise	0.3170	0.5575	0.5576	0.9953
CelebA vs SVHN	0.4526	0.3893	0.3894	0.9479
CelebA vs TinyImagenet	0.4258	0.6218	0.6219	0.9660
CelebA vs iSUN	0.4140	0.6371	0.6372	0.9724
Constant vs CIFAR-10	0.4898	0.4825	0.4826	0.9519
Constant vs CIFAR-100	0.4976	0.4920	0.4921	0.9473
Constant vs CelebA	0.4924	0.3184	0.3184	0.9561
Constant vs LSUN	0.4923	0.4895	0.4896	0.9608
Constant vs Noise	0.4027	0.4196	0.4197	0.9686
Constant vs SVHN	0.5387	0.2880	0.2880	0.9160
Constant vs TinyImagenet	0.4937	0.4860	0.4861	0.9470
Constant vs iSUN	0.4847	0.5064	0.5065	0.9606
Constant28 vs FashionMNIST	0.2145	0.3720	0.3722	0.9968
Constant28 vs KMNIST	0.1711	0.3444	0.3445	0.9974
Constant28 vs MNIST	0.1209	0.3240	0.3242	0.9999
Constant28 vs Noise28	0.1650	0.3364	0.3365	0.9997
Constant28 vs NotMNIST	0.2238	0.3633	0.3634	0.9918
Constant28 vs Omniglot	0.1681	0.3836	0.3838	0.9985
FashionMNIST vs Constant28	0.7402	0.7015	0.7016	0.7596
FashionMNIST vs KMNIST	0.6682	0.6508	0.6509	0.8535
FashionMNIST vs MNIST	0.6673	0.6653	0.6653	0.8817
FashionMNIST vs Noise28	0.6461	0.6518	0.6518	0.9024
FashionMNIST vs NotMNIST	0.6576	0.6144	0.6145	0.8358
FashionMNIST vs Omniglot	0.6762	0.7038	0.7039	0.8525
KMNIST vs Constant28	0.7172	0.6332	0.6333	0.7679
KMNIST vs FashionMNIST	0.6473	0.5786	0.5787	0.8108
KMNIST vs MNIST	0.6798	0.6219	0.6220	0.8282
KMNIST vs Noise28	0.6631	0.6347	0.6349	0.9179
KMNIST vs NotMNIST	0.7247	0.6550	0.6551	0.7778
KMNIST vs Omniglot	0.6946	0.6831	0.6833	0.8327
MNIST vs Constant28	0.7144	0.6642	0.6644	0.7131
MNIST vs FashionMNIST	0.6308	0.5614	0.5615	0.7830
MNIST vs KMNIST	0.6481	0.5574	0.5575	0.7219
MNIST vs Noise28	0.5983	0.5347	0.5348	0.8228
MNIST vs NotMNIST	0.6559	0.5612	0.5613	0.6942
MNIST vs Omniglot	0.6405	0.5998	0.5999	0.7119
Noise vs CIFAR-10	0.4799	0.4874	0.4875	0.9589
Noise vs CIFAR-100	0.4850	0.4907	0.4909	0.9570
Noise vs CelebA	0.4700	0.3176	0.3177	0.9603
Noise vs Constant	0.6244	0.5788	0.5789	0.8669
Noise vs LSUN	0.4952	0.4976	0.4977	0.9537
Noise vs SVHN	0.4528	0.2529	0.2530	0.9750
Noise vs TinyImagenet	0.4792	0.4921	0.4922	0.9590

Noise vs iSUN	0.5042	0.5282	0.5283	0.9534
Noise28 vs Constant28	0.3791	0.4156	0.4157	0.9519
Noise28 vs FashionMNIST	0.4643	0.4702	0.4703	0.9564
Noise28 vs KMNIST	0.5286	0.5151	0.5152	0.9219
Noise28 vs MNIST	0.5463	0.5331	0.5332	0.9201
Noise28 vs NotMNIST	0.5397	0.5270	0.5272	0.9194
Noise28 vs Omniglot	0.5407	0.5792	0.5793	0.9198
NotMNIST vs Constant28	0.6627	0.5695	0.5696	0.7486
NotMNIST vs FashionMNIST	0.6468	0.5981	0.5983	0.9251
NotMNIST vs KMNIST	0.6325	0.5733	0.5735	0.9032
NotMNIST vs MNIST	0.6334	0.5703	0.5704	0.9184
NotMNIST vs Noise28	0.5746	0.5418	0.5419	0.9750
NotMNIST vs Omniglot	0.6359	0.6313	0.6314	0.9218
Omniglot vs Constant28	0.5712	0.4903	0.4904	0.9484
Omniglot vs FashionMNIST	0.5566	0.4883	0.4884	0.8947
Omniglot vs KMNIST	0.5932	0.5514	0.5515	0.9295
Omniglot vs MNIST	0.5923	0.5446	0.5447	0.9286
Omniglot vs Noise28	0.4591	0.4255	0.4256	0.9595
Omniglot vs NotMNIST	0.6117	0.5319	0.5320	0.8586
SVHN vs CIFAR-10	0.6579	0.7969	0.7970	0.8539
SVHN vs CIFAR-100	0.6494	0.7900	0.7901	0.8483
SVHN vs CelebA	0.6554	0.6700	0.6700	0.8586
SVHN vs Constant	0.5825	0.7553	0.7554	0.8938
SVHN vs LSUN	0.6642	0.7973	0.7973	0.8331
SVHN vs Noise	0.5869	0.7611	0.7611	0.9201
SVHN vs TinyImagenet	0.6433	0.7874	0.7874	0.8561
SVHN vs iSUN	0.6522	0.8081	0.8081	0.8444
TinyImagenet vs CelebA	0.5920	0.4363	0.4364	0.9007
TinyImagenet vs Constant	0.5928	0.5885	0.5885	0.9075
TinyImagenet vs LSUN	0.6171	0.6256	0.6256	0.9122
TinyImagenet vs Noise	0.5503	0.5840	0.5840	0.9529
TinyImagenet vs SVHN	0.4322	0.2644	0.2645	0.9783
TinyImagenet vs iSUN	0.5945	0.6306	0.6307	0.9235
Average	0.5410	0.5477	0.5478	0.9097

Table 189: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0.0028$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5360	0.3671	0.3672	0.9608
CIFAR-10 vs Constant	0.5427	0.5294	0.5295	0.9457
CIFAR-10 vs LSUN	0.5138	0.5175	0.5176	0.9678
CIFAR-10 vs Noise	0.4722	0.5052	0.5053	0.9800
CIFAR-10 vs SVHN	0.4812	0.2807	0.2807	0.9769
CIFAR-10 vs iSUN	0.5031	0.5381	0.5382	0.9724
CIFAR-100 vs CelebA	0.6320	0.5055	0.5055	0.8930
CIFAR-100 vs Constant	0.6477	0.6690	0.6691	0.8702
CIFAR-100 vs LSUN	0.6542	0.6759	0.6759	0.9008
CIFAR-100 vs Noise	0.5652	0.6226	0.6226	0.9645
CIFAR-100 vs SVHN	0.5162	0.3509	0.3509	0.9675
CIFAR-100 vs iSUN	0.6296	0.6782	0.6782	0.9147
CelebA vs CIFAR-10	0.4335	0.6198	0.6199	0.9675
CelebA vs CIFAR-100	0.4432	0.6258	0.6258	0.9617
CelebA vs Constant	0.5041	0.6783	0.6783	0.9584
CelebA vs LSUN	0.4281	0.6183	0.6184	0.9685
CelebA vs Noise	0.3282	0.5631	0.5632	0.9931
CelebA vs SVHN	0.4542	0.3902	0.3903	0.9475
CelebA vs TinyImagenet	0.4263	0.6224	0.6224	0.9655
CelebA vs iSUN	0.4149	0.6378	0.6379	0.9715
Constant vs CIFAR-10	0.4881	0.4809	0.4810	0.9513
Constant vs CIFAR-100	0.4981	0.4919	0.4920	0.9458
Constant vs CelebA	0.4916	0.3175	0.3176	0.9573
Constant vs LSUN	0.4901	0.4880	0.4881	0.9602
Constant vs Noise	0.4096	0.4239	0.4240	0.9652
Constant vs SVHN	0.5384	0.2876	0.2876	0.9175
Constant vs TinyImagenet	0.4932	0.4849	0.4850	0.9477
Constant vs iSUN	0.4813	0.5042	0.5043	0.9610
Constant28 vs FashionMNIST	0.2141	0.3714	0.3716	0.9967
Constant28 vs KMNIST	0.1705	0.3439	0.3440	0.9981
Constant28 vs MNIST	0.1209	0.3240	0.3241	1.0000
Constant28 vs Noise28	0.1639	0.3362	0.3364	0.9998
Constant28 vs NotMNIST	0.2219	0.3625	0.3626	0.9921
Constant28 vs Omniglot	0.1706	0.3844	0.3846	0.9970
FashionMNIST vs Constant28	0.7387	0.6967	0.6968	0.7551
FashionMNIST vs KMNIST	0.6644	0.6469	0.6469	0.8562
FashionMNIST vs MNIST	0.6633	0.6615	0.6615	0.8844
FashionMNIST vs Noise28	0.6388	0.6441	0.6441	0.9067
FashionMNIST vs NotMNIST	0.6544	0.6109	0.6110	0.8354
FashionMNIST vs Omniglot	0.6722	0.7000	0.7001	0.8551
KMNIST vs Constant28	0.7105	0.6262	0.6263	0.7752
KMNIST vs FashionMNIST	0.6410	0.5745	0.5746	0.8195
KMNIST vs MNIST	0.6758	0.6183	0.6184	0.8320
KMNIST vs Noise28	0.6520	0.6259	0.6260	0.9295
KMNIST vs NotMNIST	0.7216	0.6516	0.6517	0.7815
KMNIST vs Omniglot	0.6900	0.6797	0.6798	0.8380
MNIST vs Constant28	0.7050	0.6551	0.6552	0.7292
MNIST vs FashionMNIST	0.6238	0.5569	0.5570	0.7921
MNIST vs KMNIST	0.6434	0.5539	0.5540	0.7271
MNIST vs Noise28	0.5873	0.5282	0.5283	0.8345
MNIST vs NotMNIST	0.6521	0.5583	0.5584	0.6994
MNIST vs Omniglot	0.6356	0.5966	0.5966	0.7182
Noise vs CIFAR-10	0.4804	0.4863	0.4864	0.9570
Noise vs CIFAR-100	0.4869	0.4919	0.4920	0.9559
Noise vs CelebA	0.4718	0.3181	0.3182	0.9592
Noise vs Constant	0.6287	0.5806	0.5807	0.8609
Noise vs LSUN	0.4985	0.4989	0.4990	0.9530
Noise vs SVHN	0.4602	0.2544	0.2545	0.9718
Noise vs TinyImagenet	0.4783	0.4901	0.4902	0.9568

Noise vs iSUN	0.5035	0.5271	0.5272	0.9545
Noise28 vs Constant28	0.3803	0.4150	0.4151	0.9487
Noise28 vs FashionMNIST	0.4679	0.4726	0.4727	0.9547
Noise28 vs KMNIST	0.5296	0.5153	0.5154	0.9206
Noise28 vs MNIST	0.5481	0.5327	0.5328	0.9198
Noise28 vs NotMNIST	0.5430	0.5288	0.5289	0.9174
Noise28 vs Omniglot	0.5420	0.5788	0.5790	0.9201
NotMNIST vs Constant28	0.6554	0.5619	0.5620	0.7440
NotMNIST vs FashionMNIST	0.6388	0.5910	0.5912	0.9299
NotMNIST vs KMNIST	0.6268	0.5686	0.5687	0.9071
NotMNIST vs MNIST	0.6292	0.5672	0.5673	0.9210
NotMNIST vs Noise28	0.5610	0.5316	0.5317	0.9789
NotMNIST vs Omniglot	0.6298	0.6264	0.6265	0.9240
Omniglot vs Constant28	0.5667	0.4859	0.4860	0.9492
Omniglot vs FashionMNIST	0.5514	0.4836	0.4837	0.8982
Omniglot vs KMNIST	0.5936	0.5515	0.5516	0.9297
Omniglot vs MNIST	0.5931	0.5451	0.5452	0.9278
Omniglot vs Noise28	0.4448	0.4152	0.4153	0.9630
Omniglot vs NotMNIST	0.6108	0.5307	0.5308	0.8585
SVHN vs CIFAR-10	0.6522	0.7932	0.7933	0.8558
SVHN vs CIFAR-100	0.6435	0.7864	0.7864	0.8469
SVHN vs CelebA	0.6486	0.6638	0.6638	0.8630
SVHN vs Constant	0.5914	0.7575	0.7575	0.8718
SVHN vs LSUN	0.6587	0.7938	0.7938	0.8356
SVHN vs Noise	0.5777	0.7557	0.7558	0.9201
SVHN vs TinyImagenet	0.6370	0.7834	0.7835	0.8571
SVHN vs iSUN	0.6460	0.8044	0.8045	0.8453
TinyImagenet vs CelebA	0.5885	0.4330	0.4330	0.9021
TinyImagenet vs Constant	0.6124	0.6035	0.6036	0.8882
TinyImagenet vs LSUN	0.6171	0.6261	0.6262	0.9126
TinyImagenet vs Noise	0.5440	0.5785	0.5785	0.9553
TinyImagenet vs SVHN	0.4346	0.2645	0.2646	0.9761
TinyImagenet vs iSUN	0.5952	0.6314	0.6315	0.9224
Average	0.5393	0.5457	0.5458	0.9102

Table 190: The detailed performance for indicator ODIN with $T = 100$, $\epsilon = 0.0032$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5342	0.3633	0.3634	0.9604
CIFAR-10 vs Constant	0.5489	0.5311	0.5313	0.9397
CIFAR-10 vs LSUN	0.5127	0.5147	0.5148	0.9666
CIFAR-10 vs Noise	0.4727	0.5035	0.5036	0.9752
CIFAR-10 vs SVHN	0.4827	0.2792	0.2793	0.9735
CIFAR-10 vs iSUN	0.5023	0.5355	0.5356	0.9705
CIFAR-100 vs CelebA	0.6277	0.5006	0.5007	0.8974
CIFAR-100 vs Constant	0.6547	0.6733	0.6733	0.8654
CIFAR-100 vs LSUN	0.6530	0.6748	0.6748	0.9038
CIFAR-100 vs Noise	0.5564	0.6150	0.6150	0.9685
CIFAR-100 vs SVHN	0.5123	0.3459	0.3460	0.9682
CIFAR-100 vs iSUN	0.6284	0.6771	0.6771	0.9174
CelebA vs CIFAR-10	0.4345	0.6205	0.6206	0.9659
CelebA vs CIFAR-100	0.4441	0.6264	0.6265	0.9615
CelebA vs Constant	0.5067	0.6806	0.6807	0.9590
CelebA vs LSUN	0.4292	0.6191	0.6192	0.9679
CelebA vs Noise	0.3394	0.5690	0.5691	0.9921
CelebA vs SVHN	0.4563	0.3915	0.3916	0.9473
CelebA vs TinyImagenet	0.4278	0.6234	0.6234	0.9655
CelebA vs iSUN	0.4159	0.6385	0.6386	0.9721
Constant vs CIFAR-10	0.4882	0.4804	0.4805	0.9508
Constant vs CIFAR-100	0.4983	0.4921	0.4922	0.9479
Constant vs CelebA	0.4913	0.3176	0.3177	0.9573
Constant vs LSUN	0.4914	0.4893	0.4894	0.9608
Constant vs Noise	0.4103	0.4245	0.4246	0.9637
Constant vs SVHN	0.5384	0.2874	0.2874	0.9175
Constant vs TinyImagenet	0.4917	0.4839	0.4839	0.9499
Constant vs iSUN	0.4832	0.5055	0.5056	0.9613
Constant28 vs FashionMNIST	0.2139	0.3708	0.3710	0.9964
Constant28 vs KMNIST	0.1707	0.3437	0.3438	0.9984
Constant28 vs MNIST	0.1219	0.3242	0.3244	0.9999
Constant28 vs Noise28	0.1637	0.3361	0.3363	1.0000
Constant28 vs NotMNIST	0.2205	0.3620	0.3621	0.9921
Constant28 vs Omniglot	0.1738	0.3854	0.3856	0.9973
FashionMNIST vs Constant28	0.7380	0.6932	0.6932	0.7499
FashionMNIST vs KMNIST	0.6608	0.6430	0.6430	0.8565
FashionMNIST vs MNIST	0.6593	0.6577	0.6577	0.8836
FashionMNIST vs Noise28	0.6322	0.6370	0.6370	0.9071
FashionMNIST vs NotMNIST	0.6511	0.6076	0.6077	0.8347
FashionMNIST vs Omniglot	0.6680	0.6962	0.6963	0.8559
KMNIST vs Constant28	0.7044	0.6200	0.6200	0.7829
KMNIST vs FashionMNIST	0.6350	0.5705	0.5706	0.8278
KMNIST vs MNIST	0.6718	0.6148	0.6149	0.8365
KMNIST vs Noise28	0.6418	0.6177	0.6178	0.9381
KMNIST vs NotMNIST	0.7186	0.6483	0.6484	0.7862
KMNIST vs Omniglot	0.6854	0.6762	0.6763	0.8424
MNIST vs Constant28	0.6963	0.6468	0.6469	0.7464
MNIST vs FashionMNIST	0.6172	0.5527	0.5528	0.8016
MNIST vs KMNIST	0.6388	0.5505	0.5506	0.7337
MNIST vs Noise28	0.5776	0.5224	0.5225	0.8468
MNIST vs NotMNIST	0.6483	0.5555	0.5556	0.7057
MNIST vs Omniglot	0.6308	0.5934	0.5935	0.7257
Noise vs CIFAR-10	0.4852	0.4888	0.4889	0.9550
Noise vs CIFAR-100	0.4870	0.4902	0.4903	0.9535
Noise vs CelebA	0.4755	0.3198	0.3199	0.9564
Noise vs Constant	0.6335	0.5841	0.5842	0.8635
Noise vs LSUN	0.4987	0.4988	0.4989	0.9521
Noise vs SVHN	0.4648	0.2550	0.2551	0.9702
Noise vs TinyImagenet	0.4824	0.4918	0.4919	0.9558

Noise vs iSUN	0.5060	0.5277	0.5278	0.9535
Noise28 vs Constant28	0.3811	0.4144	0.4144	0.9461
Noise28 vs FashionMNIST	0.4710	0.4747	0.4748	0.9530
Noise28 vs KMNIST	0.5320	0.5166	0.5167	0.9197
Noise28 vs MNIST	0.5494	0.5327	0.5328	0.9196
Noise28 vs NotMNIST	0.5425	0.5275	0.5276	0.9174
Noise28 vs Omniglot	0.5452	0.5807	0.5808	0.9211
NotMNIST vs Constant28	0.6498	0.5554	0.5555	0.7446
NotMNIST vs FashionMNIST	0.6311	0.5842	0.5843	0.9334
NotMNIST vs KMNIST	0.6212	0.5640	0.5641	0.9096
NotMNIST vs MNIST	0.6251	0.5641	0.5642	0.9231
NotMNIST vs Noise28	0.5489	0.5223	0.5224	0.9818
NotMNIST vs Omniglot	0.6239	0.6215	0.6217	0.9280
Omniglot vs Constant28	0.5626	0.4824	0.4825	0.9508
Omniglot vs FashionMNIST	0.5466	0.4794	0.4795	0.9015
Omniglot vs KMNIST	0.5940	0.5517	0.5517	0.9301
Omniglot vs MNIST	0.5937	0.5457	0.5458	0.9270
Omniglot vs Noise28	0.4321	0.4062	0.4063	0.9658
Omniglot vs NotMNIST	0.6100	0.5295	0.5296	0.8575
SVHN vs CIFAR-10	0.6468	0.7897	0.7897	0.8590
SVHN vs CIFAR-100	0.6377	0.7830	0.7831	0.8526
SVHN vs CelebA	0.6419	0.6583	0.6583	0.8698
SVHN vs Constant	0.5998	0.7618	0.7619	0.8629
SVHN vs LSUN	0.6531	0.7904	0.7905	0.8398
SVHN vs Noise	0.5696	0.7508	0.7508	0.9192
SVHN vs TinyImagenet	0.6309	0.7799	0.7799	0.8590
SVHN vs iSUN	0.6400	0.8013	0.8013	0.8509
TinyImagenet vs CelebA	0.5856	0.4305	0.4306	0.9041
TinyImagenet vs Constant	0.6312	0.6191	0.6192	0.8698
TinyImagenet vs LSUN	0.6169	0.6263	0.6264	0.9105
TinyImagenet vs Noise	0.5391	0.5744	0.5745	0.9558
TinyImagenet vs SVHN	0.4396	0.2662	0.2663	0.9741
TinyImagenet vs iSUN	0.5954	0.6317	0.6317	0.9206
Average	0.5380	0.5442	0.5442	0.9112

