MANET: A LARGE-SCALE MANIPULATED IMAGE DETECTION DATASET AND BASELINE EVALUATIONS

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1. BASELINE EXPERIMENTAL RESULTS

Additional results of the *Intra Set* and *Inter Set* experiments are summarized in the following subsections.

1.1. Intra Set Experiments

Tables 1 and 4 shows the results of the intra set experiments on Set 1 and Set 4, respectively. Results at recall 1 corresponding to Sets 2 and 3 are shown in the main paper. Here, in Tables 2 and 3, we have shown the results on these sets at recall 5 and 10. For better interpretability we have also included the results at recall 1 on these sets.

1.2. Inter Set Experiments

Tables 5, 6, and 7 show the results of the inter set experiment on Sets 2, 3, and 4, respectively, when the network is trained on Set 1. Similarly, results on Sets 1, 3, and 4 are shown in Tables 8, 9, and 10, respectively, when the network is trained on Set 2. In these experiments, the network is trained on handcrafted transformed images and evaluated on both handcrafted and learning based transformed images. Next, Tables 11, 12, and 13 summarizes the results on Sets 1, 2, and 4, respectively, using the network trained on Set 3. Finally, the results on Sets 1, 2, and 3 are reported in Tables 14,15, and 16, respectively, when the network is trained on Set 4. Here, the network is trained on GAN generated transformed images and evaluated on both handcrafted and learning based transformed images.

Table 1. Results for the intra set experiment. The network is trained and evaluated on Set 1. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 1	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Flipping	95.11%	59.54%	29.26%	98.87%	70.03%	32.61%	99.50%	74.57%	34.52%
Scaling	95.72%	97.91%	61.36%	98.73%	99.32%	71.68%	99.20%	99.59%	74.89%
Translation	87.12%	95.33%	85.06%	95.58%	98.67%	91.88%	97.43%	99.18%	93.60%
Rotation	96.41%	91.70%	35.28%	99.27%	97.92%	50.19%	99.64%	98.89%	56.16%
Salt & Pepper Noise	98.62%	99.80%	88.60%	99.64%	99.99%	93.64%	99.82%	100.00%	94.95%
Gamma Correction	67.47%	61.99%	0.12%	80.86%	75.91%	0.38%	85.55%	80.78%	0.55%
Blurring	97.81%	99.72%	89.92%	99.14%	99.91%	94.21%	99.41%	99.96%	95.33%
Shearing	99.90%	99.94%	86.75%	100.00%	100.00%	92.36%	100.00%	100.00%	93.91%
Perspective Transform	94.76%	97.73%	77.81%	98.79%	99.25%	86.62%	99.44%	99.60%	89.10%
Warping	99.87%	99.94%	94.10%	99.99%	100.00%	96.93%	100.00%	100.00%	97.58%
Filters	35.22%	50.73%	19.67%	49.60%	64.13%	31.76%	55.84%	69.05%	36.97%
Overall	**88.00%**	**86.76%**	**60.72%**	**92.77%**	**91.37%**	**67.48%**	**94.17%**	**92.88%**	**69.78%**

Table 2. Results for the intra set experiment. The network is trained and evaluated on Set 2. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 2	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Flipping	96.04%	61.12%	33.86%	99.53%	72.61%	40.02%	99.78%	77.41%	43.68%
Scaling	99.60%	94.43%	83.66%	99.98%	98.16%	89.63%	99.98%	98.78%	91.32%
Translation	99.85%	98.11%	96.84%	100.00%	99.65%	98.86%	100.00%	99.83%	99.20%
Rotation	98.83%	96.54%	71.62%	99.88%	99.73%	83.66%	99.95%	99.90%	87.39%
Salt & Pepper Noise	99.88%	93.41%	92.29%	100.00%	97.96%	96.54%	100.00%	99.10%	97.74%
Gamma Correction	93.43%	9.33%	0.67%	98.03%	20.20%	1.39%	98.86%	28.31%	2.24%
Blurring	99.25%	96.44%	94.63%	99.80%	98.63%	97.16%	99.90%	99.20%	97.79%
Shearing	99.85%	98.31%	87.69%	100.00%	99.83%	93.76%	100.00%	99.85%	95.32%
Perspective Transform	98.73%	90.50%	86.77%	99.98%	97.26%	92.99%	100.00%	98.73%	94.43%
Warping	100.00%	100.00%	98.76%	100.00%	100.00%	99.65%	100.00%	100.00%	99.78%
Filters	92.81%	22.01%	33.48%	96.84%	36.14%	47.61%	97.96%	43.86%	53.51%
Overall	**98.03%**	**78.20%**	**70.93%**	**99.46%**	**83.65%**	**76.48%**	**99.67%**	**85.91%**	**78.40%**