Table 191: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0.0036$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5328	0.3602	0.3603	0.9569
CIFAR-10 vs Constant	0.5543	0.5326	0.5327	0.9322
CIFAR-10 vs LSUN	0.5122	0.5123	0.5124	0.9650
CIFAR-10 vs Noise	0.4739	0.5024	0.5025	0.9706
CIFAR-10 vs SVHN	0.4848	0.2782	0.2783	0.9693
CIFAR-10 vs iSUN	0.5021	0.5340	0.5341	0.9696
CIFAR-100 vs CelebA	0.6234	0.4960	0.4961	0.9007
CIFAR-100 vs Constant	0.6618	0.6787	0.6788	0.8588
CIFAR-100 vs LSUN	0.6515	0.6736	0.6736	0.9029
CIFAR-100 vs Noise	0.5493	0.6085	0.6085	0.9709
CIFAR-100 vs SVHN	0.5102	0.3427	0.3427	0.9679
CIFAR-100 vs iSUN	0.6271	0.6760	0.6761	0.9184
CelebA vs CIFAR-10	0.4358	0.6213	0.6214	0.9665
CelebA vs CIFAR-100	0.4450	0.6272	0.6273	0.9606
CelebA vs Constant	0.5085	0.6825	0.6825	0.9591
CelebA vs LSUN	0.4300	0.6197	0.6198	0.9678
CelebA vs Noise	0.3506	0.5750	0.5751	0.9908
CelebA vs SVHN	0.4582	0.3926	0.3927	0.9465
CelebA vs TinyImagenet	0.4282	0.6237	0.6238	0.9655
CelebA vs iSUN	0.4169	0.6392	0.6392	0.9711
Constant vs CIFAR-10	0.4894	0.4821	0.4822	0.9504
Constant vs CIFAR-100	0.4978	0.4920	0.4922	0.9495
Constant vs CelebA	0.4911	0.3172	0.3173	0.9565
Constant vs LSUN	0.4881	0.4872	0.4873	0.9608
Constant vs Noise	0.4163	0.4277	0.4278	0.9627
Constant vs SVHN	0.5384	0.2875	0.2876	0.9161
Constant vs TinyImagenet	0.4940	0.4853	0.4853	0.9483
Constant vs iSUN	0.4835	0.5053	0.5054	0.9608
Constant28 vs FashionMNIST	0.2136	0.3706	0.3708	0.9966
Constant28 vs KMNIST	0.1714	0.3440	0.3441	0.9980
Constant28 vs MNIST	0.1239	0.3249	0.3250	0.9998
Constant28 vs Noise28	0.1630	0.3362	0.3363	0.9999
Constant28 vs NotMNIST	0.2194	0.3616	0.3618	0.9917
Constant28 vs Omniglot	0.1781	0.3869	0.3870	0.9962
FashionMNIST vs Constant28	0.7375	0.6904	0.6905	0.7416
FashionMNIST vs KMNIST	0.6572	0.6393	0.6394	0.8583
FashionMNIST vs MNIST	0.6552	0.6540	0.6541	0.8859
FashionMNIST vs Noise28	0.6266	0.6306	0.6306	0.9070
FashionMNIST vs NotMNIST	0.6479	0.6043	0.6045	0.8307
FashionMNIST vs Omniglot	0.6638	0.6926	0.6927	0.8554
KMNIST vs Constant28	0.6986	0.6138	0.6138	0.7855
KMNIST vs FashionMNIST	0.6292	0.5668	0.5669	0.8337
KMNIST vs MNIST	0.6679	0.6114	0.6115	0.8400
KMNIST vs Noise28	0.6326	0.6097	0.6098	0.9444
KMNIST vs NotMNIST	0.7157	0.6451	0.6452	0.7892
KMNIST vs Omniglot	0.6810	0.6729	0.6730	0.8485
MNIST vs Constant28	0.6875	0.6382	0.6383	0.7569
MNIST vs FashionMNIST	0.6109	0.5487	0.5488	0.8107
MNIST vs KMNIST	0.6344	0.5473	0.5474	0.7396
MNIST vs Noise28	0.5692	0.5173	0.5174	0.8567
MNIST vs NotMNIST	0.6448	0.5528	0.5529	0.7123
MNIST vs Omniglot	0.6262	0.5904	0.5905	0.7312
Noise vs CIFAR-10	0.4816	0.4862	0.4863	0.9552
Noise vs CIFAR-100	0.4891	0.4912	0.4913	0.9523
Noise vs CelebA	0.4781	0.3204	0.3205	0.9564
Noise vs Constant	0.6357	0.5844	0.5845	0.8595
Noise vs LSUN	0.5009	0.4996	0.4998	0.9522
Noise vs SVHN	0.4733	0.2576	0.2577	0.9683
Noise vs TinyImagenet	0.4840	0.4920	0.4922	0.9556

Noise vs iSUN	0.5071	0.5283	0.5284	0.9531
Noise28 vs Constant28	0.3843	0.4158	0.4158	0.9444
Noise28 vs FashionMNIST	0.4738	0.4765	0.4766	0.9540
Noise28 vs KMNIST	0.5318	0.5158	0.5159	0.9219
Noise28 vs MNIST	0.5501	0.5325	0.5327	0.9185
Noise28 vs NotMNIST	0.5446	0.5280	0.5281	0.9153
Noise28 vs Omniglot	0.5437	0.5785	0.5787	0.9209
NotMNIST vs Constant28	0.6440	0.5497	0.5498	0.7440
NotMNIST vs FashionMNIST	0.6241	0.5780	0.5782	0.9357
NotMNIST vs KMNIST	0.6159	0.5597	0.5598	0.9139
NotMNIST vs MNIST	0.6211	0.5612	0.5613	0.9255
NotMNIST vs Noise28	0.5388	0.5144	0.5145	0.9840
NotMNIST vs Omniglot	0.6183	0.6170	0.6171	0.9307
Omniglot vs Constant28	0.5596	0.4794	0.4795	0.9542
Omniglot vs FashionMNIST	0.5421	0.4754	0.4755	0.9041
Omniglot vs KMNIST	0.5944	0.5517	0.5518	0.9300
Omniglot vs MNIST	0.5945	0.5461	0.5462	0.9280
Omniglot vs Noise28	0.4206	0.3984	0.3985	0.9680
Omniglot vs NotMNIST	0.6092	0.5282	0.5284	0.8565
SVHN vs CIFAR-10	0.6414	0.7866	0.7866	0.8642
SVHN vs CIFAR-100	0.6320	0.7798	0.7798	0.8579
SVHN vs CelebA	0.6352	0.6529	0.6530	0.8782
SVHN vs Constant	0.6119	0.7667	0.7667	0.8505
SVHN vs LSUN	0.6476	0.7875	0.7875	0.8449
SVHN vs Noise	0.5630	0.7471	0.7471	0.9201
SVHN vs TinyImagenet	0.6251	0.7766	0.7767	0.8636
SVHN vs iSUN	0.6339	0.7984	0.7984	0.8542
TinyImagenet vs CelebA	0.5830	0.4283	0.4284	0.9066
TinyImagenet vs Constant	0.6488	0.6334	0.6334	0.8516
TinyImagenet vs LSUN	0.6170	0.6266	0.6267	0.9072
TinyImagenet vs Noise	0.5353	0.5704	0.5704	0.9569
TinyImagenet vs SVHN	0.4456	0.2685	0.2686	0.9700
TinyImagenet vs iSUN	0.5957	0.6319	0.6320	0.9210
Average	0.5368	0.5427	0.5428	0.9117

Table 192: The detailed performance for indicator ODIN with $T = 100, \epsilon = 0.004$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5756	0.4207	0.4208	0.9438
CIFAR-10 vs Constant	0.5532	0.5612	0.5612	0.9684
CIFAR-10 vs LSUN	0.5354	0.5520	0.5522	0.9636
CIFAR-10 vs Noise	0.5523	0.5802	0.5803	0.9677
CIFAR-10 vs SVHN	0.5676	0.3500	0.3501	0.9502
CIFAR-10 vs iSUN	0.5238	0.5710	0.5711	0.9666
CIFAR-100 vs CelebA	0.6863	0.5607	0.5607	0.8448
CIFAR-100 vs Constant	0.6534	0.6871	0.6871	0.8937
CIFAR-100 vs LSUN	0.6559	0.6771	0.6772	0.9046
CIFAR-100 vs Noise	0.6963	0.7289	0.7289	0.8774
CIFAR-100 vs SVHN	0.6666	0.4921	0.4921	0.8865
CIFAR-100 vs iSUN	0.6323	0.6809	0.6809	0.9148
CelebA vs CIFAR-10	0.4254	0.6156	0.6156	0.9702
CelebA vs CIFAR-100	0.4337	0.6196	0.6197	0.9683
CelebA vs Constant	0.4480	0.6371	0.6371	0.9665
CelebA vs LSUN	0.4089	0.6056	0.6057	0.9759
CelebA vs Noise	0.3363	0.5748	0.5749	0.9957
CelebA vs SVHN	0.4742	0.4035	0.4035	0.9454
CelebA vs TinyImagenet	0.4220	0.6189	0.6189	0.9692
CelebA vs iSUN	0.4000	0.6285	0.6286	0.9776
Constant vs CIFAR-10	0.5024	0.4932	0.4933	0.9479
Constant vs CIFAR-100	0.5094	0.5025	0.5026	0.9408
Constant vs CelebA	0.5071	0.3288	0.3289	0.9491
Constant vs LSUN	0.5062	0.5022	0.5023	0.9541
Constant vs Noise	0.4050	0.4250	0.4252	0.9688
Constant vs SVHN	0.5502	0.2967	0.2968	0.9123
Constant vs TinyImagenet	0.5006	0.4918	0.4919	0.9414
Constant vs iSUN	0.4970	0.5159	0.5160	0.9548
Constant28 vs FashionMNIST	0.2305	0.3823	0.3832	0.9934
Constant28 vs KMNIST	0.1913	0.3561	0.3570	0.9961
Constant28 vs MNIST	0.1434	0.3355	0.3365	0.9992
Constant28 vs Noise28	0.1741	0.3423	0.3433	0.9993
Constant28 vs NotMNIST	0.2504	0.3730	0.3738	0.9809
Constant28 vs Omniglot	0.1773	0.3914	0.3924	0.9963
FashionMNIST vs Constant28	0.8026	0.7746	0.7746	0.6124
FashionMNIST vs KMNIST	0.6868	0.6673	0.6675	0.8437
FashionMNIST vs MNIST	0.6877	0.6783	0.6784	0.8636
FashionMNIST vs Noise28	0.7211	0.7116	0.7117	0.8170
FashionMNIST vs NotMNIST	0.6713	0.6297	0.6298	0.8420
FashionMNIST vs Omniglot	0.6997	0.7194	0.7195	0.8307
KMNIST vs Constant28	0.7975	0.7062	0.7063	0.6438
KMNIST vs FashionMNIST	0.6930	0.6085	0.6087	0.7430
KMNIST vs MNIST	0.7042	0.6431	0.6432	0.7985
KMNIST vs Noise28	0.7604	0.7003	0.7004	0.7339
KMNIST vs NotMNIST	0.7420	0.6739	0.6740	0.7547
KMNIST vs Omniglot	0.7254	0.7055	0.7056	0.7840
MNIST vs Constant28	0.8148	0.7582	0.7583	0.4834
MNIST vs FashionMNIST	0.6837	0.5951	0.5952	0.6876
MNIST vs KMNIST	0.6763	0.5786	0.5787	0.6721
MNIST vs Noise28	0.7106	0.6103	0.6104	0.6330
MNIST vs NotMNIST	0.6806	0.5800	0.5801	0.6532
MNIST vs Omniglot	0.6727	0.6210	0.6211	0.6577
Noise vs CIFAR-10	0.5384	0.5248	0.5249	0.9383
Noise vs CIFAR-100	0.5447	0.5320	0.5321	0.9364
Noise vs CelebA	0.5132	0.3397	0.3398	0.9461
Noise vs Constant	0.5991	0.5783	0.5784	0.9035
Noise vs LSUN	0.5266	0.5196	0.5197	0.9433
Noise vs SVHN	0.5942	0.3345	0.3346	0.9031
Noise vs TinyImagenet	0.5405	0.5342	0.5343	0.9374

Noise vs iSUN	0.5375	0.5521	0.5522	0.9393
Noise28 vs Constant28	0.4325	0.4532	0.4533	0.9683
Noise28 vs FashionMNIST	0.4672	0.4715	0.4716	0.9587
Noise28 vs KMNIST	0.4908	0.4939	0.4941	0.9505
Noise28 vs MNIST	0.4983	0.5059	0.5060	0.9537
Noise28 vs NotMNIST	0.4994	0.5042	0.5043	0.9527
Noise28 vs Omniglot	0.4969	0.5537	0.5538	0.9520
NotMNIST vs Constant28	0.7880	0.7485	0.7485	0.6608
NotMNIST vs FashionMNIST	0.7097	0.6520	0.6521	0.8539
NotMNIST vs KMNIST	0.6706	0.6045	0.6046	0.8677
NotMNIST vs MNIST	0.6605	0.5901	0.5901	0.8927
NotMNIST vs Noise28	0.7111	0.6495	0.6496	0.8557
NotMNIST vs Omniglot	0.6774	0.6640	0.6641	0.8850
Omniglot vs Constant28	0.6849	0.6010	0.6011	0.8286
Omniglot vs FashionMNIST	0.6022	0.5286	0.5287	0.8591
Omniglot vs KMNIST	0.5864	0.5471	0.5472	0.9340
Omniglot vs MNIST	0.5844	0.5386	0.5386	0.9316
Omniglot vs Noise28	0.6053	0.5445	0.5445	0.8834
Omniglot vs NotMNIST	0.6170	0.5389	0.5390	0.8591
SVHN vs CIFAR-10	0.6847	0.8214	0.8214	0.8697
SVHN vs CIFAR-100	0.6829	0.8163	0.8164	0.8688
SVHN vs CelebA	0.6891	0.7108	0.7109	0.8800
SVHN vs Constant	0.6799	0.8177	0.8178	0.8689
SVHN vs LSUN	0.6849	0.8184	0.8184	0.8648
SVHN vs Noise	0.6823	0.8175	0.8175	0.8693
SVHN vs TinyImagenet	0.6820	0.8171	0.8172	0.8648
SVHN vs iSUN	0.6841	0.8328	0.8328	0.8647
TinyImagenet vs CelebA	0.6407	0.4796	0.4796	0.8585
TinyImagenet vs Constant	0.5493	0.5608	0.5608	0.9382
TinyImagenet vs LSUN	0.5958	0.6066	0.6067	0.9196
TinyImagenet vs Noise	0.6501	0.6675	0.6675	0.8903
TinyImagenet vs SVHN	0.6151	0.4005	0.4005	0.8984
TinyImagenet vs iSUN	0.5748	0.6154	0.6155	0.9324
Average	0.5760	0.5777	0.5779	0.8839

Table 193: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5655	0.4109	0.4110	0.9502
CIFAR-10 vs Constant	0.5154	0.5376	0.5377	0.9796
CIFAR-10 vs LSUN	0.5298	0.5462	0.5463	0.9651
CIFAR-10 vs Noise	0.5243	0.5604	0.5604	0.9796
CIFAR-10 vs SVHN	0.5336	0.3291	0.3292	0.9718
CIFAR-10 vs iSUN	0.5180	0.5653	0.5655	0.9692
CIFAR-100 vs CelebA	0.6777	0.5519	0.5519	0.8499
CIFAR-100 vs Constant	0.6182	0.6567	0.6568	0.9165
CIFAR-100 vs LSUN	0.6567	0.6776	0.6777	0.9009
CIFAR-100 vs Noise	0.6734	0.7106	0.7106	0.8990
CIFAR-100 vs SVHN	0.6287	0.4573	0.4573	0.9186
CIFAR-100 vs iSUN	0.6328	0.6811	0.6811	0.9105
CelebA vs CIFAR-10	0.4259	0.6157	0.6158	0.9706
CelebA vs CIFAR-100	0.4348	0.6203	0.6203	0.9673
CelebA vs Constant	0.4514	0.6391	0.6391	0.9660
CelebA vs LSUN	0.4134	0.6082	0.6083	0.9746
CelebA vs Noise	0.3092	0.5590	0.5591	0.9973
CelebA vs SVHN	0.4634	0.3969	0.3969	0.9490
CelebA vs TinyImagenet	0.4218	0.6189	0.6189	0.9689
CelebA vs iSUN	0.4027	0.6301	0.6302	0.9774
Constant vs CIFAR-10	0.4965	0.4873	0.4874	0.9467
Constant vs CIFAR-100	0.5038	0.4960	0.4961	0.9417
Constant vs CelebA	0.4993	0.3232	0.3232	0.9519
Constant vs LSUN	0.5007	0.4970	0.4972	0.9568
Constant vs Noise	0.3788	0.4069	0.4071	0.9741
Constant vs SVHN	0.5447	0.2924	0.2925	0.9126
Constant vs TinyImagenet	0.4973	0.4884	0.4886	0.9424
Constant vs iSUN	0.4902	0.5099	0.5100	0.9568
Constant28 vs FashionMNIST	0.2257	0.3807	0.3816	0.9950
Constant28 vs KMNIST	0.1841	0.3531	0.3540	0.9974
Constant28 vs MNIST	0.1358	0.3317	0.3326	0.9998
Constant28 vs Noise28	0.1703	0.3398	0.3408	0.9995
Constant28 vs NotMNIST	0.2435	0.3709	0.3717	0.9856
Constant28 vs Omniglot	0.1682	0.3868	0.3878	0.9970
FashionMNIST vs Constant28	0.7694	0.7432	0.7433	0.7021
FashionMNIST vs KMNIST	0.6829	0.6633	0.6634	0.8443
FashionMNIST vs MNIST	0.6828	0.6746	0.6747	0.8681
FashionMNIST vs Noise28	0.7061	0.7000	0.7001	0.8412
FashionMNIST vs NotMNIST	0.6682	0.6260	0.6261	0.8413
FashionMNIST vs Omniglot	0.6939	0.7152	0.7153	0.8375
KMNIST vs Constant28	0.7703	0.6828	0.6828	0.6975
KMNIST vs FashionMNIST	0.6850	0.6029	0.6030	0.7544
KMNIST vs MNIST	0.6992	0.6386	0.6387	0.8041
KMNIST vs Noise28	0.7439	0.6891	0.6892	0.7777
KMNIST vs NotMNIST	0.7382	0.6699	0.6700	0.7586
KMNIST vs Omniglot	0.7193	0.7010	0.7011	0.7933
MNIST vs Constant28	0.7823	0.7262	0.7263	0.5560
MNIST vs FashionMNIST	0.6737	0.5884	0.5884	0.7066
MNIST vs KMNIST	0.6708	0.5742	0.5743	0.6817
MNIST vs Noise28	0.6900	0.5948	0.5949	0.6764
MNIST vs NotMNIST	0.6756	0.5761	0.5762	0.6618
MNIST vs Omniglot	0.6663	0.6166	0.6167	0.6693
Noise vs CIFAR-10	0.5225	0.5158	0.5159	0.9525
Noise vs CIFAR-100	0.5284	0.5220	0.5221	0.9503
Noise vs CelebA	0.4946	0.3299	0.3300	0.9611
Noise vs Constant	0.5944	0.5761	0.5763	0.9140
Noise vs LSUN	0.5240	0.5170	0.5171	0.9460
Noise vs SVHN	0.5358	0.3018	0.3019	0.9597
Noise vs TinyImagenet	0.5251	0.5249	0.5250	0.9549

Noise vs iSUN	0.5334	0.5495	0.5496	0.9427
Noise28 vs Constant28	0.3940	0.4298	0.4299	0.9800
Noise28 vs FashionMNIST	0.4635	0.4691	0.4692	0.9605
Noise28 vs KMNIST	0.5030	0.5021	0.5022	0.9418
Noise28 vs MNIST	0.5129	0.5177	0.5178	0.9463
Noise28 vs NotMNIST	0.5123	0.5129	0.5130	0.9449
Noise28 vs Omniglot	0.5096	0.5632	0.5633	0.9447
NotMNIST vs Constant28	0.7394	0.6797	0.6797	0.7255
NotMNIST vs FashionMNIST	0.6980	0.6415	0.6416	0.8739
NotMNIST vs KMNIST	0.6635	0.5985	0.5986	0.8751
NotMNIST vs MNIST	0.6550	0.5859	0.5860	0.8993
NotMNIST vs Noise28	0.6866	0.6287	0.6288	0.8920
NotMNIST vs Omniglot	0.6690	0.6572	0.6573	0.8962
Omniglot vs Constant28	0.6392	0.5548	0.5549	0.8822
Omniglot vs FashionMNIST	0.5946	0.5215	0.5216	0.8668
Omniglot vs KMNIST	0.5883	0.5484	0.5485	0.9313
Omniglot vs MNIST	0.5856	0.5395	0.5396	0.9311
Omniglot vs Noise28	0.5806	0.5224	0.5224	0.9019
Omniglot vs NotMNIST	0.6166	0.5379	0.5380	0.8585
SVHN vs CIFAR-10	0.6805	0.8175	0.8175	0.8684
SVHN vs CIFAR-100	0.6773	0.8117	0.8118	0.8667
SVHN vs CelebA	0.6837	0.7036	0.7036	0.8779
SVHN vs Constant	0.5702	0.7612	0.7612	0.9685
SVHN vs LSUN	0.6824	0.8152	0.8152	0.8591
SVHN vs Noise	0.6619	0.8061	0.8061	0.8898
SVHN vs TinyImagenet	0.6752	0.8121	0.8121	0.8657
SVHN vs iSUN	0.6793	0.8287	0.8288	0.8631
TinyImagenet vs CelebA	0.6307	0.4704	0.4705	0.8677
TinyImagenet vs Constant	0.4973	0.5233	0.5234	0.9654
TinyImagenet vs LSUN	0.6013	0.6111	0.6112	0.9158
TinyImagenet vs Noise	0.6292	0.6499	0.6499	0.9063
TinyImagenet vs SVHN	0.5457	0.3469	0.3470	0.9467
TinyImagenet vs iSUN	0.5798	0.6190	0.6191	0.9283
Average	0.5632	0.5679	0.5680	0.8960

Table 194: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.0004$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5568	0.4013	0.4014	0.9549
CIFAR-10 vs Constant	0.5102	0.5311	0.5312	0.9785
CIFAR-10 vs LSUN	0.5246	0.5401	0.5403	0.9673
CIFAR-10 vs Noise	0.5026	0.5427	0.5428	0.9865
CIFAR-10 vs SVHN	0.5102	0.3132	0.3133	0.9802
CIFAR-10 vs iSUN	0.5128	0.5595	0.5596	0.9706
CIFAR-100 vs CelebA	0.6696	0.5435	0.5436	0.8573
CIFAR-100 vs Constant	0.6136	0.6509	0.6509	0.9142
CIFAR-100 vs LSUN	0.6572	0.6780	0.6780	0.8989
CIFAR-100 vs Noise	0.6521	0.6936	0.6936	0.9179
CIFAR-100 vs SVHN	0.5979	0.4292	0.4292	0.9376
CIFAR-100 vs iSUN	0.6329	0.6810	0.6810	0.9104
CelebA vs CIFAR-10	0.4267	0.6161	0.6161	0.9707
CelebA vs CIFAR-100	0.4360	0.6209	0.6209	0.9662
CelebA vs Constant	0.4627	0.6466	0.6466	0.9636
CelebA vs LSUN	0.4171	0.6105	0.6106	0.9726
CelebA vs Noise	0.2962	0.5507	0.5508	0.9973
CelebA vs SVHN	0.4568	0.3927	0.3927	0.9497
CelebA vs TinyImagenet	0.4220	0.6191	0.6192	0.9671
CelebA vs iSUN	0.4051	0.6316	0.6316	0.9766
Constant vs CIFAR-10	0.4956	0.4869	0.4870	0.9480
Constant vs CIFAR-100	0.5022	0.4953	0.4954	0.9446
Constant vs CelebA	0.4960	0.3206	0.3207	0.9550
Constant vs LSUN	0.4987	0.4955	0.4956	0.9598
Constant vs Noise	0.3792	0.4068	0.4070	0.9740
Constant vs SVHN	0.5434	0.2918	0.2919	0.9149
Constant vs TinyImagenet	0.4948	0.4864	0.4865	0.9424
Constant vs iSUN	0.4873	0.5084	0.5085	0.9594
Constant28 vs FashionMNIST	0.2224	0.3786	0.3795	0.9958
Constant28 vs KMNIST	0.1799	0.3506	0.3516	0.9978
Constant28 vs MNIST	0.1305	0.3287	0.3296	0.9996
Constant28 vs Noise28	0.1693	0.3391	0.3401	0.9996
Constant28 vs NotMNIST	0.2384	0.3691	0.3700	0.9882
Constant28 vs Omniglot	0.1640	0.3843	0.3853	0.9974
FashionMNIST vs Constant28	0.7565	0.7288	0.7289	0.7343
FashionMNIST vs KMNIST	0.6791	0.6595	0.6596	0.8488
FashionMNIST vs MNIST	0.6788	0.6714	0.6714	0.8728
FashionMNIST vs Noise28	0.6917	0.6886	0.6887	0.8587
FashionMNIST vs NotMNIST	0.6653	0.6225	0.6226	0.8424
FashionMNIST vs Omniglot	0.6893	0.7116	0.7117	0.8406
KMNIST vs Constant28	0.7555	0.6695	0.6696	0.7238
KMNIST vs FashionMNIST	0.6774	0.5976	0.5978	0.7657
KMNIST vs MNIST	0.6947	0.6346	0.6347	0.8090
KMNIST vs Noise28	0.7276	0.6782	0.6783	0.8135
KMNIST vs NotMNIST	0.7347	0.6661	0.6662	0.7617
KMNIST vs Omniglot	0.7140	0.6970	0.6971	0.8016
MNIST vs Constant28	0.7645	0.7090	0.7091	0.5937
MNIST vs FashionMNIST	0.6644	0.5821	0.5822	0.7223
MNIST vs KMNIST	0.6654	0.5702	0.5702	0.6894
MNIST vs Noise28	0.6702	0.5805	0.5805	0.7098
MNIST vs NotMNIST	0.6709	0.5725	0.5726	0.6693
MNIST vs Omniglot	0.6605	0.6127	0.6128	0.6788
Noise vs CIFAR-10	0.5111	0.5098	0.5099	0.9591
Noise vs CIFAR-100	0.5108	0.5110	0.5111	0.9593
Noise vs CelebA	0.4806	0.3235	0.3236	0.9688
Noise vs Constant	0.6013	0.5775	0.5776	0.9027
Noise vs LSUN	0.5108	0.5076	0.5077	0.9514
Noise vs SVHN	0.4961	0.2807	0.2808	0.9792
Noise vs TinyImagenet	0.5071	0.5142	0.5143	0.9664

Noise vs iSUN	0.5255	0.5444	0.5445	0.9464
Noise28 vs Constant28	0.3889	0.4267	0.4268	0.9758
Noise28 vs FashionMNIST	0.4608	0.4672	0.4673	0.9604
Noise28 vs KMNIST	0.5105	0.5066	0.5067	0.9357
Noise28 vs MNIST	0.5236	0.5254	0.5255	0.9380
Noise28 vs NotMNIST	0.5208	0.5186	0.5187	0.9351
Noise28 vs Omniglot	0.5189	0.5699	0.5700	0.9366
NotMNIST vs Constant28	0.7141	0.6421	0.6421	0.7377
NotMNIST vs FashionMNIST	0.6870	0.6317	0.6318	0.8867
NotMNIST vs KMNIST	0.6568	0.5928	0.5929	0.8823
NotMNIST vs MNIST	0.6502	0.5823	0.5824	0.9032
NotMNIST vs Noise28	0.6631	0.6091	0.6092	0.9196
NotMNIST vs Omniglot	0.6617	0.6512	0.6513	0.9030
Omniglot vs Constant28	0.6189	0.5350	0.5351	0.9072
Omniglot vs FashionMNIST	0.5872	0.5149	0.5150	0.8721
Omniglot vs KMNIST	0.5893	0.5490	0.5491	0.9311
Omniglot vs MNIST	0.5868	0.5403	0.5404	0.9299
Omniglot vs Noise28	0.5563	0.5015	0.5016	0.9174
Omniglot vs NotMNIST	0.6156	0.5365	0.5366	0.8577
SVHN vs CIFAR-10	0.6758	0.8133	0.8134	0.8670
SVHN vs CIFAR-100	0.6715	0.8071	0.8071	0.8625
SVHN vs CelebA	0.6780	0.6963	0.6963	0.8739
SVHN vs Constant	0.5558	0.7505	0.7506	0.9592
SVHN vs LSUN	0.6793	0.8116	0.8117	0.8525
SVHN vs Noise	0.6434	0.7955	0.7955	0.9070
SVHN vs TinyImagenet	0.6684	0.8069	0.8069	0.8672
SVHN vs iSUN	0.6739	0.8244	0.8245	0.8595
TinyImagenet vs CelebA	0.6220	0.4624	0.4625	0.8750
TinyImagenet vs Constant	0.4999	0.5240	0.5240	0.9643
TinyImagenet vs LSUN	0.6059	0.6148	0.6149	0.9124
TinyImagenet vs Noise	0.6108	0.6345	0.6345	0.9162
TinyImagenet vs SVHN	0.4984	0.3127	0.3127	0.9654
TinyImagenet vs iSUN	0.5841	0.6222	0.6222	0.9247
Average	0.5559	0.5619	0.5620	0.9013

Table 195: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.0008$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5493	0.3921	0.3923	0.9586
CIFAR-10 vs Constant	0.5115	0.5275	0.5275	0.9738
CIFAR-10 vs LSUN	0.5201	0.5341	0.5343	0.9686
CIFAR-10 vs Noise	0.4873	0.5282	0.5283	0.9898
CIFAR-10 vs SVHN	0.4951	0.3012	0.3014	0.9834
CIFAR-10 vs iSUN	0.5084	0.5538	0.5539	0.9725
CIFAR-100 vs CelebA	0.6619	0.5357	0.5357	0.8651
CIFAR-100 vs Constant	0.6161	0.6508	0.6509	0.9101
CIFAR-100 vs LSUN	0.6571	0.6780	0.6780	0.8978
CIFAR-100 vs Noise	0.6328	0.6781	0.6781	0.9330
CIFAR-100 vs SVHN	0.5737	0.4071	0.4072	0.9483
CIFAR-100 vs iSUN	0.6328	0.6808	0.6809	0.9108
CelebA vs CIFAR-10	0.4277	0.6164	0.6165	0.9697
CelebA vs CIFAR-100	0.4374	0.6217	0.6217	0.9640
CelebA vs Constant	0.4734	0.6541	0.6542	0.9604
CelebA vs LSUN	0.4200	0.6124	0.6124	0.9714
CelebA vs Noise	0.2921	0.5472	0.5473	0.9972
CelebA vs SVHN	0.4531	0.3902	0.3903	0.9483
CelebA vs TinyImagenet	0.4226	0.6195	0.6195	0.9657
CelebA vs iSUN	0.4073	0.6329	0.6330	0.9756
Constant vs CIFAR-10	0.4928	0.4847	0.4848	0.9502
Constant vs CIFAR-100	0.5015	0.4944	0.4946	0.9463
Constant vs CelebA	0.4964	0.3214	0.3215	0.9571
Constant vs LSUN	0.4976	0.4947	0.4948	0.9608
Constant vs Noise	0.3871	0.4099	0.4101	0.9736
Constant vs SVHN	0.5416	0.2903	0.2904	0.9173
Constant vs TinyImagenet	0.4938	0.4857	0.4858	0.9466
Constant vs iSUN	0.4880	0.5090	0.5091	0.9599
Constant28 vs FashionMNIST	0.2198	0.3766	0.3775	0.9962
Constant28 vs KMNIST	0.1764	0.3485	0.3495	0.9983
Constant28 vs MNIST	0.1263	0.3266	0.3275	0.9999
Constant28 vs Noise28	0.1686	0.3384	0.3393	0.9997
Constant28 vs NotMNIST	0.2340	0.3673	0.3682	0.9900
Constant28 vs Omniglot	0.1621	0.3828	0.3837	0.9975
FashionMNIST vs Constant28	0.7490	0.7189	0.7189	0.7497
FashionMNIST vs KMNIST	0.6753	0.6556	0.6557	0.8502
FashionMNIST vs MNIST	0.6749	0.6681	0.6681	0.8732
FashionMNIST vs Noise28	0.6785	0.6776	0.6777	0.8725
FashionMNIST vs NotMNIST	0.6623	0.6190	0.6191	0.8385
FashionMNIST vs Omniglot	0.6850	0.7081	0.7082	0.8426
KMNIST vs Constant28	0.7443	0.6592	0.6593	0.7367
KMNIST vs FashionMNIST	0.6701	0.5926	0.5928	0.7758
KMNIST vs MNIST	0.6904	0.6308	0.6309	0.8141
KMNIST vs Noise28	0.7121	0.6677	0.6678	0.8445
KMNIST vs NotMNIST	0.7313	0.6624	0.6625	0.7666
KMNIST vs Omniglot	0.7089	0.6931	0.6932	0.8109
MNIST vs Constant28	0.7504	0.6954	0.6956	0.6261
MNIST vs FashionMNIST	0.6555	0.5762	0.5763	0.7379
MNIST vs KMNIST	0.6602	0.5662	0.5662	0.6972
MNIST vs Noise28	0.6513	0.5674	0.5675	0.7400
MNIST vs NotMNIST	0.6665	0.5691	0.5692	0.6768
MNIST vs Omniglot	0.6549	0.6089	0.6090	0.6870
Noise vs CIFAR-10	0.4979	0.5016	0.5017	0.9622
Noise vs CIFAR-100	0.4981	0.5025	0.5026	0.9638
Noise vs CelebA	0.4751	0.3207	0.3208	0.9694
Noise vs Constant	0.6068	0.5767	0.5768	0.8898
Noise vs LSUN	0.5031	0.5032	0.5033	0.9531
Noise vs SVHN	0.4789	0.2719	0.2720	0.9795
Noise vs TinyImagenet	0.5019	0.5117	0.5118	0.9653

Noise vs iSUN	0.5191	0.5409	0.5410	0.9477
Noise28 vs Constant28	0.3853	0.4233	0.4233	0.9675
Noise28 vs FashionMNIST	0.4569	0.4645	0.4646	0.9588
Noise28 vs KMNIST	0.5146	0.5087	0.5088	0.9300
Noise28 vs MNIST	0.5312	0.5292	0.5293	0.9307
Noise28 vs NotMNIST	0.5250	0.5209	0.5210	0.9273
Noise28 vs Omniglot	0.5276	0.5749	0.5750	0.9281
NotMNIST vs Constant28	0.6976	0.6172	0.6173	0.7454
NotMNIST vs FashionMNIST	0.6766	0.6225	0.6226	0.8993
NotMNIST vs KMNIST	0.6504	0.5873	0.5875	0.8888
NotMNIST vs MNIST	0.6456	0.5787	0.5788	0.9095
NotMNIST vs Noise28	0.6409	0.5913	0.5914	0.9391
NotMNIST vs Omniglot	0.6547	0.6455	0.6457	0.9093
Omniglot vs Constant28	0.6053	0.5219	0.5220	0.9220
Omniglot vs FashionMNIST	0.5803	0.5087	0.5088	0.8779
Omniglot vs KMNIST	0.5900	0.5494	0.5494	0.9308
Omniglot vs MNIST	0.5878	0.5410	0.5411	0.9296
Omniglot vs Noise28	0.5335	0.4825	0.4826	0.9289
Omniglot vs NotMNIST	0.6146	0.5351	0.5352	0.8584
SVHN vs CIFAR-10	0.6709	0.8091	0.8091	0.8673
SVHN vs CIFAR-100	0.6654	0.8025	0.8025	0.8601
SVHN vs CelebA	0.6719	0.6890	0.6891	0.8719
SVHN vs Constant	0.5539	0.7470	0.7470	0.9469
SVHN vs LSUN	0.6755	0.8079	0.8079	0.8488
SVHN vs Noise	0.6273	0.7861	0.7862	0.9154
SVHN vs TinyImagenet	0.6615	0.8017	0.8018	0.8655
SVHN vs iSUN	0.6682	0.8201	0.8201	0.8556
TinyImagenet vs CelebA	0.6142	0.4553	0.4554	0.8789
TinyImagenet vs Constant	0.5135	0.5324	0.5325	0.9576
TinyImagenet vs LSUN	0.6094	0.6180	0.6180	0.9107
TinyImagenet vs Noise	0.5945	0.6208	0.6209	0.9272
TinyImagenet vs SVHN	0.4679	0.2912	0.2913	0.9738
TinyImagenet vs iSUN	0.5873	0.6247	0.6247	0.9210
Average	0.5507	0.5572	0.5574	0.9045

Table 196: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.0012$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5433	0.3836	0.3838	0.9611
CIFAR-10 vs Constant	0.5150	0.5248	0.5249	0.9711
CIFAR-10 vs LSUN	0.5162	0.5284	0.5285	0.9699
CIFAR-10 vs Noise	0.4774	0.5179	0.5180	0.9915
CIFAR-10 vs SVHN	0.4859	0.2928	0.2930	0.9846
CIFAR-10 vs iSUN	0.5047	0.5482	0.5484	0.9736
CIFAR-100 vs CelebA	0.6548	0.5284	0.5285	0.8719
CIFAR-100 vs Constant	0.6206	0.6526	0.6526	0.9041
CIFAR-100 vs LSUN	0.6569	0.6777	0.6777	0.8978
CIFAR-100 vs Noise	0.6156	0.6642	0.6642	0.9435
CIFAR-100 vs SVHN	0.5550	0.3895	0.3896	0.9551
CIFAR-100 vs iSUN	0.6323	0.6803	0.6804	0.9113
CelebA vs CIFAR-10	0.4286	0.6170	0.6171	0.9704
CelebA vs CIFAR-100	0.4385	0.6224	0.6225	0.9628
CelebA vs Constant	0.4825	0.6608	0.6608	0.9600
CelebA vs LSUN	0.4224	0.6140	0.6141	0.9707
CelebA vs Noise	0.2940	0.5472	0.5473	0.9966
CelebA vs SVHN	0.4514	0.3889	0.3890	0.9481
CelebA vs TinyImagenet	0.4233	0.6200	0.6201	0.9663
CelebA vs iSUN	0.4093	0.6341	0.6342	0.9747
Constant vs CIFAR-10	0.4921	0.4841	0.4842	0.9483
Constant vs CIFAR-100	0.5007	0.4955	0.4956	0.9445
Constant vs CelebA	0.4950	0.3206	0.3207	0.9563
Constant vs LSUN	0.4984	0.4953	0.4954	0.9589
Constant vs Noise	0.3911	0.4123	0.4125	0.9702
Constant vs SVHN	0.5404	0.2897	0.2898	0.9166
Constant vs TinyImagenet	0.4947	0.4867	0.4868	0.9457
Constant vs iSUN	0.4872	0.5089	0.5090	0.9592
Constant28 vs FashionMNIST	0.2175	0.3750	0.3760	0.9965
Constant28 vs KMNIST	0.1737	0.3469	0.3478	0.9985
Constant28 vs MNIST	0.1230	0.3251	0.3261	0.9999
Constant28 vs Noise28	0.1669	0.3376	0.3385	0.9999
Constant28 vs NotMNIST	0.2300	0.3658	0.3666	0.9904
Constant28 vs Omniglot	0.1619	0.3822	0.3832	0.9986
FashionMNIST vs Constant28	0.7437	0.7108	0.7109	0.7545
FashionMNIST vs KMNIST	0.6714	0.6517	0.6518	0.8517
FashionMNIST vs MNIST	0.6710	0.6648	0.6649	0.8752
FashionMNIST vs Noise28	0.6664	0.6673	0.6674	0.8837
FashionMNIST vs NotMNIST	0.6594	0.6155	0.6156	0.8385
FashionMNIST vs Omniglot	0.6808	0.7048	0.7049	0.8460
KMNIST vs Constant28	0.7349	0.6504	0.6504	0.7456
KMNIST vs FashionMNIST	0.6629	0.5879	0.5880	0.7863
KMNIST vs MNIST	0.6861	0.6270	0.6271	0.8200
KMNIST vs Noise28	0.6973	0.6576	0.6578	0.8698
KMNIST vs NotMNIST	0.7281	0.6589	0.6590	0.7720
KMNIST vs Omniglot	0.7039	0.6893	0.6894	0.8175
MNIST vs Constant28	0.7383	0.6839	0.6840	0.6535
MNIST vs FashionMNIST	0.6470	0.5707	0.5708	0.7509
MNIST vs KMNIST	0.6551	0.5623	0.5624	0.7056
MNIST vs Noise28	0.6340	0.5559	0.5560	0.7684
MNIST vs NotMNIST	0.6622	0.5659	0.5660	0.6830
MNIST vs Omniglot	0.6496	0.6053	0.6054	0.6937
Noise vs CIFAR-10	0.4864	0.4932	0.4933	0.9639
Noise vs CIFAR-100	0.4870	0.4936	0.4937	0.9650
Noise vs CelebA	0.4678	0.3166	0.3167	0.9699
Noise vs Constant	0.6083	0.5742	0.5743	0.8840
Noise vs LSUN	0.5015	0.5015	0.5017	0.9527
Noise vs SVHN	0.4590	0.2605	0.2606	0.9786
Noise vs TinyImagenet	0.4881	0.5005	0.5006	0.9641