Table 3. Results for the intra set experiment. The network is trained and evaluated on Set 3. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 3	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Cycle GAN									
Van-gogh	99.60%	94.03	5.07%	100.00%	97.61	10.75%	100.00%	98.81	14.03%
Monet	100.00%	97.61	3.78%	100.00%	99.00	8.26%	100.00%	99.40	11.14%
Ukiyoe	98.21%	80.10	0.70%	99.80%	90.25	2.69%	99.90%	94.13	3.98%
Cezanna	99.80%	97.21	4.08%	100.00%	98.71	8.46%	100.00%	99.10	11.74%
Cartoon GAN									
Shinkai	98.71%	92.04	7.76%	99.60%	96.32	15.32%	99.70%	97.31	18.81%
Hayao	98.41%	91.24	6.27%	99.50%	96.82	11.34%	99.70%	98.11	16.12%
Hosoda	99.00%	90.05	3.38%	99.60%	95.92	7.06%	99.80%	96.82	8.96%
Paprika	99.60%	94.23	8.56%	100.00%	97.21	14.93%	100.00%	98.01	18.51%
Overall	**99.17%**	**92.95**	**4.94%**	**99.81%**	**96.87**	**9.88%**	**99.89%**	**97.97**	**12.92%**

Table 4. Results for the intra set experiment. The network is trained and evaluated on Set 4. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 4	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Black Hair	96.00%	86.00%	29.00%	99.00%	92.00%	51.00%	99.00%	9458.00%.00%	61.00%
Blonde Hair	96.00%	58.00%	26.00%	99.00%	70.00%	41.00%	99.00%	74.00%	56.00%
Brown Hair	68.00%	51.00%	27.00%	77.00%	61.00%	40.00%	86.00%	66.00%	49.00%
Gender	98.00%	80.00%	33.00%	99.00%	88.00%	63.00%	100.00%	92.00%	71.00%
Aged	95.00%	83.00%	46.00%	98.00%	89.00%	61.00%	99.00%	89.00%	70.00%
Overall	**90.60%**	**76.29%**	**32.20%**	**94.40%**	**83.31%**	**51.20%**	**96.60%**	**85.81%**	**61.40%**

Table 5. Results for the inter set experiment. The network is trained on Set 1 and evaluated on Set 2. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 2	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Flipping	98.98%	72.84%	33.86%	99.93%	84.78%	40.02%	100.00%	89.03%	43.68%
Scaling	98.81%	99.38%	83.66%	99.80%	99.95%	89.63%	99.93%	100.00%	91.32%
Translation	95.90%	98.83%	96.84%	99.48%	99.83%	98.86%	99.88%	99.88%	99.20%
Rotation	99.20%	97.76%	71.62%	99.93%	99.88%	83.66%	100.00%	99.98%	87.39%
Salt & Pepper Noise	99.85%	99.95%	92.29%	99.98%	100.00%	96.54%	100.00%	100.00%	97.74%
Gamma Correction	83.63%	77.21%	0.67%	94.03%	89.55%	1.39%	96.92%	93.78%	2.24%
Blurring	98.68%	99.88%	94.63%	99.68%	99.98%	97.16%	99.90%	100.00%	97.79%
Shearing	100.00%	100.00%	87.69%	100.00%	100.00%	93.76%	100.00%	100.00%	95.32%
Perspective Transform	98.76%	99.10%	86.77%	100.00%	99.80%	92.99%	100.00%	100.00%	94.43%
Warping	100.00%	99.93%	98.76%	100.00%	100.00%	99.65%	100.00%	100.00%	99.78%
Filters	54.55%	66.19%	33.48%	71.62%	79.38%	47.61%	78.81%	84.23%	53.51%
Overall	**93.49%**	**91.92%**	**70.93%**	**96.77%**	**95.74%**	**76.48%**	**97.77%**	**96.99%**	**78.40%**

Table 6. Results for the inter set experiment. The network is trained on Set 1 and evaluated on Set 3. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 3	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Cycle GAN									
Van-gogh	3.58%	8.96%	5.07%	9.55%	17.71%	10.75%	13.13%	22.39%	14.03%
Monet	5.07%	9.05%	3.78%	10.75%	17.31%	8.26%	13.73%	22.69%	11.14%
Ukiyoe	0.20%	1.09%	0.70%	0.80%	2.19%	2.69%	1.69%	3.28%	3.98%
Cezanna	2.49%	6.77%	4.08%	7.06%	14.03%	8.46%	10.65%	18.51%	11.74%
Cartoon GAN									
Shinkai	4.08%	12.84%	7.76%	10.15%	22.19%	15.32%	13.83%	27.46%	18.81%
Hayao	8.06%	22.69%	6.27%	17.21%	33.73%	11.34%	22.19%	40.10%	16.12%
Hosoda	3.38%	10.85%	3.38%	8.36%	20.10%	7.06%	12.64%	24.98%	8.96%
Paprika	6.97%	16.72%	8.56%	14.73%	27.46%	14.93%	20.20%	33.63%	18.51%
Overall	**14.86%**	**37.23%**	**4.94%**	**44.91%**	**28.30%**	**9.88%**	**23.11%**	**32.55%**	**12.92%**