Noise vs iSUN	0.5099	0.5329	0.5330	0.9503
Noise28 vs Constant28	0.3814	0.4201	0.4202	0.9608
Noise28 vs FashionMNIST	0.4579	0.4656	0.4657	0.9601
Noise28 vs KMNIST	0.5193	0.5115	0.5116	0.9281
Noise28 vs MNIST	0.5355	0.5303	0.5305	0.9262
Noise28 vs NotMNIST	0.5299	0.5230	0.5231	0.9214
Noise28 vs Omniglot	0.5329	0.5771	0.5773	0.9226
NotMNIST vs Constant28	0.6849	0.5988	0.5988	0.7460
NotMNIST vs FashionMNIST	0.6668	0.6138	0.6139	0.9065
NotMNIST vs KMNIST	0.6441	0.5821	0.5822	0.8917
NotMNIST vs MNIST	0.6411	0.5754	0.5755	0.9104
NotMNIST vs Noise28	0.6203	0.5751	0.5752	0.9535
NotMNIST vs Omniglot	0.6480	0.6401	0.6402	0.9147
Omniglot vs Constant28	0.5947	0.5119	0.5121	0.9309
Omniglot vs FashionMNIST	0.5737	0.5028	0.5029	0.8828
Omniglot vs KMNIST	0.5906	0.5496	0.5497	0.9309
Omniglot vs MNIST	0.5887	0.5417	0.5418	0.9301
Omniglot vs Noise28	0.5126	0.4655	0.4656	0.9412
Omniglot vs NotMNIST	0.6136	0.5337	0.5338	0.8577
SVHN vs CIFAR-10	0.6657	0.8048	0.8048	0.8639
SVHN vs CIFAR-100	0.6596	0.7980	0.7981	0.8572
SVHN vs CelebA	0.6656	0.6820	0.6820	0.8694
SVHN vs Constant	0.5566	0.7455	0.7455	0.9306
SVHN vs LSUN	0.6712	0.8040	0.8040	0.8438
SVHN vs Noise	0.6134	0.7777	0.7777	0.9208
SVHN vs TinyImagenet	0.6549	0.7968	0.7968	0.8644
SVHN vs iSUN	0.6625	0.8157	0.8158	0.8529
TinyImagenet vs CelebA	0.6074	0.4491	0.4492	0.8866
TinyImagenet vs Constant	0.5318	0.5445	0.5446	0.9493
TinyImagenet vs LSUN	0.6121	0.6203	0.6204	0.9121
TinyImagenet vs Noise	0.5808	0.6093	0.6094	0.9361
TinyImagenet vs SVHN	0.4493	0.2781	0.2782	0.9779
TinyImagenet vs iSUN	0.5897	0.6265	0.6266	0.9227
Average	0.5463	0.5532	0.5533	0.9067

Table 197: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.0016$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5383	0.3760	0.3762	0.9619
CIFAR-10 vs Constant	0.5199	0.5236	0.5237	0.9673
CIFAR-10 vs LSUN	0.5131	0.5232	0.5234	0.9692
CIFAR-10 vs Noise	0.4718	0.5107	0.5108	0.9919
CIFAR-10 vs SVHN	0.4809	0.2868	0.2869	0.9832
CIFAR-10 vs iSUN	0.5018	0.5432	0.5433	0.9736
CIFAR-100 vs CelebA	0.6483	0.5216	0.5216	0.8775
CIFAR-100 vs Constant	0.6262	0.6557	0.6558	0.8952
CIFAR-100 vs LSUN	0.6564	0.6773	0.6773	0.8974
CIFAR-100 vs Noise	0.6005	0.6518	0.6518	0.9495
CIFAR-100 vs SVHN	0.5407	0.3759	0.3759	0.9597
CIFAR-100 vs iSUN	0.6318	0.6798	0.6798	0.9109
CelebA vs CIFAR-10	0.4298	0.6176	0.6177	0.9691
CelebA vs CIFAR-100	0.4397	0.6232	0.6233	0.9621
CelebA vs Constant	0.4899	0.6664	0.6664	0.9590
CelebA vs LSUN	0.4242	0.6152	0.6153	0.9703
CelebA vs Noise	0.2998	0.5494	0.5495	0.9964
CelebA vs SVHN	0.4510	0.3886	0.3886	0.9488
CelebA vs TinyImagenet	0.4239	0.6205	0.6206	0.9664
CelebA vs iSUN	0.4109	0.6352	0.6352	0.9740
Constant vs CIFAR-10	0.4896	0.4823	0.4824	0.9487
Constant vs CIFAR-100	0.4996	0.4946	0.4948	0.9450
Constant vs CelebA	0.4919	0.3181	0.3182	0.9559
Constant vs LSUN	0.4941	0.4918	0.4919	0.9598
Constant vs Noise	0.3939	0.4139	0.4141	0.9694
Constant vs SVHN	0.5394	0.2885	0.2886	0.9161
Constant vs TinyImagenet	0.4935	0.4862	0.4864	0.9473
Constant vs iSUN	0.4851	0.5064	0.5065	0.9600
Constant28 vs FashionMNIST	0.2159	0.3735	0.3745	0.9967
Constant28 vs KMNIST	0.1718	0.3455	0.3464	0.9987
Constant28 vs MNIST	0.1214	0.3243	0.3253	0.9998
Constant28 vs Noise28	0.1661	0.3370	0.3379	1.0000
Constant28 vs NotMNIST	0.2277	0.3647	0.3656	0.9911
Constant28 vs Omniglot	0.1626	0.3822	0.3832	0.9988
FashionMNIST vs Constant28	0.7398	0.7041	0.7041	0.7578
FashionMNIST vs KMNIST	0.6677	0.6478	0.6479	0.8528
FashionMNIST vs MNIST	0.6671	0.6616	0.6616	0.8789
FashionMNIST vs Noise28	0.6557	0.6576	0.6577	0.8927
FashionMNIST vs NotMNIST	0.6563	0.6121	0.6122	0.8397
FashionMNIST vs Omniglot	0.6765	0.7012	0.7013	0.8491
KMNIST vs Constant28	0.7268	0.6425	0.6426	0.7553
KMNIST vs FashionMNIST	0.6561	0.5833	0.5834	0.7960
KMNIST vs MNIST	0.6820	0.6233	0.6234	0.8236
KMNIST vs Noise28	0.6835	0.6479	0.6480	0.8892
KMNIST vs NotMNIST	0.7249	0.6553	0.6554	0.7755
KMNIST vs Omniglot	0.6990	0.6856	0.6858	0.8237
MNIST vs Constant28	0.7264	0.6727	0.6728	0.6828
MNIST vs FashionMNIST	0.6388	0.5655	0.5656	0.7649
MNIST vs KMNIST	0.6501	0.5586	0.5587	0.7119
MNIST vs Noise28	0.6182	0.5459	0.5459	0.7889
MNIST vs NotMNIST	0.6581	0.5627	0.5628	0.6884
MNIST vs Omniglot	0.6443	0.6018	0.6019	0.7025
Noise vs CIFAR-10	0.4811	0.4883	0.4884	0.9620
Noise vs CIFAR-100	0.4843	0.4916	0.4918	0.9607
Noise vs CelebA	0.4663	0.3149	0.3150	0.9659
Noise vs Constant	0.6115	0.5727	0.5728	0.8717
Noise vs LSUN	0.4994	0.4996	0.4998	0.9526
Noise vs SVHN	0.4526	0.2558	0.2559	0.9767
Noise vs TinyImagenet	0.4796	0.4929	0.4930	0.9613

Noise vs iSUN	0.5088	0.5310	0.5311	0.9497
Noise28 vs Constant28	0.3789	0.4170	0.4171	0.9572
Noise28 vs FashionMNIST	0.4588	0.4660	0.4661	0.9595
Noise28 vs KMNIST	0.5220	0.5121	0.5122	0.9265
Noise28 vs MNIST	0.5395	0.5315	0.5316	0.9234
Noise28 vs NotMNIST	0.5333	0.5245	0.5247	0.9218
Noise28 vs Omniglot	0.5358	0.5785	0.5786	0.9234
NotMNIST vs Constant28	0.6741	0.5849	0.5850	0.7477
NotMNIST vs FashionMNIST	0.6574	0.6056	0.6057	0.9142
NotMNIST vs KMNIST	0.6379	0.5770	0.5771	0.8967
NotMNIST vs MNIST	0.6366	0.5721	0.5722	0.9150
NotMNIST vs Noise28	0.6016	0.5608	0.5609	0.9634
NotMNIST vs Omniglot	0.6414	0.6348	0.6350	0.9180
Omniglot vs Constant28	0.5859	0.5036	0.5038	0.9365
Omniglot vs FashionMNIST	0.5676	0.4973	0.4975	0.8868
Omniglot vs KMNIST	0.5912	0.5500	0.5500	0.9297
Omniglot vs MNIST	0.5896	0.5423	0.5424	0.9299
Omniglot vs Noise28	0.4933	0.4505	0.4506	0.9478
Omniglot vs NotMNIST	0.6126	0.5324	0.5325	0.8580
SVHN vs CIFAR-10	0.6604	0.8005	0.8006	0.8612
SVHN vs CIFAR-100	0.6537	0.7938	0.7939	0.8535
SVHN vs CelebA	0.6593	0.6753	0.6753	0.8654
SVHN vs Constant	0.5647	0.7468	0.7468	0.9201
SVHN vs LSUN	0.6665	0.8003	0.8003	0.8415
SVHN vs Noise	0.6013	0.7702	0.7702	0.9219
SVHN vs TinyImagenet	0.6486	0.7921	0.7922	0.8610
SVHN vs iSUN	0.6564	0.8115	0.8116	0.8512
TinyImagenet vs CelebA	0.6018	0.4441	0.4441	0.8922
TinyImagenet vs Constant	0.5518	0.5583	0.5584	0.9340
TinyImagenet vs LSUN	0.6139	0.6221	0.6222	0.9117
TinyImagenet vs Noise	0.5694	0.5998	0.5998	0.9422
TinyImagenet vs SVHN	0.4387	0.2705	0.2705	0.9786
TinyImagenet vs iSUN	0.5917	0.6281	0.6282	0.9219
Average	0.5428	0.5498	0.5499	0.9082

Table 198: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.002$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5343	0.3696	0.3697	0.9628
CIFAR-10 vs Constant	0.5254	0.5231	0.5232	0.9595
CIFAR-10 vs LSUN	0.5107	0.5186	0.5187	0.9700
CIFAR-10 vs Noise	0.4692	0.5069	0.5070	0.9888
CIFAR-10 vs SVHN	0.4786	0.2827	0.2828	0.9824
CIFAR-10 vs iSUN	0.4995	0.5387	0.5388	0.9736
CIFAR-100 vs CelebA	0.6424	0.5154	0.5154	0.8829
CIFAR-100 vs Constant	0.6329	0.6593	0.6594	0.8874
CIFAR-100 vs LSUN	0.6555	0.6766	0.6767	0.8989
CIFAR-100 vs Noise	0.5872	0.6408	0.6408	0.9562
CIFAR-100 vs SVHN	0.5302	0.3651	0.3651	0.9631
CIFAR-100 vs iSUN	0.6307	0.6790	0.6790	0.9122
CelebA vs CIFAR-10	0.4308	0.6182	0.6183	0.9685
CelebA vs CIFAR-100	0.4409	0.6240	0.6241	0.9618
CelebA vs Constant	0.4959	0.6712	0.6712	0.9587
CelebA vs LSUN	0.4258	0.6165	0.6165	0.9696
CelebA vs Noise	0.3078	0.5531	0.5531	0.9954
CelebA vs SVHN	0.4514	0.3887	0.3887	0.9479
CelebA vs TinyImagenet	0.4247	0.6211	0.6211	0.9669
CelebA vs iSUN	0.4123	0.6360	0.6361	0.9729
Constant vs CIFAR-10	0.4911	0.4836	0.4837	0.9497
Constant vs CIFAR-100	0.4985	0.4932	0.4934	0.9469
Constant vs CelebA	0.4917	0.3180	0.3181	0.9575
Constant vs LSUN	0.4923	0.4899	0.4900	0.9616
Constant vs Noise	0.3949	0.4151	0.4153	0.9687
Constant vs SVHN	0.5383	0.2877	0.2878	0.9179
Constant vs TinyImagenet	0.4920	0.4851	0.4852	0.9474
Constant vs iSUN	0.4833	0.5050	0.5051	0.9619
Constant28 vs FashionMNIST	0.2148	0.3725	0.3734	0.9970
Constant28 vs KMNIST	0.1714	0.3449	0.3458	0.9982
Constant28 vs MNIST	0.1208	0.3241	0.3250	0.9997
Constant28 vs Noise28	0.1652	0.3365	0.3374	0.9998
Constant28 vs NotMNIST	0.2255	0.3639	0.3648	0.9910
Constant28 vs Omniglot	0.1653	0.3828	0.3838	0.9981
FashionMNIST vs Constant28	0.7373	0.6984	0.6985	0.7591
FashionMNIST vs KMNIST	0.6639	0.6440	0.6441	0.8544
FashionMNIST vs MNIST	0.6630	0.6581	0.6582	0.8816
FashionMNIST vs Noise28	0.6463	0.6489	0.6490	0.9000
FashionMNIST vs NotMNIST	0.6533	0.6087	0.6088	0.8388
FashionMNIST vs Omniglot	0.6723	0.6977	0.6978	0.8507
KMNIST vs Constant28	0.7186	0.6343	0.6344	0.7622
KMNIST vs FashionMNIST	0.6495	0.5789	0.5791	0.8061
KMNIST vs MNIST	0.6779	0.6196	0.6198	0.8272
KMNIST vs Noise28	0.6708	0.6386	0.6387	0.9061
KMNIST vs NotMNIST	0.7217	0.6519	0.6520	0.7801
KMNIST vs Omniglot	0.6942	0.6819	0.6821	0.8304
MNIST vs Constant28	0.7158	0.6625	0.6626	0.7064
MNIST vs FashionMNIST	0.6310	0.5605	0.5606	0.7765
MNIST vs KMNIST	0.6452	0.5550	0.5551	0.7209
MNIST vs Noise28	0.6042	0.5373	0.5374	0.8095
MNIST vs NotMNIST	0.6540	0.5597	0.5598	0.6948
MNIST vs Omniglot	0.6392	0.5984	0.5985	0.7120
Noise vs CIFAR-10	0.4802	0.4883	0.4884	0.9596
Noise vs CIFAR-100	0.4824	0.4903	0.4905	0.9585
Noise vs CelebA	0.4685	0.3166	0.3167	0.9626
Noise vs Constant	0.6167	0.5740	0.5742	0.8685
Noise vs LSUN	0.4974	0.4996	0.4997	0.9531
Noise vs SVHN	0.4502	0.2534	0.2534	0.9759
Noise vs TinyImagenet	0.4776	0.4917	0.4919	0.9599

Noise vs iSUN	0.5018	0.5268	0.5269	0.9536
Noise28 vs Constant28	0.3783	0.4156	0.4157	0.9531
Noise28 vs FashionMNIST	0.4605	0.4675	0.4676	0.9590
Noise28 vs KMNIST	0.5250	0.5136	0.5137	0.9262
Noise28 vs MNIST	0.5420	0.5319	0.5320	0.9222
Noise28 vs NotMNIST	0.5364	0.5257	0.5258	0.9209
Noise28 vs Omniglot	0.5377	0.5785	0.5786	0.9245
NotMNIST vs Constant28	0.6650	0.5740	0.5741	0.7491
NotMNIST vs FashionMNIST	0.6485	0.5978	0.5979	0.9227
NotMNIST vs KMNIST	0.6320	0.5720	0.5722	0.9011
NotMNIST vs MNIST	0.6323	0.5689	0.5690	0.9193
NotMNIST vs Noise28	0.5847	0.5480	0.5481	0.9702
NotMNIST vs Omniglot	0.6350	0.6296	0.6298	0.9218
Omniglot vs Constant28	0.5790	0.4973	0.4974	0.9409
Omniglot vs FashionMNIST	0.5618	0.4922	0.4923	0.8898
Omniglot vs KMNIST	0.5917	0.5501	0.5502	0.9282
Omniglot vs MNIST	0.5904	0.5429	0.5430	0.9296
Omniglot vs Noise28	0.4760	0.4372	0.4373	0.9542
Omniglot vs NotMNIST	0.6116	0.5311	0.5312	0.8573
SVHN vs CIFAR-10	0.6553	0.7965	0.7965	0.8601
SVHN vs CIFAR-100	0.6478	0.7897	0.7898	0.8520
SVHN vs CelebA	0.6530	0.6691	0.6691	0.8644
SVHN vs Constant	0.5720	0.7490	0.7491	0.9048
SVHN vs LSUN	0.6615	0.7963	0.7964	0.8401
SVHN vs Noise	0.5904	0.7636	0.7637	0.9198
SVHN vs TinyImagenet	0.6423	0.7877	0.7877	0.8620
SVHN vs iSUN	0.6506	0.8077	0.8077	0.8501
TinyImagenet vs CelebA	0.5965	0.4395	0.4396	0.8938
TinyImagenet vs Constant	0.5720	0.5735	0.5736	0.9230
TinyImagenet vs LSUN	0.6152	0.6236	0.6237	0.9094
TinyImagenet vs Noise	0.5594	0.5916	0.5916	0.9488
TinyImagenet vs SVHN	0.4343	0.2665	0.2666	0.9789
TinyImagenet vs iSUN	0.5930	0.6293	0.6293	0.9228
Average	0.5402	0.5472	0.5473	0.9098

Table 199: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.0024$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5315	0.3643	0.3644	0.9622
CIFAR-10 vs Constant	0.5313	0.5235	0.5236	0.9542
CIFAR-10 vs LSUN	0.5087	0.5147	0.5148	0.9694
CIFAR-10 vs Noise	0.4685	0.5039	0.5040	0.9837
CIFAR-10 vs SVHN	0.4781	0.2798	0.2799	0.9802
CIFAR-10 vs iSUN	0.4981	0.5352	0.5354	0.9740
CIFAR-100 vs CelebA	0.6369	0.5097	0.5097	0.8867
CIFAR-100 vs Constant	0.6396	0.6635	0.6635	0.8791
CIFAR-100 vs LSUN	0.6544	0.6758	0.6758	0.9002
CIFAR-100 vs Noise	0.5757	0.6311	0.6311	0.9604
CIFAR-100 vs SVHN	0.5223	0.3570	0.3571	0.9665
CIFAR-100 vs iSUN	0.6298	0.6781	0.6782	0.9144
CelebA vs CIFAR-10	0.4321	0.6190	0.6190	0.9680
CelebA vs CIFAR-100	0.4420	0.6248	0.6249	0.9625
CelebA vs Constant	0.5007	0.6750	0.6750	0.9591
CelebA vs LSUN	0.4269	0.6173	0.6173	0.9687
CelebA vs Noise	0.3169	0.5575	0.5576	0.9956
CelebA vs SVHN	0.4527	0.3894	0.3894	0.9479
CelebA vs TinyImagenet	0.4258	0.6219	0.6219	0.9657
CelebA vs iSUN	0.4137	0.6370	0.6371	0.9730
Constant vs CIFAR-10	0.4898	0.4820	0.4821	0.9509
Constant vs CIFAR-100	0.4998	0.4943	0.4944	0.9501
Constant vs CelebA	0.4920	0.3181	0.3182	0.9567
Constant vs LSUN	0.4915	0.4892	0.4893	0.9609
Constant vs Noise	0.4004	0.4189	0.4191	0.9691
Constant vs SVHN	0.5390	0.2881	0.2881	0.9173
Constant vs TinyImagenet	0.4941	0.4860	0.4861	0.9456
Constant vs iSUN	0.4825	0.5040	0.5041	0.9613
Constant28 vs FashionMNIST	0.2146	0.3721	0.3730	0.9967
Constant28 vs KMNIST	0.1712	0.3444	0.3453	0.9976
Constant28 vs MNIST	0.1206	0.3239	0.3249	0.9998
Constant28 vs Noise28	0.1643	0.3364	0.3374	0.9999
Constant28 vs NotMNIST	0.2237	0.3633	0.3641	0.9917
Constant28 vs Omniglot	0.1670	0.3833	0.3842	0.9980
FashionMNIST vs Constant28	0.7354	0.6935	0.6935	0.7552
FashionMNIST vs KMNIST	0.6601	0.6404	0.6405	0.8563
FashionMNIST vs MNIST	0.6590	0.6548	0.6548	0.8843
FashionMNIST vs Noise28	0.6380	0.6408	0.6408	0.9051
FashionMNIST vs NotMNIST	0.6502	0.6054	0.6055	0.8383
FashionMNIST vs Omniglot	0.6681	0.6942	0.6943	0.8540
KMNIST vs Constant28	0.7115	0.6273	0.6274	0.7692
KMNIST vs FashionMNIST	0.6430	0.5747	0.5748	0.8147
KMNIST vs MNIST	0.6738	0.6161	0.6162	0.8322
KMNIST vs Noise28	0.6590	0.6298	0.6299	0.9192
KMNIST vs NotMNIST	0.7186	0.6485	0.6486	0.7842
KMNIST vs Omniglot	0.6896	0.6784	0.6785	0.8368
MNIST vs Constant28	0.7057	0.6535	0.6536	0.7256
MNIST vs FashionMNIST	0.6237	0.5560	0.5560	0.7878
MNIST vs KMNIST	0.6404	0.5515	0.5515	0.7270
MNIST vs Noise28	0.5918	0.5298	0.5299	0.8258
MNIST vs NotMNIST	0.6501	0.5568	0.5569	0.6992
MNIST vs Omniglot	0.6342	0.5951	0.5952	0.7167
Noise vs CIFAR-10	0.4820	0.4886	0.4887	0.9596
Noise vs CIFAR-100	0.4855	0.4914	0.4915	0.9560
Noise vs CelebA	0.4700	0.3176	0.3177	0.9602
Noise vs Constant	0.6211	0.5762	0.5763	0.8675
Noise vs LSUN	0.4969	0.4982	0.4983	0.9548
Noise vs SVHN	0.4542	0.2532	0.2533	0.9740
Noise vs TinyImagenet	0.4800	0.4916	0.4917	0.9590

Noise vs iSUN	0.5038	0.5270	0.5271	0.9538
Noise28 vs Constant28	0.3777	0.4144	0.4145	0.9503
Noise28 vs FashionMNIST	0.4634	0.4697	0.4698	0.9563
Noise28 vs KMNIST	0.5273	0.5144	0.5146	0.9260
Noise28 vs MNIST	0.5445	0.5319	0.5320	0.9221
Noise28 vs NotMNIST	0.5388	0.5269	0.5270	0.9197
Noise28 vs Omniglot	0.5395	0.5787	0.5788	0.9233
NotMNIST vs Constant28	0.6570	0.5648	0.5648	0.7478
NotMNIST vs FashionMNIST	0.6400	0.5905	0.5906	0.9266
NotMNIST vs KMNIST	0.6261	0.5673	0.5674	0.9052
NotMNIST vs MNIST	0.6281	0.5657	0.5658	0.9207
NotMNIST vs Noise28	0.5696	0.5367	0.5369	0.9748
NotMNIST vs Omniglot	0.6289	0.6248	0.6249	0.9244
Omniglot vs Constant28	0.5729	0.4916	0.4917	0.9458
Omniglot vs FashionMNIST	0.5564	0.4875	0.4876	0.8937
Omniglot vs KMNIST	0.5922	0.5504	0.5504	0.9292
Omniglot vs MNIST	0.5912	0.5435	0.5436	0.9291
Omniglot vs Noise28	0.4603	0.4256	0.4257	0.9582
Omniglot vs NotMNIST	0.6108	0.5298	0.5299	0.8579
SVHN vs CIFAR-10	0.6500	0.7926	0.7926	0.8605
SVHN vs CIFAR-100	0.6420	0.7860	0.7860	0.8533
SVHN vs CelebA	0.6468	0.6632	0.6633	0.8683
SVHN vs Constant	0.5794	0.7513	0.7513	0.8890
SVHN vs LSUN	0.6562	0.7928	0.7928	0.8408
SVHN vs Noise	0.5809	0.7577	0.7577	0.9202
SVHN vs TinyImagenet	0.6361	0.7837	0.7838	0.8619
SVHN vs iSUN	0.6446	0.8041	0.8041	0.8522
TinyImagenet vs CelebA	0.5926	0.4358	0.4359	0.9001
TinyImagenet vs Constant	0.5915	0.5880	0.5880	0.9087
TinyImagenet vs LSUN	0.6162	0.6249	0.6249	0.9120
TinyImagenet vs Noise	0.5515	0.5849	0.5850	0.9535
TinyImagenet vs SVHN	0.4339	0.2648	0.2649	0.9775
TinyImagenet vs iSUN	0.5939	0.6301	0.6302	0.9229
Average	0.5383	0.5451	0.5452	0.9110

Table 200: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.0028$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5294	0.3601	0.3602	0.9617
CIFAR-10 vs Constant	0.5371	0.5246	0.5247	0.9459
CIFAR-10 vs LSUN	0.5076	0.5116	0.5117	0.9688
CIFAR-10 vs Noise	0.4690	0.5021	0.5022	0.9803
CIFAR-10 vs SVHN	0.4790	0.2779	0.2780	0.9764
CIFAR-10 vs iSUN	0.4972	0.5325	0.5326	0.9730
CIFAR-100 vs CelebA	0.6320	0.5043	0.5044	0.8919
CIFAR-100 vs Constant	0.6467	0.6679	0.6680	0.8707
CIFAR-100 vs LSUN	0.6533	0.6748	0.6748	0.9017
CIFAR-100 vs Noise	0.5657	0.6225	0.6225	0.9641
CIFAR-100 vs SVHN	0.5167	0.3509	0.3509	0.9663
CIFAR-100 vs iSUN	0.6286	0.6772	0.6773	0.9143
CelebA vs CIFAR-10	0.4333	0.6198	0.6198	0.9672
CelebA vs CIFAR-100	0.4433	0.6258	0.6258	0.9607
CelebA vs Constant	0.5040	0.6781	0.6781	0.9580
CelebA vs LSUN	0.4281	0.6182	0.6183	0.9685
CelebA vs Noise	0.3279	0.5631	0.5631	0.9935
CelebA vs SVHN	0.4543	0.3902	0.3903	0.9479
CelebA vs TinyImagenet	0.4269	0.6226	0.6226	0.9652
CelebA vs iSUN	0.4152	0.6379	0.6380	0.9715
Constant vs CIFAR-10	0.4888	0.4811	0.4812	0.9524
Constant vs CIFAR-100	0.4972	0.4919	0.4920	0.9497
Constant vs CelebA	0.4921	0.3183	0.3184	0.9584
Constant vs LSUN	0.4914	0.4892	0.4894	0.9604
Constant vs Noise	0.4083	0.4229	0.4231	0.9678
Constant vs SVHN	0.5389	0.2878	0.2878	0.9190
Constant vs TinyImagenet	0.4934	0.4850	0.4851	0.9468
Constant vs iSUN	0.4826	0.5049	0.5050	0.9615
Constant28 vs FashionMNIST	0.2143	0.3715	0.3724	0.9968
Constant28 vs KMNIST	0.1700	0.3437	0.3447	0.9983
Constant28 vs MNIST	0.1205	0.3239	0.3248	1.0000
Constant28 vs Noise28	0.1638	0.3362	0.3371	0.9999
Constant28 vs NotMNIST	0.2217	0.3625	0.3634	0.9923
Constant28 vs Omniglot	0.1711	0.3845	0.3854	0.9971
FashionMNIST vs Constant28	0.7339	0.6893	0.6893	0.7567
FashionMNIST vs KMNIST	0.6565	0.6366	0.6367	0.8582
FashionMNIST vs MNIST	0.6551	0.6514	0.6514	0.8862
FashionMNIST vs Noise28	0.6308	0.6339	0.6340	0.9078
FashionMNIST vs NotMNIST	0.6470	0.6022	0.6023	0.8396
FashionMNIST vs Omniglot	0.6639	0.6907	0.6908	0.8577
KMNIST vs Constant28	0.7049	0.6203	0.6204	0.7728
KMNIST vs FashionMNIST	0.6368	0.5707	0.5708	0.8220
KMNIST vs MNIST	0.6698	0.6126	0.6127	0.8367
KMNIST vs Noise28	0.6480	0.6213	0.6214	0.9314
KMNIST vs NotMNIST	0.7156	0.6452	0.6453	0.7883
KMNIST vs Omniglot	0.6850	0.6750	0.6751	0.8419
MNIST vs Constant28	0.6959	0.6447	0.6448	0.7450
MNIST vs FashionMNIST	0.6167	0.5516	0.5517	0.7983
MNIST vs KMNIST	0.6358	0.5481	0.5482	0.7325
MNIST vs Noise28	0.5808	0.5235	0.5236	0.8389
MNIST vs NotMNIST	0.6463	0.5540	0.5541	0.7052
MNIST vs Omniglot	0.6294	0.5920	0.5921	0.7240
Noise vs CIFAR-10	0.4806	0.4866	0.4867	0.9597
Noise vs CIFAR-100	0.4849	0.4901	0.4902	0.9546
Noise vs CelebA	0.4732	0.3189	0.3190	0.9589
Noise vs Constant	0.6244	0.5772	0.5773	0.8653
Noise vs LSUN	0.4977	0.4989	0.4990	0.9525
Noise vs SVHN	0.4595	0.2542	0.2543	0.9730
Noise vs TinyImagenet	0.4814	0.4925	0.4926	0.9566

Noise vs iSUN	0.5043	0.5271	0.5272	0.9527
Noise28 vs Constant28	0.3768	0.4128	0.4129	0.9507
Noise28 vs FashionMNIST	0.4673	0.4721	0.4722	0.9528
Noise28 vs KMNIST	0.5278	0.5141	0.5142	0.9238
Noise28 vs MNIST	0.5458	0.5316	0.5318	0.9209
Noise28 vs NotMNIST	0.5397	0.5261	0.5262	0.9187
Noise28 vs Omniglot	0.5407	0.5785	0.5786	0.9195
NotMNIST vs Constant28	0.6510	0.5580	0.5581	0.7466
NotMNIST vs FashionMNIST	0.6322	0.5837	0.5838	0.9307
NotMNIST vs KMNIST	0.6205	0.5627	0.5628	0.9086
NotMNIST vs MNIST	0.6239	0.5627	0.5628	0.9219
NotMNIST vs Noise28	0.5563	0.5267	0.5268	0.9784
NotMNIST vs Omniglot	0.6229	0.6199	0.6201	0.9260
Omniglot vs Constant28	0.5681	0.4873	0.4874	0.9500
Omniglot vs FashionMNIST	0.5513	0.4829	0.4831	0.8984
Omniglot vs KMNIST	0.5927	0.5505	0.5506	0.9290
Omniglot vs MNIST	0.5920	0.5440	0.5441	0.9274
Omniglot vs Noise28	0.4463	0.4155	0.4156	0.9622
Omniglot vs NotMNIST	0.6099	0.5286	0.5287	0.8583
SVHN vs CIFAR-10	0.6448	0.7891	0.7891	0.8610
SVHN vs CIFAR-100	0.6365	0.7826	0.7826	0.8537
SVHN vs CelebA	0.6403	0.6576	0.6576	0.8704
SVHN vs Constant	0.5893	0.7552	0.7552	0.8753
SVHN vs LSUN	0.6509	0.7895	0.7895	0.8432
SVHN vs Noise	0.5721	0.7525	0.7526	0.9197
SVHN vs TinyImagenet	0.6302	0.7799	0.7799	0.8608
SVHN vs iSUN	0.6386	0.8008	0.8008	0.8525
TinyImagenet vs CelebA	0.5890	0.4326	0.4327	0.9009
TinyImagenet vs Constant	0.6120	0.6035	0.6035	0.8862
TinyImagenet vs LSUN	0.6167	0.6256	0.6256	0.9116
TinyImagenet vs Noise	0.5452	0.5792	0.5792	0.9545
TinyImagenet vs SVHN	0.4360	0.2649	0.2650	0.9763
TinyImagenet vs iSUN	0.5947	0.6307	0.6308	0.9222
Average	0.5366	0.5432	0.5433	0.9117

Table 201: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.0032$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5281	0.3569	0.3570	0.9603
CIFAR-10 vs Constant	0.5425	0.5254	0.5256	0.9386
CIFAR-10 vs LSUN	0.5068	0.5092	0.5093	0.9669
CIFAR-10 vs Noise	0.4701	0.5009	0.5010	0.9757
CIFAR-10 vs SVHN	0.4806	0.2768	0.2769	0.9723
CIFAR-10 vs iSUN	0.4966	0.5304	0.5305	0.9714
CIFAR-100 vs CelebA	0.6274	0.4994	0.4995	0.8960
CIFAR-100 vs Constant	0.6537	0.6734	0.6734	0.8666
CIFAR-100 vs LSUN	0.6520	0.6738	0.6739	0.9030
CIFAR-100 vs Noise	0.5571	0.6150	0.6150	0.9686
CIFAR-100 vs SVHN	0.5130	0.3459	0.3460	0.9670
CIFAR-100 vs iSUN	0.6274	0.6762	0.6762	0.9160
CelebA vs CIFAR-10	0.4345	0.6205	0.6206	0.9666
CelebA vs CIFAR-100	0.4442	0.6264	0.6265	0.9608
CelebA vs Constant	0.5069	0.6806	0.6806	0.9588
CelebA vs LSUN	0.4291	0.6191	0.6192	0.9678
CelebA vs Noise	0.3393	0.5689	0.5690	0.9918
CelebA vs SVHN	0.4563	0.3915	0.3915	0.9470
CelebA vs TinyImagenet	0.4278	0.6233	0.6234	0.9645
CelebA vs iSUN	0.4161	0.6386	0.6387	0.9720
Constant vs CIFAR-10	0.4883	0.4808	0.4809	0.9543
Constant vs CIFAR-100	0.4966	0.4902	0.4904	0.9491
Constant vs CelebA	0.4930	0.3187	0.3188	0.9570
Constant vs LSUN	0.4895	0.4872	0.4873	0.9618
Constant vs Noise	0.4120	0.4253	0.4255	0.9666
Constant vs SVHN	0.5389	0.2876	0.2877	0.9188
Constant vs TinyImagenet	0.4937	0.4856	0.4857	0.9492
Constant vs iSUN	0.4827	0.5045	0.5046	0.9629
Constant28 vs FashionMNIST	0.2136	0.3709	0.3718	0.9969
Constant28 vs KMNIST	0.1708	0.3438	0.3447	0.9983
Constant28 vs MNIST	0.1221	0.3243	0.3253	0.9999
Constant28 vs Noise28	0.1639	0.3363	0.3372	1.0000
Constant28 vs NotMNIST	0.2203	0.3620	0.3629	0.9924
Constant28 vs Omniglot	0.1740	0.3854	0.3864	0.9970
FashionMNIST vs Constant28	0.7334	0.6857	0.6857	0.7506
FashionMNIST vs KMNIST	0.6528	0.6330	0.6332	0.8597
FashionMNIST vs MNIST	0.6510	0.6480	0.6480	0.8872
FashionMNIST vs Noise28	0.6246	0.6272	0.6273	0.9074
FashionMNIST vs NotMNIST	0.6438	0.5991	0.5992	0.8368
FashionMNIST vs Omniglot	0.6597	0.6873	0.6874	0.8580
KMNIST vs Constant28	0.6991	0.6142	0.6143	0.7792
KMNIST vs FashionMNIST	0.6309	0.5668	0.5669	0.8300
KMNIST vs MNIST	0.6659	0.6092	0.6093	0.8411
KMNIST vs Noise28	0.6380	0.6131	0.6132	0.9382
KMNIST vs NotMNIST	0.7126	0.6419	0.6420	0.7923
KMNIST vs Omniglot	0.6805	0.6716	0.6717	0.8481
MNIST vs Constant28	0.6870	0.6368	0.6369	0.7565
MNIST vs FashionMNIST	0.6102	0.5476	0.5477	0.8068
MNIST vs KMNIST	0.6313	0.5448	0.5449	0.7396
MNIST vs Noise28	0.5717	0.5181	0.5182	0.8491
MNIST vs NotMNIST	0.6426	0.5513	0.5514	0.7113
MNIST vs Omniglot	0.6246	0.5889	0.5890	0.7296
Noise vs CIFAR-10	0.4831	0.4874	0.4875	0.9559
Noise vs CIFAR-100	0.4892	0.4920	0.4921	0.9547
Noise vs CelebA	0.4747	0.3187	0.3188	0.9571
Noise vs Constant	0.6292	0.5805	0.5806	0.8696
Noise vs LSUN	0.4972	0.4980	0.4981	0.9526
Noise vs SVHN	0.4670	0.2561	0.2562	0.9699
Noise vs TinyImagenet	0.4817	0.4915	0.4916	0.9559

Noise vs iSUN	0.5060	0.5276	0.5277	0.9529
Noise28 vs Constant28	0.3802	0.4142	0.4143	0.9458
Noise28 vs FashionMNIST	0.4708	0.4741	0.4743	0.9518
Noise28 vs KMNIST	0.5292	0.5146	0.5147	0.9226
Noise28 vs MNIST	0.5474	0.5314	0.5315	0.9203
Noise28 vs NotMNIST	0.5408	0.5262	0.5263	0.9203
Noise28 vs Omniglot	0.5411	0.5776	0.5778	0.9207
NotMNIST vs Constant28	0.6449	0.5517	0.5517	0.7459
NotMNIST vs FashionMNIST	0.6249	0.5773	0.5774	0.9333
NotMNIST vs KMNIST	0.6150	0.5583	0.5584	0.9119
NotMNIST vs MNIST	0.6199	0.5597	0.5598	0.9256
NotMNIST vs Noise28	0.5448	0.5181	0.5181	0.9815
NotMNIST vs Omniglot	0.6171	0.6153	0.6155	0.9289
Omniglot vs Constant28	0.5639	0.4837	0.4838	0.9500
Omniglot vs FashionMNIST	0.5465	0.4787	0.4789	0.9007
Omniglot vs KMNIST	0.5930	0.5506	0.5506	0.9302
Omniglot vs MNIST	0.5927	0.5446	0.5447	0.9283
Omniglot vs Noise28	0.4338	0.4067	0.4068	0.9646
Omniglot vs NotMNIST	0.6091	0.5274	0.5276	0.8578
SVHN vs CIFAR-10	0.6394	0.7858	0.7859	0.8636
SVHN vs CIFAR-100	0.6311	0.7794	0.7794	0.8572
SVHN vs CelebA	0.6339	0.6523	0.6523	0.8745
SVHN vs Constant	0.5977	0.7596	0.7596	0.8616
SVHN vs LSUN	0.6456	0.7863	0.7863	0.8462
SVHN vs Noise	0.5645	0.7480	0.7481	0.9200
SVHN vs TinyImagenet	0.6243	0.7765	0.7765	0.8655
SVHN vs iSUN	0.6328	0.7976	0.7976	0.8579
TinyImagenet vs CelebA	0.5864	0.4302	0.4303	0.9022
TinyImagenet vs Constant	0.6298	0.6179	0.6179	0.8652
TinyImagenet vs LSUN	0.6167	0.6260	0.6261	0.9099
TinyImagenet vs Noise	0.5403	0.5749	0.5750	0.9562
TinyImagenet vs SVHN	0.4410	0.2665	0.2666	0.9743
TinyImagenet vs iSUN	0.5946	0.6311	0.6311	0.9243
Average	0.5353	0.5417	0.5418	0.9124

Table 202: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.0036$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.5269	0.3541	0.3542	0.9588
CIFAR-10 vs Constant	0.5482	0.5281	0.5282	0.9357
CIFAR-10 vs LSUN	0.5061	0.5072	0.5073	0.9665
CIFAR-10 vs Noise	0.4717	0.5005	0.5006	0.9699
CIFAR-10 vs SVHN	0.4828	0.2761	0.2762	0.9683
CIFAR-10 vs iSUN	0.4966	0.5290	0.5291	0.9699
CIFAR-100 vs CelebA	0.6233	0.4949	0.4950	0.8998
CIFAR-100 vs Constant	0.6605	0.6770	0.6770	0.8563
CIFAR-100 vs LSUN	0.6507	0.6726	0.6726	0.9049
CIFAR-100 vs Noise	0.5497	0.6084	0.6085	0.9707
CIFAR-100 vs SVHN	0.5110	0.3423	0.3424	0.9672
CIFAR-100 vs iSUN	0.6263	0.6751	0.6752	0.9183
CelebA vs CIFAR-10	0.4359	0.6214	0.6214	0.9670
CelebA vs CIFAR-100	0.4452	0.6273	0.6274	0.9614
CelebA vs Constant	0.5087	0.6823	0.6823	0.9590
CelebA vs LSUN	0.4298	0.6196	0.6196	0.9675
CelebA vs Noise	0.3505	0.5748	0.5749	0.9916
CelebA vs SVHN	0.4584	0.3927	0.3927	0.9463
CelebA vs TinyImagenet	0.4285	0.6239	0.6239	0.9653
CelebA vs iSUN	0.4170	0.6392	0.6393	0.9712
Constant vs CIFAR-10	0.4884	0.4809	0.4810	0.9551
Constant vs CIFAR-100	0.4974	0.4911	0.4913	0.9487
Constant vs CelebA	0.4908	0.3170	0.3171	0.9583
Constant vs LSUN	0.4889	0.4869	0.4871	0.9625
Constant vs Noise	0.4095	0.4253	0.4255	0.9652
Constant vs SVHN	0.5378	0.2869	0.2870	0.9203
Constant vs TinyImagenet	0.4930	0.4847	0.4848	0.9495
Constant vs iSUN	0.4821	0.5044	0.5046	0.9652
Constant28 vs FashionMNIST	0.2136	0.3706	0.3715	0.9966
Constant28 vs KMNIST	0.1710	0.3439	0.3448	0.9983
Constant28 vs MNIST	0.1239	0.3249	0.3258	0.9998
Constant28 vs Noise28	0.1637	0.3364	0.3373	1.0000
Constant28 vs NotMNIST	0.2197	0.3619	0.3627	0.9917
Constant28 vs Omniglot	0.1770	0.3865	0.3874	0.9971
FashionMNIST vs Constant28	0.7331	0.6826	0.6827	0.7444
FashionMNIST vs KMNIST	0.6492	0.6296	0.6298	0.8592
FashionMNIST vs MNIST	0.6469	0.6444	0.6445	0.8878
FashionMNIST vs Noise28	0.6191	0.6212	0.6213	0.9065
FashionMNIST vs NotMNIST	0.6406	0.5961	0.5962	0.8343
FashionMNIST vs Omniglot	0.6557	0.6840	0.6841	0.8592
KMNIST vs Constant28	0.6935	0.6086	0.6087	0.7851
KMNIST vs FashionMNIST	0.6253	0.5631	0.5632	0.8347
KMNIST vs MNIST	0.6621	0.6059	0.6060	0.8452
KMNIST vs Noise28	0.6289	0.6055	0.6056	0.9441
KMNIST vs NotMNIST	0.7097	0.6387	0.6388	0.7959
KMNIST vs Omniglot	0.6761	0.6682	0.6684	0.8537
MNIST vs Constant28	0.6787	0.6287	0.6288	0.7688
MNIST vs FashionMNIST	0.6041	0.5438	0.5439	0.8151
MNIST vs KMNIST	0.6270	0.5418	0.5418	0.7455
MNIST vs Noise28	0.5637	0.5134	0.5136	0.8594
MNIST vs NotMNIST	0.6391	0.5487	0.5488	0.7180
MNIST vs Omniglot	0.6200	0.5860	0.5861	0.7375
Noise vs CIFAR-10	0.4850	0.4882	0.4883	0.9544
Noise vs CIFAR-100	0.4894	0.4917	0.4918	0.9525
Noise vs CelebA	0.4778	0.3202	0.3203	0.9569
Noise vs Constant	0.6347	0.5838	0.5839	0.8614
Noise vs LSUN	0.4983	0.4986	0.4988	0.9544
Noise vs SVHN	0.4749	0.2583	0.2584	0.9687
Noise vs TinyImagenet	0.4849	0.4923	0.4924	0.9542

Noise vs iSUN	0.5054	0.5272	0.5273	0.9527
Noise28 vs Constant28	0.3818	0.4142	0.4143	0.9457
Noise28 vs FashionMNIST	0.4742	0.4763	0.4764	0.9511
Noise28 vs KMNIST	0.5307	0.5153	0.5154	0.9214
Noise28 vs MNIST	0.5479	0.5310	0.5311	0.9206
Noise28 vs NotMNIST	0.5415	0.5257	0.5258	0.9202
Noise28 vs Omniglot	0.5413	0.5769	0.5771	0.9230
NotMNIST vs Constant28	0.6397	0.5461	0.5462	0.7441
NotMNIST vs FashionMNIST	0.6178	0.5712	0.5713	0.9384
NotMNIST vs KMNIST	0.6097	0.5540	0.5542	0.9151
NotMNIST vs MNIST	0.6159	0.5568	0.5569	0.9269
NotMNIST vs Noise28	0.5348	0.5104	0.5105	0.9841
NotMNIST vs Omniglot	0.6117	0.6109	0.6110	0.9314
Omniglot vs Constant28	0.5611	0.4811	0.4812	0.9489
Omniglot vs FashionMNIST	0.5420	0.4747	0.4748	0.9030
Omniglot vs KMNIST	0.5933	0.5507	0.5507	0.9287
Omniglot vs MNIST	0.5933	0.5451	0.5452	0.9271
Omniglot vs Noise28	0.4224	0.3988	0.3989	0.9678
Omniglot vs NotMNIST	0.6083	0.5263	0.5264	0.8566
SVHN vs CIFAR-10	0.6343	0.7827	0.7828	0.8669
SVHN vs CIFAR-100	0.6258	0.7765	0.7765	0.8633
SVHN vs CelebA	0.6277	0.6474	0.6474	0.8828
SVHN vs Constant	0.6047	0.7636	0.7637	0.8556
SVHN vs LSUN	0.6404	0.7836	0.7837	0.8520
SVHN vs Noise	0.5578	0.7445	0.7445	0.9192
SVHN vs TinyImagenet	0.6189	0.7735	0.7735	0.8690
SVHN vs iSUN	0.6272	0.7950	0.7950	0.8597
TinyImagenet vs CelebA	0.5841	0.4283	0.4283	0.9029
TinyImagenet vs Constant	0.6477	0.6325	0.6326	0.8505
TinyImagenet vs LSUN	0.6164	0.6260	0.6261	0.9102
TinyImagenet vs Noise	0.5363	0.5714	0.5714	0.9570
TinyImagenet vs SVHN	0.4477	0.2695	0.2696	0.9700
TinyImagenet vs iSUN	0.5948	0.6312	0.6313	0.9212
Average	0.5341	0.5403	0.5405	0.9131

Table 203: The detailed performance for indicator ODIN with $T = 1000, \epsilon = 0.004$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8158	0.7515	0.7515	0.7533
CIFAR-10 vs Constant	0.7879	0.8192	0.8192	0.8094
CIFAR-10 vs LSUN	0.7471	0.7772	0.7773	0.8484
CIFAR-10 vs Noise	0.8983	0.9162	0.9162	0.5594
CIFAR-10 vs SVHN	0.7637	0.6359	0.6360	0.8244
CIFAR-10 vs iSUN	0.7259	0.7721	0.7721	0.8647
CIFAR-100 vs CelebA	0.8280	0.7673	0.7673	0.7033
CIFAR-100 vs Constant	0.7549	0.7811	0.7811	0.8502
CIFAR-100 vs LSUN	0.7620	0.7841	0.7841	0.8082
CIFAR-100 vs Noise	0.9103	0.9257	0.9257	0.4973
CIFAR-100 vs SVHN	0.7907	0.6805	0.6805	0.7708
CIFAR-100 vs iSUN	0.7162	0.7577	0.7577	0.8569
CelebA vs CIFAR-10	0.3893	0.6139	0.6140	0.9992
CelebA vs CIFAR-100	0.3758	0.6063	0.6064	0.9988
CelebA vs Constant	0.1924	0.4948	0.4952	0.9994
CelebA vs LSUN	0.3489	0.5783	0.5785	0.9986
CelebA vs Noise	0.4078	0.5810	0.5812	0.9564
CelebA vs SVHN	0.3848	0.3665	0.3667	0.9976
CelebA vs TinyImagenet	0.4313	0.6502	0.6503	0.9973
CelebA vs iSUN	0.3616	0.6140	0.6142	0.9983
Constant vs CIFAR-10	0.5991	0.5592	0.5593	0.8684
Constant vs CIFAR-100	0.6015	0.5608	0.5608	0.8770
Constant vs CelebA	0.6308	0.4160	0.4160	0.8811
Constant vs LSUN	0.6307	0.5846	0.5847	0.8537
Constant vs Noise	0.5222	0.5137	0.5138	0.9514
Constant vs SVHN	0.4241	0.2521	0.2522	0.9783
Constant vs TinyImagenet	0.6214	0.5777	0.5778	0.8608
Constant vs iSUN	0.6258	0.6038	0.6039	0.8570
Constant28 vs FashionMNIST	0.4625	0.4818	0.4819	0.9666
Constant28 vs KMNIST	0.5255	0.5093	0.5094	0.9131
Constant28 vs MNIST	0.6078	0.5469	0.5470	0.7911
Constant28 vs Noise28	0.5425	0.5114	0.5116	0.8333
Constant28 vs NotMNIST	0.4482	0.4744	0.4746	0.9637
Constant28 vs Omniglot	0.6458	0.6177	0.6178	0.6931
FashionMNIST vs Constant28	0.9701	0.9713	0.9713	0.1503
FashionMNIST vs KMNIST	0.9498	0.9514	0.9514	0.2509
FashionMNIST vs MNIST	0.9614	0.9632	0.9632	0.1940
FashionMNIST vs Noise28	0.9893	0.9911	0.9911	0.0440
FashionMNIST vs NotMNIST	0.9196	0.9080	0.9080	0.3104
FashionMNIST vs Omniglot	0.9684	0.9754	0.9754	0.1606
KMNIST vs Constant28	0.9704	0.9752	0.9752	0.1555
KMNIST vs FashionMNIST	0.8932	0.8442	0.8443	0.4401
KMNIST vs MNIST	0.8880	0.8646	0.8647	0.5436
KMNIST vs Noise28	0.9628	0.9726	0.9726	0.2198
KMNIST vs NotMNIST	0.9229	0.9314	0.9315	0.4798
KMNIST vs Omniglot	0.9157	0.9316	0.9316	0.4767
MNIST vs Constant28	0.9931	0.9947	0.9947	0.0040
MNIST vs FashionMNIST	0.9206	0.8858	0.8859	0.2408
MNIST vs KMNIST	0.9101	0.8650	0.8651	0.2712
MNIST vs Noise28	0.9907	0.9914	0.9914	0.0255
MNIST vs NotMNIST	0.9314	0.8955	0.8956	0.2130
MNIST vs Omniglot	0.8920	0.8546	0.8547	0.2979
Noise vs CIFAR-10	0.5543	0.5395	0.5396	0.9229
Noise vs CIFAR-100	0.5610	0.5443	0.5445	0.9217
Noise vs CelebA	0.5391	0.3595	0.3596	0.9324
Noise vs Constant	0.5573	0.5348	0.5349	0.9279
Noise vs LSUN	0.5423	0.5321	0.5322	0.9327
Noise vs SVHN	0.6096	0.3478	0.3479	0.8853
Noise vs TinyImagenet	0.5580	0.5526	0.5527	0.9260

Noise vs iSUN	0.5449	0.5608	0.5609	0.9253
Noise28 vs Constant28	0.5469	0.5514	0.5514	0.9183
Noise28 vs FashionMNIST	0.5329	0.5277	0.5278	0.9438
Noise28 vs KMNIST	0.5104	0.5086	0.5087	0.9466
Noise28 vs MNIST	0.4981	0.4936	0.4937	0.9524
Noise28 vs NotMNIST	0.4981	0.4974	0.4975	0.9527
Noise28 vs Omniglot	0.5117	0.5611	0.5612	0.9451
NotMNIST vs Constant28	0.9764	0.9837	0.9837	0.1390
NotMNIST vs FashionMNIST	0.9469	0.9556	0.9556	0.4243
NotMNIST vs KMNIST	0.9352	0.9438	0.9438	0.4958
NotMNIST vs MNIST	0.8974	0.8954	0.8954	0.6676
NotMNIST vs Noise28	0.9710	0.9796	0.9796	0.2273
NotMNIST vs Omniglot	0.9420	0.9545	0.9545	0.4351
Omniglot vs Constant28	0.5802	0.6290	0.6290	1.0000
Omniglot vs FashionMNIST	0.5950	0.6023	0.6024	0.9251
Omniglot vs KMNIST	0.5647	0.5752	0.5752	0.9468
Omniglot vs MNIST	0.5223	0.5232	0.5232	0.9635
Omniglot vs Noise28	0.5788	0.6103	0.6103	0.9495
Omniglot vs NotMNIST	0.5371	0.5490	0.5490	0.9522
SVHN vs CIFAR-10	0.8393	0.9065	0.9065	0.6306
SVHN vs CIFAR-100	0.8585	0.9132	0.9133	0.5606
SVHN vs CelebA	0.9002	0.9073	0.9073	0.4989
SVHN vs Constant	0.9309	0.9654	0.9654	0.3168
SVHN vs LSUN	0.8324	0.8966	0.8966	0.6224
SVHN vs Noise	0.8818	0.9405	0.9405	0.5513
SVHN vs TinyImagenet	0.8447	0.9067	0.9067	0.6021
SVHN vs iSUN	0.8349	0.9091	0.9092	0.6208
TinyImagenet vs CelebA	0.5233	0.3429	0.3430	0.9475
TinyImagenet vs Constant	0.3948	0.4826	0.4826	0.9998
TinyImagenet vs LSUN	0.5265	0.5102	0.5103	0.9284
TinyImagenet vs Noise	0.5501	0.5237	0.5238	0.9332
TinyImagenet vs SVHN	0.4342	0.2727	0.2728	0.9929
TinyImagenet vs iSUN	0.5187	0.5333	0.5333	0.9368
Average	0.6925	0.6975	0.6976	0.7083

Table 204: The detailed performance for indicator disagreement $\mathbb{E}_\theta KL(p_\theta(y|x)||p_E(y|x))$ where $p_E(y|x) = \mathbb{E}_\theta p_\theta(y|x)$ based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.1842	0.2102	0.2102	1.0000
CIFAR-10 vs Constant	0.2121	0.3528	0.3529	1.0000
CIFAR-10 vs LSUN	0.2529	0.3674	0.3675	0.9994
CIFAR-10 vs Noise	0.1017	0.3189	0.3189	1.0000
CIFAR-10 vs SVHN	0.2363	0.1812	0.1812	0.9994
CIFAR-10 vs iSUN	0.2741	0.4025	0.4026	0.9989
CIFAR-100 vs CelebA	0.1720	0.2071	0.2072	1.0000
CIFAR-100 vs Constant	0.2451	0.3652	0.3653	0.9992
CIFAR-100 vs LSUN	0.2380	0.3585	0.3586	0.9988
CIFAR-100 vs Noise	0.0897	0.3164	0.3164	1.0000
CIFAR-100 vs SVHN	0.2093	0.1746	0.1747	0.9999
CIFAR-100 vs iSUN	0.2838	0.4053	0.4054	0.9980
CelebA vs CIFAR-10	0.6107	0.7891	0.7888	0.9343
CelebA vs CIFAR-100	0.6242	0.8009	0.8006	0.9283
CelebA vs Constant	0.8076	0.8866	0.8864	0.5714
CelebA vs LSUN	0.6511	0.8136	0.8133	0.8756
CelebA vs Noise	0.5922	0.7086	0.7088	0.8009
CelebA vs SVHN	0.6152	0.6009	0.6003	0.8991
CelebA vs TinyImagenet	0.5687	0.7692	0.7689	0.9527
CelebA vs iSUN	0.6384	0.8221	0.8218	0.8936
Constant vs CIFAR-10	0.4009	0.4223	0.4225	0.9479
Constant vs CIFAR-100	0.3985	0.4228	0.4230	0.9471
Constant vs CelebA	0.3692	0.2610	0.2611	0.9498
Constant vs LSUN	0.3693	0.4071	0.4073	0.9496
Constant vs Noise	0.4778	0.4892	0.4893	0.9480
Constant vs SVHN	0.5759	0.3502	0.3503	0.9505
Constant vs TinyImagenet	0.3786	0.4157	0.4159	0.9461
Constant vs iSUN	0.3742	0.4360	0.4362	0.9431
Constant28 vs FashionMNIST	0.5375	0.5355	0.5357	0.9600
Constant28 vs KMNIST	0.4745	0.4634	0.4636	0.9626
Constant28 vs MNIST	0.3922	0.4076	0.4078	0.9535
Constant28 vs Noise28	0.4575	0.4397	0.4399	0.9611
Constant28 vs NotMNIST	0.5518	0.5419	0.5421	0.9641
Constant28 vs Omniglot	0.3542	0.4394	0.4397	0.9558
FashionMNIST vs Constant28	0.0299	0.3091	0.3091	1.0000
FashionMNIST vs KMNIST	0.0502	0.3112	0.3112	1.0000
FashionMNIST vs MNIST	0.0386	0.3098	0.3098	1.0000
FashionMNIST vs Noise28	0.0107	0.3071	0.3072	1.0000
FashionMNIST vs NotMNIST	0.0804	0.3165	0.3165	0.9996
FashionMNIST vs Omniglot	0.0316	0.3520	0.3520	1.0000
KMNIST vs Constant28	0.0296	0.3084	0.3085	1.0000
KMNIST vs FashionMNIST	0.1068	0.3217	0.3217	0.9838
KMNIST vs MNIST	0.1120	0.3237	0.3238	0.9924
KMNIST vs Noise28	0.0372	0.3091	0.3092	1.0000
KMNIST vs NotMNIST	0.0771	0.3162	0.3163	0.9992
KMNIST vs Omniglot	0.0843	0.3615	0.3616	0.9985
MNIST vs Constant28	0.0069	0.3069	0.3070	1.0000
MNIST vs FashionMNIST	0.0794	0.3174	0.3174	0.9942
MNIST vs KMNIST	0.0899	0.3192	0.3192	0.9917
MNIST vs Noise28	0.0093	0.3072	0.3073	1.0000
MNIST vs NotMNIST	0.0686	0.3156	0.3156	0.9935
MNIST vs Omniglot	0.1080	0.3670	0.3670	0.9846
Noise vs CIFAR-10	0.4457	0.4587	0.4589	0.9605
Noise vs CIFAR-100	0.4390	0.4541	0.4542	0.9615
Noise vs CelebA	0.4609	0.3076	0.3077	0.9576
Noise vs Constant	0.4427	0.4574	0.4576	0.9528
Noise vs LSUN	0.4577	0.4679	0.4680	0.9599
Noise vs SVHN	0.3904	0.2205	0.2205	0.9656
Noise vs TinyImagenet	0.4420	0.4620	0.4621	0.9635

Noise vs iSUN	0.4551	0.4915	0.4917	0.9597
Noise28 vs Constant28	0.4531	0.4653	0.4654	0.9712
Noise28 vs FashionMNIST	0.4671	0.4775	0.4776	0.9612
Noise28 vs KMNIST	0.4896	0.4923	0.4924	0.9556
Noise28 vs MNIST	0.5019	0.5003	0.5004	0.9423
Noise28 vs NotMNIST	0.5019	0.5006	0.5007	0.9465
Noise28 vs Omniglot	0.4883	0.5426	0.5427	0.9515
NotMNIST vs Constant28	0.0237	0.3083	0.3083	1.0000
NotMNIST vs FashionMNIST	0.0531	0.3111	0.3111	1.0000
NotMNIST vs KMNIST	0.0648	0.3132	0.3133	0.9996
NotMNIST vs MNIST	0.1026	0.3218	0.3218	0.9984
NotMNIST vs Noise28	0.0290	0.3082	0.3082	1.0000
NotMNIST vs Omniglot	0.0580	0.3556	0.3556	0.9988
Omniglot vs Constant28	0.4198	0.5152	0.5153	1.0000
Omniglot vs FashionMNIST	0.4050	0.3948	0.3949	0.9997
Omniglot vs KMNIST	0.4353	0.4212	0.4213	0.9990
Omniglot vs MNIST	0.4777	0.4514	0.4515	0.9949
Omniglot vs Noise28	0.4212	0.4199	0.4200	1.0000
Omniglot vs NotMNIST	0.4629	0.4391	0.4392	0.9984
SVHN vs CIFAR-10	0.1607	0.5466	0.5466	0.9881
SVHN vs CIFAR-100	0.1415	0.5395	0.5395	0.9839
SVHN vs CelebA	0.0998	0.3745	0.3745	0.9952
SVHN vs Constant	0.0691	0.5192	0.5193	0.9994
SVHN vs LSUN	0.1676	0.5481	0.5482	0.9813
SVHN vs Noise	0.1182	0.5334	0.5334	0.9955
SVHN vs TinyImagenet	0.1553	0.5483	0.5483	0.9823
SVHN vs iSUN	0.1651	0.5729	0.5729	0.9822
TinyImagenet vs CelebA	0.4767	0.3159	0.3160	0.9499
TinyImagenet vs Constant	0.6052	0.6948	0.6948	0.9758
TinyImagenet vs LSUN	0.4735	0.4679	0.4680	0.9478
TinyImagenet vs Noise	0.4499	0.4574	0.4576	0.9466
TinyImagenet vs SVHN	0.5658	0.3946	0.3946	0.9720
TinyImagenet vs iSUN	0.4813	0.5027	0.5028	0.9489
Average	0.3075	0.4297	0.4298	0.9693

Table 205: The detailed performance for indicator negative disagreement based on model ResNet

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9287	0.7953	0.7954	0.1657
CIFAR-10 vs Constant	0.9253	0.8135	0.8135	0.0990
CIFAR-10 vs LSUN	0.9024	0.8785	0.8785	0.3423
CIFAR-10 vs Noise	0.9998	0.9999	0.9999	0.0000
CIFAR-10 vs SVHN	0.9281	0.6823	0.6824	0.1240
CIFAR-10 vs iSUN	0.8906	0.8642	0.8642	0.3538
CIFAR-100 vs CelebA	0.9126	0.7488	0.7489	0.1972
CIFAR-100 vs Constant	0.9325	0.8293	0.8293	0.0927
CIFAR-100 vs LSUN	0.9199	0.8898	0.8898	0.2682
CIFAR-100 vs Noise	0.9999	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9103	0.6384	0.6385	0.1512
CIFAR-100 vs iSUN	0.9102	0.8859	0.8860	0.2846
CelebA vs CIFAR-10	0.8144	0.8448	0.8448	0.4064
CelebA vs CIFAR-100	0.7990	0.8292	0.8292	0.4303
CelebA vs Constant	0.8981	0.8619	0.8620	0.1318
CelebA vs LSUN	0.9460	0.9569	0.9569	0.1610
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9543	0.8650	0.8651	0.0735
CelebA vs TinyImagenet	0.8266	0.8550	0.8550	0.3903
CelebA vs iSUN	0.9450	0.9599	0.9599	0.1516
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0001
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9895	0.9820	0.9820	0.0172
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9994	0.9981	0.9982	0.0010
Constant28 vs Omniglot	0.9988	0.9941	0.9942	0.0012
FashionMNIST vs Constant28	0.9888	0.9628	0.9628	0.0139
FashionMNIST vs KMNIST	0.9985	0.9972	0.9972	0.0034
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0005
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9927	0.9796	0.9797	0.0112
FashionMNIST vs Omniglot	0.9997	0.9997	0.9997	0.0011
KMNIST vs Constant28	0.7840	0.6275	0.6276	0.2269
KMNIST vs FashionMNIST	0.9952	0.9852	0.9852	0.0107
KMNIST vs MNIST	0.9966	0.9962	0.9962	0.0154
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9896	0.9708	0.9709	0.0173
KMNIST vs Omniglot	0.9864	0.9834	0.9835	0.0457
MNIST vs Constant28	0.9927	0.9764	0.9764	0.0079
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9521	0.9476	0.9477	0.1760
Noise vs CIFAR-10	0.9997	0.9977	0.9978	0.0003
Noise vs CIFAR-100	0.9993	0.9954	0.9955	0.0007
Noise vs CelebA	0.9999	0.9977	0.9978	0.0001
Noise vs Constant	0.9926	0.9669	0.9669	0.0079
Noise vs LSUN	0.9960	0.9786	0.9787	0.0040
Noise vs SVHN	0.9998	0.9988	0.9988	0.0003
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	0.9951	0.9763	0.9763	0.0049
Noise28 vs Constant28	0.9795	0.9269	0.9269	0.0233
Noise28 vs FashionMNIST	0.9993	0.9953	0.9953	0.0007
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9981	0.9881	0.9882	0.0019
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9547	0.8695	0.8695	0.0561
NotMNIST vs FashionMNIST	0.9946	0.9914	0.9915	0.0151
NotMNIST vs KMNIST	0.9950	0.9937	0.9937	0.0152
NotMNIST vs MNIST	0.9994	0.9996	0.9996	0.0001
NotMNIST vs Noise28	0.9974	0.9986	0.9986	0.0000
NotMNIST vs Omniglot	0.9985	0.9989	0.9989	0.0010
Omniglot vs Constant28	0.9363	0.7965	0.7966	0.0677
Omniglot vs FashionMNIST	0.9996	0.9972	0.9972	0.0004
Omniglot vs KMNIST	0.9831	0.9561	0.9561	0.0411
Omniglot vs MNIST	0.9929	0.9856	0.9856	0.0217
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9995	0.9964	0.9964	0.0007
SVHN vs CIFAR-10	0.9215	0.9452	0.9452	0.1723
SVHN vs CIFAR-100	0.9204	0.9447	0.9448	0.1808
SVHN vs CelebA	0.9844	0.9729	0.9729	0.0311
SVHN vs Constant	0.8968	0.8959	0.8960	0.1430
SVHN vs LSUN	0.9845	0.9883	0.9883	0.0337
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9286	0.9505	0.9505	0.1551
SVHN vs iSUN	0.9835	0.9895	0.9895	0.0366
TinyImagenet vs CelebA	0.8997	0.7120	0.7122	0.2243
TinyImagenet vs Constant	0.9044	0.7817	0.7818	0.1376
TinyImagenet vs LSUN	0.9271	0.9021	0.9021	0.2596
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9090	0.6317	0.6318	0.1588
TinyImagenet vs iSUN	0.9116	0.8841	0.8841	0.2755
Average	0.9673	0.9413	0.9414	0.0701

Table 206: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is streaming with size 64, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9242	0.7881	0.7882	0.1898
CIFAR-10 vs Constant	0.9335	0.8269	0.8270	0.0857
CIFAR-10 vs LSUN	0.9369	0.9126	0.9126	0.2030
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9379	0.7135	0.7136	0.1108
CIFAR-10 vs iSUN	0.9187	0.8906	0.8906	0.2456
CIFAR-100 vs CelebA	0.9017	0.7313	0.7313	0.2388
CIFAR-100 vs Constant	0.9407	0.8424	0.8425	0.0806
CIFAR-100 vs LSUN	0.9400	0.9104	0.9104	0.1954
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9207	0.6684	0.6685	0.1425
CIFAR-100 vs iSUN	0.9268	0.9014	0.9014	0.2239
CelebA vs CIFAR-10	0.8432	0.8666	0.8666	0.3739
CelebA vs CIFAR-100	0.8324	0.8539	0.8539	0.3871
CelebA vs Constant	0.9212	0.8865	0.8866	0.1037
CelebA vs LSUN	0.9790	0.9800	0.9800	0.0548
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9647	0.8929	0.8929	0.0613
CelebA vs TinyImagenet	0.8588	0.8787	0.8787	0.3450
CelebA vs iSUN	0.9752	0.9793	0.9793	0.0657
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	0.9952	0.9916	0.9916	0.0074
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9995	0.9982	0.9983	0.0009
Constant28 vs Omniglot	0.9989	0.9943	0.9944	0.0011
FashionMNIST vs Constant28	0.9914	0.9708	0.9709	0.0117
FashionMNIST vs KMNIST	0.9988	0.9979	0.9979	0.0041
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0003
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9950	0.9866	0.9866	0.0094
FashionMNIST vs Omniglot	0.9996	0.9996	0.9996	0.0015
KMNIST vs Constant28	0.7916	0.6345	0.6346	0.2183
KMNIST vs FashionMNIST	0.9980	0.9926	0.9927	0.0053
KMNIST vs MNIST	0.9948	0.9947	0.9947	0.0246
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9958	0.9872	0.9872	0.0090
KMNIST vs Omniglot	0.9782	0.9759	0.9760	0.0947
MNIST vs Constant28	0.9941	0.9828	0.9828	0.0065
MNIST vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs KMNIST	1.0000	1.0000	1.0000	0.0001
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	1.0000	1.0000	1.0000	0.0000
MNIST vs Omniglot	0.9220	0.9361	0.9361	0.4307
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9996	0.9987	0.9987	0.0009
Noise vs LSUN	1.0000	0.9999	0.9999	0.0001
Noise vs SVHN	1.0000	0.9999	0.9999	0.0002
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0001

Noise vs iSUN	0.9994	0.9966	0.9967	0.0007
Noise28 vs Constant28	0.9968	0.9907	0.9908	0.0074
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9583	0.8774	0.8775	0.0502
NotMNIST vs FashionMNIST	0.9964	0.9948	0.9948	0.0074
NotMNIST vs KMNIST	0.9936	0.9936	0.9936	0.0124
NotMNIST vs MNIST	0.9988	0.9992	0.9992	0.0005
NotMNIST vs Noise28	0.9995	0.9997	0.9997	0.0000
NotMNIST vs Omniglot	0.9976	0.9985	0.9985	0.0011
Omniglot vs Constant28	0.9427	0.8096	0.8096	0.0603
Omniglot vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Omniglot vs KMNIST	0.9969	0.9957	0.9957	0.0158
Omniglot vs MNIST	0.9842	0.9749	0.9749	0.0705
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9997	0.9971	0.9971	0.0003
SVHN vs CIFAR-10	0.9575	0.9680	0.9680	0.0885
SVHN vs CIFAR-100	0.9552	0.9666	0.9666	0.0927
SVHN vs CelebA	0.9917	0.9836	0.9836	0.0141
SVHN vs Constant	0.9035	0.9013	0.9013	0.1341
SVHN vs LSUN	0.9935	0.9948	0.9948	0.0112
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9620	0.9715	0.9715	0.0772
SVHN vs iSUN	0.9934	0.9956	0.9956	0.0139
TinyImagenet vs CelebA	0.8838	0.6896	0.6897	0.2883
TinyImagenet vs Constant	0.9207	0.8062	0.8063	0.1127
TinyImagenet vs LSUN	0.9430	0.9182	0.9182	0.1973
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9248	0.6760	0.6761	0.1396
TinyImagenet vs iSUN	0.9240	0.8961	0.8962	0.2388
Average	0.9731	0.9496	0.9496	0.0605

Table 207: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when data is streaming with size 64, based on model VAE

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8274	0.5977	0.5978	0.3441
CIFAR-10 vs Constant	0.4153	0.4238	0.4238	0.7522
CIFAR-10 vs LSUN	0.9492	0.8879	0.8880	0.0933
CIFAR-10 vs Noise	0.9954	0.9790	0.9790	0.0052
CIFAR-10 vs SVHN	0.7102	0.3667	0.3668	0.4509
CIFAR-10 vs iSUN	0.9287	0.8689	0.8690	0.1310
CIFAR-100 vs CelebA	0.8477	0.6222	0.6222	0.3236
CIFAR-100 vs Constant	0.3388	0.3984	0.3985	0.8523
CIFAR-100 vs LSUN	0.9468	0.8815	0.8815	0.1041
CIFAR-100 vs Noise	0.9930	0.9659	0.9660	0.0070
CIFAR-100 vs SVHN	0.7127	0.3688	0.3688	0.4427
CIFAR-100 vs iSUN	0.9235	0.8590	0.8591	0.1507
CelebA vs CIFAR-10	0.6287	0.7045	0.7046	0.6378
CelebA vs CIFAR-100	0.6448	0.7138	0.7139	0.6079
CelebA vs Constant	0.2765	0.5234	0.5234	0.8239
CelebA vs LSUN	0.9268	0.9166	0.9167	0.1290
CelebA vs Noise	0.9935	0.9818	0.9818	0.0066
CelebA vs SVHN	0.7291	0.5339	0.5339	0.3725
CelebA vs TinyImagenet	0.6903	0.7499	0.7500	0.5651
CelebA vs iSUN	0.9063	0.9058	0.9059	0.1598
Constant vs CIFAR-10	0.9974	0.9871	0.9872	0.0031
Constant vs CIFAR-100	0.9968	0.9839	0.9840	0.0039
Constant vs CelebA	0.9986	0.9868	0.9869	0.0017
Constant vs LSUN	0.9995	0.9977	0.9977	0.0005
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9988	0.9876	0.9876	0.0017
Constant vs TinyImagenet	0.9977	0.9888	0.9889	0.0034
Constant vs iSUN	0.9997	0.9991	0.9991	0.0004
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.5717	0.4844	0.4846	0.5192
FashionMNIST vs KMNIST	0.9821	0.9483	0.9484	0.0280
FashionMNIST vs MNIST	0.9863	0.9588	0.9588	0.0216
FashionMNIST vs Noise28	0.9883	0.9552	0.9553	0.0146
FashionMNIST vs NotMNIST	0.9700	0.9249	0.9250	0.0499
FashionMNIST vs Omniglot	0.9806	0.9583	0.9583	0.0378
KMNIST vs Constant28	0.9174	0.7986	0.7988	0.0935
KMNIST vs FashionMNIST	0.9399	0.8512	0.8513	0.0838
KMNIST vs MNIST	0.9523	0.8900	0.8900	0.0789
KMNIST vs Noise28	0.9890	0.9530	0.9530	0.0120
KMNIST vs NotMNIST	0.9480	0.8683	0.8684	0.0704
KMNIST vs Omniglot	0.9300	0.8844	0.8844	0.1289
MNIST vs Constant28	0.9818	0.9360	0.9361	0.0199
MNIST vs FashionMNIST	0.9816	0.9360	0.9360	0.0221
MNIST vs KMNIST	0.9696	0.9115	0.9116	0.0443
MNIST vs Noise28	0.9939	0.9695	0.9695	0.0061
MNIST vs NotMNIST	0.9922	0.9647	0.9647	0.0080
MNIST vs Omniglot	0.9507	0.9051	0.9052	0.0900
Noise vs CIFAR-10	0.9795	0.9339	0.9339	0.0219
Noise vs CIFAR-100	0.9815	0.9389	0.9389	0.0196
Noise vs CelebA	0.9903	0.9329	0.9330	0.0101
Noise vs Constant	0.9014	0.7902	0.7903	0.1103
Noise vs LSUN	0.9766	0.9242	0.9242	0.0249
Noise vs SVHN	0.9927	0.9348	0.9348	0.0076
Noise vs TinyImagenet	0.9830	0.9447	0.9448	0.0183

Noise vs iSUN	0.9781	0.9349	0.9350	0.0232
Noise28 vs Constant28	0.9637	0.8939	0.8940	0.0397
Noise28 vs FashionMNIST	0.9958	0.9814	0.9814	0.0043
Noise28 vs KMNIST	0.9985	0.9935	0.9935	0.0015
Noise28 vs MNIST	0.9997	0.9988	0.9988	0.0003
Noise28 vs NotMNIST	0.9953	0.9794	0.9794	0.0047
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.7830	0.6356	0.6357	0.2801
NotMNIST vs FashionMNIST	0.9302	0.8484	0.8485	0.1267
NotMNIST vs KMNIST	0.9752	0.9262	0.9263	0.0355
NotMNIST vs MNIST	0.9860	0.9567	0.9567	0.0186
NotMNIST vs Noise28	0.9864	0.9467	0.9468	0.0162
NotMNIST vs Omniglot	0.9772	0.9497	0.9497	0.0362
Omniglot vs Constant28	0.9534	0.8413	0.8414	0.0524
Omniglot vs FashionMNIST	0.9887	0.9445	0.9446	0.0126
Omniglot vs KMNIST	0.9731	0.9041	0.9041	0.0406
Omniglot vs MNIST	0.9785	0.9138	0.9139	0.0267
Omniglot vs Noise28	0.9915	0.9522	0.9522	0.0085
Omniglot vs NotMNIST	0.9835	0.9245	0.9246	0.0181
SVHN vs CIFAR-10	0.9224	0.9397	0.9398	0.1565
SVHN vs CIFAR-100	0.9280	0.9437	0.9437	0.1635
SVHN vs CelebA	0.9922	0.9791	0.9791	0.0114
SVHN vs Constant	0.6287	0.7434	0.7434	0.5365
SVHN vs LSUN	0.9962	0.9932	0.9932	0.0044
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9557	0.9615	0.9615	0.0914
SVHN vs iSUN	0.9940	0.9917	0.9918	0.0091
TinyImagenet vs CelebA	0.7600	0.5095	0.5096	0.4989
TinyImagenet vs Constant	0.2783	0.3743	0.3744	0.8809
TinyImagenet vs LSUN	0.9553	0.8984	0.8985	0.0830
TinyImagenet vs Noise	0.9962	0.9818	0.9818	0.0038
TinyImagenet vs SVHN	0.6515	0.3202	0.3203	0.5182
TinyImagenet vs iSUN	0.9319	0.8708	0.8709	0.1310
Average	0.9090	0.8664	0.8665	0.1342

Table 208: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is streaming with size 64, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8302	0.6037	0.6038	0.3895
CIFAR-10 vs Constant	0.4521	0.4400	0.4400	0.7318
CIFAR-10 vs LSUN	0.9585	0.9019	0.9020	0.0751
CIFAR-10 vs Noise	0.9972	0.9843	0.9844	0.0028
CIFAR-10 vs SVHN	0.7625	0.4123	0.4124	0.3804
CIFAR-10 vs iSUN	0.9381	0.8815	0.8816	0.1142
CIFAR-100 vs CelebA	0.8450	0.6234	0.6235	0.3666
CIFAR-100 vs Constant	0.3699	0.4102	0.4103	0.8385
CIFAR-100 vs LSUN	0.9545	0.8934	0.8935	0.0877
CIFAR-100 vs Noise	0.9930	0.9662	0.9663	0.0070
CIFAR-100 vs SVHN	0.7438	0.3953	0.3954	0.4010
CIFAR-100 vs iSUN	0.9314	0.8698	0.8699	0.1343
CelebA vs CIFAR-10	0.6445	0.7173	0.7173	0.6604
CelebA vs CIFAR-100	0.6732	0.7338	0.7339	0.6182
CelebA vs Constant	0.3519	0.5491	0.5492	0.7722
CelebA vs LSUN	0.9482	0.9360	0.9361	0.0919
CelebA vs Noise	0.9936	0.9828	0.9828	0.0065
CelebA vs SVHN	0.8064	0.6127	0.6128	0.2821
CelebA vs TinyImagenet	0.7081	0.7638	0.7638	0.5821
CelebA vs iSUN	0.9286	0.9236	0.9237	0.1228
Constant vs CIFAR-10	0.9978	0.9896	0.9897	0.0027
Constant vs CIFAR-100	0.9971	0.9858	0.9859	0.0031
Constant vs CelebA	0.9989	0.9904	0.9905	0.0015
Constant vs LSUN	0.9996	0.9987	0.9987	0.0004
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9990	0.9899	0.9899	0.0014
Constant vs TinyImagenet	0.9982	0.9907	0.9908	0.0021
Constant vs iSUN	0.9999	0.9997	0.9997	0.0003
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.5715	0.4844	0.4846	0.5262
FashionMNIST vs KMNIST	0.9813	0.9477	0.9477	0.0330
FashionMNIST vs MNIST	0.9876	0.9616	0.9616	0.0188
FashionMNIST vs Noise28	0.9909	0.9620	0.9621	0.0096
FashionMNIST vs NotMNIST	0.9685	0.9237	0.9237	0.0596
FashionMNIST vs Omniglot	0.9838	0.9632	0.9632	0.0273
KMNIST vs Constant28	0.9488	0.8572	0.8573	0.0596
KMNIST vs FashionMNIST	0.9599	0.8933	0.8933	0.0653
KMNIST vs MNIST	0.9613	0.9112	0.9113	0.0818
KMNIST vs Noise28	0.9932	0.9665	0.9665	0.0068
KMNIST vs NotMNIST	0.9557	0.8844	0.8845	0.0684
KMNIST vs Omniglot	0.9430	0.9059	0.9060	0.1280
MNIST vs Constant28	0.9932	0.9714	0.9715	0.0072
MNIST vs FashionMNIST	0.9905	0.9589	0.9589	0.0106
MNIST vs KMNIST	0.9822	0.9373	0.9374	0.0246
MNIST vs Noise28	0.9953	0.9775	0.9776	0.0050
MNIST vs NotMNIST	0.9938	0.9710	0.9711	0.0064
MNIST vs Omniglot	0.9442	0.9044	0.9045	0.1507
Noise vs CIFAR-10	0.9783	0.9330	0.9330	0.0273
Noise vs CIFAR-100	0.9808	0.9390	0.9390	0.0241
Noise vs CelebA	0.9900	0.9329	0.9329	0.0116
Noise vs Constant	0.9497	0.8765	0.8765	0.0622
Noise vs LSUN	0.9750	0.9231	0.9231	0.0327
Noise vs SVHN	0.9924	0.9339	0.9339	0.0088
Noise vs TinyImagenet	0.9817	0.9434	0.9435	0.0228

Noise vs iSUN	0.9764	0.9343	0.9343	0.0306
Noise28 vs Constant28	0.9768	0.9263	0.9264	0.0270
Noise28 vs FashionMNIST	0.9958	0.9816	0.9816	0.0045
Noise28 vs KMNIST	0.9985	0.9934	0.9934	0.0015
Noise28 vs MNIST	0.9997	0.9988	0.9988	0.0003
Noise28 vs NotMNIST	0.9955	0.9803	0.9803	0.0047
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.8094	0.6623	0.6625	0.2482
NotMNIST vs FashionMNIST	0.9446	0.8732	0.8733	0.0996
NotMNIST vs KMNIST	0.9746	0.9266	0.9267	0.0365
NotMNIST vs MNIST	0.9852	0.9558	0.9558	0.0200
NotMNIST vs Noise28	0.9886	0.9521	0.9522	0.0129
NotMNIST vs Omniglot	0.9753	0.9483	0.9484	0.0410
Omniglot vs Constant28	0.9818	0.9216	0.9218	0.0203
Omniglot vs FashionMNIST	0.9925	0.9591	0.9592	0.0080
Omniglot vs KMNIST	0.9861	0.9360	0.9361	0.0176
Omniglot vs MNIST	0.9807	0.9210	0.9211	0.0266
Omniglot vs Noise28	0.9955	0.9710	0.9711	0.0045
Omniglot vs NotMNIST	0.9883	0.9418	0.9419	0.0126
SVHN vs CIFAR-10	0.9444	0.9534	0.9534	0.1063
SVHN vs CIFAR-100	0.9456	0.9544	0.9544	0.1164
SVHN vs CelebA	0.9941	0.9825	0.9825	0.0077
SVHN vs Constant	0.6424	0.7510	0.7510	0.5218
SVHN vs LSUN	0.9967	0.9940	0.9940	0.0039
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9682	0.9694	0.9694	0.0612
SVHN vs iSUN	0.9949	0.9928	0.9928	0.0073
TinyImagenet vs CelebA	0.7442	0.4989	0.4990	0.5878
TinyImagenet vs Constant	0.3184	0.3876	0.3877	0.8612
TinyImagenet vs LSUN	0.9604	0.9078	0.9078	0.0740
TinyImagenet vs Noise	0.9984	0.9948	0.9948	0.0019
TinyImagenet vs SVHN	0.7059	0.3573	0.3574	0.4547
TinyImagenet vs iSUN	0.9371	0.8783	0.8784	0.1196
Average	0.9186	0.8784	0.8785	0.1271

Table 209: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when data is streaming with size 64, based on model PixelCNN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.9571	0.9217	0.9217	0.1981
CIFAR-10 vs Constant	0.9965	0.9966	0.9966	0.0119
CIFAR-10 vs LSUN	0.9172	0.9047	0.9047	0.3370
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9509	0.9252	0.9252	0.3497
CIFAR-10 vs iSUN	0.9131	0.8969	0.8969	0.2861
CIFAR-100 vs CelebA	0.9309	0.8716	0.8716	0.2905
CIFAR-100 vs Constant	0.9911	0.9917	0.9917	0.0297
CIFAR-100 vs LSUN	0.9247	0.9122	0.9122	0.2926
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9503	0.9141	0.9142	0.2757
CIFAR-100 vs iSUN	0.9104	0.8985	0.8985	0.2844
CelebA vs CIFAR-10	0.9644	0.9818	0.9818	0.1978
CelebA vs CIFAR-100	0.9490	0.9745	0.9745	0.3020
CelebA vs Constant	0.9996	0.9997	0.9997	0.0007
CelebA vs LSUN	0.9895	0.9949	0.9949	0.0493
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9890	0.9883	0.9883	0.0426
CelebA vs TinyImagenet	0.9794	0.9901	0.9901	0.1012
CelebA vs iSUN	0.9912	0.9961	0.9961	0.0374
Constant vs CIFAR-10	0.9982	0.9981	0.9981	0.0084
Constant vs CIFAR-100	0.9943	0.9933	0.9933	0.0244
Constant vs CelebA	0.9994	0.9988	0.9988	0.0029
Constant vs LSUN	0.9997	0.9997	0.9997	0.0015
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	0.9860	0.9786	0.9786	0.0434
Constant vs TinyImagenet	0.9913	0.9903	0.9903	0.0434
Constant vs iSUN	0.9993	0.9993	0.9993	0.0038
Constant28 vs FashionMNIST	0.9996	0.9995	0.9995	0.0018
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9827	0.9463	0.9463	0.0206
Constant28 vs Omniglot	0.9999	0.9999	0.9999	0.0001
FashionMNIST vs Constant28	0.9975	0.9978	0.9978	0.0034
FashionMNIST vs KMNIST	0.9990	0.9990	0.9990	0.0047
FashionMNIST vs MNIST	0.9999	0.9999	0.9999	0.0005
FashionMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs NotMNIST	0.9964	0.9962	0.9962	0.0162
FashionMNIST vs Omniglot	0.9981	0.9985	0.9985	0.0042
KMNIST vs Constant28	0.9997	0.9997	0.9997	0.0005
KMNIST vs FashionMNIST	0.9960	0.9961	0.9961	0.0181
KMNIST vs MNIST	0.9970	0.9969	0.9969	0.0167
KMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
KMNIST vs NotMNIST	0.9886	0.9876	0.9876	0.0606
KMNIST vs Omniglot	0.9935	0.9948	0.9948	0.0336
MNIST vs Constant28	1.0000	1.0000	1.0000	0.0000
MNIST vs FashionMNIST	0.9995	0.9995	0.9995	0.0005
MNIST vs KMNIST	0.9992	0.9993	0.9993	0.0018
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9997	0.9997	0.9997	0.0009
MNIST vs Omniglot	0.9949	0.9962	0.9962	0.0171
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	0.9972	0.9836	0.9836	0.0028
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	1.0000	1.0000	1.0000	0.0000
Noise vs LSUN	0.9999	0.9993	0.9993	0.0001
Noise vs SVHN	0.9999	0.9988	0.9988	0.0001
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9806	0.9892	0.9892	0.0000
NotMNIST vs FashionMNIST	0.9943	0.9949	0.9949	0.0183
NotMNIST vs KMNIST	0.9882	0.9896	0.9896	0.0687
NotMNIST vs MNIST	0.9998	0.9998	0.9998	0.0001
NotMNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Omniglot	0.9996	0.9997	0.9997	0.0004
Omniglot vs Constant28	0.9997	0.9995	0.9995	0.0006
Omniglot vs FashionMNIST	0.9972	0.9962	0.9962	0.0146
Omniglot vs KMNIST	0.9939	0.9927	0.9927	0.0337
Omniglot vs MNIST	0.9959	0.9943	0.9943	0.0186
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9998	0.9997	0.9997	0.0013
SVHN vs CIFAR-10	0.8142	0.9231	0.9231	0.7758
SVHN vs CIFAR-100	0.8083	0.9207	0.9207	0.7938
SVHN vs CelebA	0.9893	0.9919	0.9919	0.0570
SVHN vs Constant	0.9436	0.9750	0.9750	0.2626
SVHN vs LSUN	0.9404	0.9789	0.9789	0.4167
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.8290	0.9308	0.9308	0.7214
SVHN vs iSUN	0.9257	0.9752	0.9752	0.4660
TinyImagenet vs CelebA	0.9646	0.9259	0.9259	0.1462
TinyImagenet vs Constant	0.9910	0.9913	0.9913	0.0382
TinyImagenet vs LSUN	0.8853	0.8653	0.8654	0.4412
TinyImagenet vs Noise	0.9970	0.9919	0.9919	0.0033
TinyImagenet vs SVHN	0.9514	0.9197	0.9197	0.3242
TinyImagenet vs iSUN	0.8742	0.8643	0.8644	0.4529
Average	0.9791	0.9806	0.9806	0.0921

Table 210: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x)$ when data is streaming with size 64, when data is streaming with size 64, based on model WGAN

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8849	0.6785	0.6786	0.2354
CIFAR-10 vs Constant	0.7127	0.5694	0.5695	0.3467
CIFAR-10 vs LSUN	0.9780	0.9533	0.9533	0.0403
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9293	0.6949	0.6950	0.1330
CIFAR-10 vs iSUN	0.9759	0.9543	0.9543	0.0468
CIFAR-100 vs CelebA	0.9044	0.7196	0.7196	0.2052
CIFAR-100 vs Constant	0.6884	0.5528	0.5529	0.3846
CIFAR-100 vs LSUN	0.9837	0.9726	0.9726	0.0369
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9288	0.6958	0.6959	0.1299
CIFAR-100 vs iSUN	0.9728	0.9550	0.9550	0.0585
CelebA vs CIFAR-10	0.7954	0.8201	0.8201	0.4091
CelebA vs CIFAR-100	0.7648	0.7896	0.7896	0.4468
CelebA vs Constant	0.0719	0.4611	0.4611	0.9925
CelebA vs LSUN	0.9356	0.9220	0.9220	0.1112
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9188	0.7717	0.7718	0.1169
CelebA vs TinyImagenet	0.8155	0.8348	0.8348	0.3668
CelebA vs iSUN	0.9229	0.9149	0.9150	0.1333
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9946	0.9901	0.9901	0.0124
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9820	0.9643	0.9643	0.0322
FashionMNIST vs KMNIST	0.6433	0.5648	0.5649	0.6835
FashionMNIST vs MNIST	0.6726	0.5730	0.5731	0.5779
FashionMNIST vs Noise28	0.9945	0.9909	0.9909	0.0133
FashionMNIST vs NotMNIST	0.6823	0.5963	0.5964	0.5725
FashionMNIST vs Omniglot	0.7513	0.6754	0.6755	0.4406
KMNIST vs Constant28	0.9975	0.9971	0.9971	0.0106
KMNIST vs FashionMNIST	0.7768	0.6850	0.6850	0.4272
KMNIST vs MNIST	0.6622	0.5951	0.5952	0.7345
KMNIST vs Noise28	0.9948	0.9914	0.9914	0.0115
KMNIST vs NotMNIST	0.8066	0.7206	0.7206	0.3620
KMNIST vs Omniglot	0.7193	0.6722	0.6723	0.5631
MNIST vs Constant28	0.9973	0.9962	0.9962	0.0082
MNIST vs FashionMNIST	0.7868	0.6986	0.6986	0.4015
MNIST vs KMNIST	0.5446	0.5193	0.5194	0.8374
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0002
MNIST vs NotMNIST	0.8515	0.7649	0.7650	0.2571
MNIST vs Omniglot	0.6463	0.6204	0.6205	0.6829
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9995	0.9993	0.9993	0.0010
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	0.9795	0.9680	0.9680	0.0401
Noise28 vs KMNIST	0.9917	0.9876	0.9876	0.0188
Noise28 vs MNIST	0.9999	0.9999	0.9999	0.0001
Noise28 vs NotMNIST	0.9763	0.9603	0.9603	0.0440
Noise28 vs Omniglot	0.9988	0.9989	0.9989	0.0050
NotMNIST vs Constant28	0.9920	0.9865	0.9865	0.0218
NotMNIST vs FashionMNIST	0.7605	0.6657	0.6658	0.4800
NotMNIST vs KMNIST	0.7311	0.6376	0.6377	0.6122
NotMNIST vs MNIST	0.8184	0.7020	0.7021	0.3645
NotMNIST vs Noise28	0.9930	0.9901	0.9901	0.0193
NotMNIST vs Omniglot	0.8470	0.7692	0.7693	0.3051
Omniglot vs Constant28	0.9995	0.9994	0.9994	0.0024
Omniglot vs FashionMNIST	0.8174	0.6836	0.6836	0.3151
Omniglot vs KMNIST	0.7153	0.5772	0.5773	0.4948
Omniglot vs MNIST	0.6156	0.5133	0.5133	0.7505
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9003	0.7997	0.7997	0.1601
SVHN vs CIFAR-10	0.9254	0.9359	0.9359	0.1129
SVHN vs CIFAR-100	0.9242	0.9361	0.9361	0.1218
SVHN vs CelebA	0.9910	0.9844	0.9844	0.0135
SVHN vs Constant	0.8955	0.9094	0.9094	0.1537
SVHN vs LSUN	0.9993	0.9993	0.9993	0.0013
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9472	0.9556	0.9556	0.0847
SVHN vs iSUN	0.9978	0.9981	0.9981	0.0032
TinyImagenet vs CelebA	0.9370	0.7788	0.7789	0.1156
TinyImagenet vs Constant	0.2929	0.3643	0.3643	0.8189
TinyImagenet vs LSUN	0.9640	0.9299	0.9299	0.0777
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9593	0.7945	0.7946	0.0786
TinyImagenet vs iSUN	0.9571	0.9306	0.9307	0.1005
Average	0.9003	0.8690	0.8690	0.1731

Table 211: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ when data is streaming with size 64, based on model RNVP

Dataset pair	AUROC	AUPR	AP	FPR@TPR95
CIFAR-10 vs CelebA	0.8941	0.7032	0.7033	0.2310
CIFAR-10 vs Constant	0.7633	0.6128	0.6128	0.2983
CIFAR-10 vs LSUN	0.9831	0.9640	0.9640	0.0323
CIFAR-10 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-10 vs SVHN	0.9439	0.7382	0.7383	0.1033
CIFAR-10 vs iSUN	0.9805	0.9629	0.9629	0.0388
CIFAR-100 vs CelebA	0.9071	0.7259	0.7259	0.1985
CIFAR-100 vs Constant	0.7086	0.5681	0.5682	0.3632
CIFAR-100 vs LSUN	0.9859	0.9759	0.9759	0.0300
CIFAR-100 vs Noise	1.0000	1.0000	1.0000	0.0000
CIFAR-100 vs SVHN	0.9356	0.7141	0.7142	0.1153
CIFAR-100 vs iSUN	0.9755	0.9590	0.9590	0.0524
CelebA vs CIFAR-10	0.8210	0.8396	0.8396	0.3748
CelebA vs CIFAR-100	0.7971	0.8136	0.8137	0.4068
CelebA vs Constant	0.1903	0.4923	0.4923	0.9463
CelebA vs LSUN	0.9440	0.9302	0.9302	0.0956
CelebA vs Noise	1.0000	1.0000	1.0000	0.0000
CelebA vs SVHN	0.9389	0.8127	0.8127	0.0866
CelebA vs TinyImagenet	0.8353	0.8501	0.8501	0.3335
CelebA vs iSUN	0.9339	0.9245	0.9246	0.1137
Constant vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Constant vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Constant vs CelebA	1.0000	1.0000	1.0000	0.0000
Constant vs LSUN	1.0000	1.0000	1.0000	0.0000
Constant vs Noise	1.0000	1.0000	1.0000	0.0000
Constant vs SVHN	1.0000	1.0000	1.0000	0.0000
Constant vs TinyImagenet	1.0000	1.0000	1.0000	0.0000
Constant vs iSUN	1.0000	1.0000	1.0000	0.0000
Constant28 vs FashionMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs KMNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Constant28 vs Noise28	1.0000	1.0000	1.0000	0.0000
Constant28 vs NotMNIST	0.9956	0.9919	0.9919	0.0117
Constant28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
FashionMNIST vs Constant28	0.9814	0.9631	0.9631	0.0336
FashionMNIST vs KMNIST	0.6435	0.5660	0.5661	0.6946
FashionMNIST vs MNIST	0.6852	0.5824	0.5825	0.5481
FashionMNIST vs Noise28	0.9997	0.9996	0.9996	0.0012
FashionMNIST vs NotMNIST	0.6954	0.6063	0.6064	0.5475
FashionMNIST vs Omniglot	0.7671	0.6885	0.6886	0.4126
KMNIST vs Constant28	0.9982	0.9979	0.9979	0.0100
KMNIST vs FashionMNIST	0.7910	0.6988	0.6989	0.4005
KMNIST vs MNIST	0.6793	0.6054	0.6055	0.6893
KMNIST vs Noise28	0.9999	0.9999	0.9999	0.0005
KMNIST vs NotMNIST	0.8319	0.7481	0.7481	0.3163
KMNIST vs Omniglot	0.7375	0.6849	0.6850	0.5223
MNIST vs Constant28	0.9993	0.9992	0.9992	0.0041
MNIST vs FashionMNIST	0.8776	0.8003	0.8003	0.2239
MNIST vs KMNIST	0.6692	0.5937	0.5938	0.6147
MNIST vs Noise28	1.0000	1.0000	1.0000	0.0000
MNIST vs NotMNIST	0.9321	0.8778	0.8779	0.1161
MNIST vs Omniglot	0.6540	0.6271	0.6272	0.7154
Noise vs CIFAR-10	1.0000	1.0000	1.0000	0.0000
Noise vs CIFAR-100	1.0000	1.0000	1.0000	0.0000
Noise vs CelebA	1.0000	1.0000	1.0000	0.0000
Noise vs Constant	0.9996	0.9995	0.9995	0.0009
Noise vs LSUN	1.0000	1.0000	1.0000	0.0000
Noise vs SVHN	1.0000	1.0000	1.0000	0.0000
Noise vs TinyImagenet	1.0000	1.0000	1.0000	0.0000

Noise vs iSUN	1.0000	1.0000	1.0000	0.0000
Noise28 vs Constant28	1.0000	1.0000	1.0000	0.0000
Noise28 vs FashionMNIST	0.9886	0.9827	0.9827	0.0268
Noise28 vs KMNIST	0.9995	0.9993	0.9993	0.0014
Noise28 vs MNIST	1.0000	1.0000	1.0000	0.0000
Noise28 vs NotMNIST	0.9918	0.9870	0.9871	0.0176
Noise28 vs Omniglot	1.0000	1.0000	1.0000	0.0000
NotMNIST vs Constant28	0.9916	0.9862	0.9862	0.0235
NotMNIST vs FashionMNIST	0.7618	0.6678	0.6678	0.4826
NotMNIST vs KMNIST	0.7300	0.6372	0.6373	0.6191
NotMNIST vs MNIST	0.8251	0.7087	0.7088	0.3445
NotMNIST vs Noise28	0.9995	0.9995	0.9995	0.0023
NotMNIST vs Omniglot	0.8546	0.7767	0.7768	0.2813
Omniglot vs Constant28	0.9998	0.9997	0.9997	0.0011
Omniglot vs FashionMNIST	0.8719	0.7545	0.7546	0.2216
Omniglot vs KMNIST	0.7913	0.6469	0.6470	0.3598
Omniglot vs MNIST	0.6266	0.5212	0.5213	0.7528
Omniglot vs Noise28	1.0000	1.0000	1.0000	0.0000
Omniglot vs NotMNIST	0.9465	0.8843	0.8843	0.0872
SVHN vs CIFAR-10	0.9561	0.9606	0.9606	0.0623
SVHN vs CIFAR-100	0.9573	0.9623	0.9623	0.0663
SVHN vs CelebA	0.9971	0.9953	0.9953	0.0051
SVHN vs Constant	0.9126	0.9218	0.9218	0.1325
SVHN vs LSUN	0.9997	0.9997	0.9997	0.0004
SVHN vs Noise	1.0000	1.0000	1.0000	0.0000
SVHN vs TinyImagenet	0.9726	0.9757	0.9757	0.0439
SVHN vs iSUN	0.9989	0.9990	0.9990	0.0020
TinyImagenet vs CelebA	0.9427	0.7978	0.7979	0.1151
TinyImagenet vs Constant	0.4246	0.4099	0.4100	0.7374
TinyImagenet vs LSUN	0.9712	0.9425	0.9425	0.0606
TinyImagenet vs Noise	1.0000	1.0000	1.0000	0.0000
TinyImagenet vs SVHN	0.9658	0.8217	0.8218	0.0674
TinyImagenet vs iSUN	0.9649	0.9411	0.9411	0.0839
Average	0.9144	0.8827	0.8828	0.1530

Table 212: The detailed performance for indicator $\log p_\theta(x) - \log p_\gamma(x) + 0.1p_S(x)$ based on model RNVP

References

- [1] Gelfand, I.M., Silverman, R.A., et al.: Calculus of variations. Courier Corporation (2000)