Table 7. Results for the inter set experiment. The network is trained on Set 1 and evaluated on Set 4. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 4	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Black Hair	18.00%	29.00%	29.00%	43.00%	51.00%	51.00%	53.00%	64.00%	61.00%
Blonde Hair	10.00%	20.00%	26.00%	32.00%	47.00%	41.00%	48.00%	56.00%	56.00%
Brown Hair	11.00%	15.00%	27.00%	28.00%	33.00%	40.00%	39.00%	39.00%	49.00%
Gender	21.00%	31.00%	33.00%	31.00%	47.00%	63.00%	44.00%	58.00%	71.00%
Age	23.00%	29.00%	46.00%	36.00%	56.00%	61.00%	51.00%	63.00%	70.00%
Overal	**30.38%**	**37.23%**	**32.20%**	**44.91%**	**55.59%**	**51.20%**	**55.76%**	**63.27%**	**61.40%**

Table 8. Results for the inter set experiment. The network is trained on Set 2 and evaluated on Set 1. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 1	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Flipping	90.52%	48.73%	29.26%	96.57%	58.19%	32.61%	97.93%	62.43%	34.52%
Scaling	91.24%	76.70%	61.36%	96.40%	87.09%	71.68%	97.69%	89.95%	74.89%
Translation	79.27%	72.25%	85.06%	89.05%	87.41%	91.88%	92.06%	91.47%	93.60%
Rotation	77.74%	68.59%	35.28%	88.51%	84.42%	50.19%	91.73%	89.56%	56.16%
Salt & Pepper Noise	99.61%	89.65%	88.60%	99.94%	94.31%	93.64%	99.97%	95.85%	94.95%
Gamma Correction	86.61%	3.72%	0.12%	93.19%	8.00%	0.38%	95.17%	10.99%	0.55%
Blurring	98.34%	90.97%	89.92%	99.07%	95.53%	94.21%	99.33%	96.79%	95.33%
Shearing	99.89%	99.06%	86.75%	100.00%	99.82%	92.36%	100.00%	99.92%	93.91%
Perspective Transform	88.74%	68.99%	77.81%	95.59%	81.93%	86.62%	97.42%	86.44%	89.10%
Warping	99.91%	99.31%	94.10%	99.99%	99.90%	96.93%	100.00%	99.95%	97.58%
Filters	87.63%	11.65%	19.67%	92.74%	19.79%	31.76%	94.24%	24.26%	36.97%
Overall	**90.86%**	**66.43%**	**60.72%**	**95.55%**	**74.22%**	**67.48%**	**96.87%**	**77.05%**	**69.78%**

Table 9. Results for the inter set experiment. The network is trained on Set 2 and evaluated on Set 3. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 3	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Cycle GAN									
Van-gogh	42.69%	9.95%	5.07%	55.82%	19.70%	10.75%	60.30%	25.87%	14.03%
Monet	32.74%	6.07%	3.78%	46.57%	10.75%	8.26%	52.04%	14.33%	11.14%
Ukiyoe	12.94%	0.10%	0.70%	23.78%	0.40%	2.69%	29.95%	0.70%	3.98%
Cezanna	40.60%	8.26%	4.08%	54.93%	15.72%	8.46%	61.49%	21.09%	11.74%
Cartoon GAN									
Shinkai	41.59%	8.56%	7.76%	54.93%	14.23%	15.32%	61.79%	18.71%	18.81%
Hayao	42.49%	9.85%	6.27%	52.04%	19.30%	11.34%	56.92%	24.68%	16.12%
Hosoda	37.61%	6.07%	3.38%	50.15%	11.34%	7.06%	56.62%	13.53%	8.96%
Paprika	37.91%	7.56%	8.56%	50.75%	15.12%	14.93%	56.12%	18.51%	18.51%
Overall	**36.06%**	**17.37%**	**4.94%**	**48.62%**	**22.94%**	**9.88%**	**54.40%**	**26.37%**	**12.92%**

Table 10. Results for the inter set experiment. The network is trained on Set 2 and evaluated on Set 4. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 4	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Black Hair	28.00%	39.00%	29.00%	49.00%	57.00%	51.00%	63.00%	71.00%	61.00%
Blonde Hair	17.00%	24.00%	26.00%	42.00%	39.00%	41.00%	53.00%	51.00%	56.00%
Brown Hair	15.00%	11.00%	27.00%	29.00%	25.00%	40.00%	42.00%	33.00%	49.00%
Gender	28.00%	35.00%	33.00%	53.00%	58.00%	63.00%	59.00%	69.00%	71.00%
Aged	31.00%	26.00%	46.00%	54.00%	49.00%	61.00%	67.00%	62.00%	70.00%
Overall	**23.80%**	**39.07%**	**32.20%**	**45.40%**	**54.59%**	**51.20%**	**83.52%**	**64.27%**	**61.40%**

Table 11. Results for the inter set experiment. The network is trained on Set 3 and evaluated on Set 1. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 1	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Flipping	27.35%	29.28%	29.26%	29.19%	32.11%	32.61%	30.43%	33.49%	34.52%
Scaling	72.94%	66.59%	61.36%	84.02%	74.05%	71.68%	88.23%	76.73%	74.89%
Translation	29.85%	38.92%	85.06%	47.15%	53.76%	91.88%	54.72%	59.63%	93.60%
Rotation	15.45%	23.03%	35.28%	28.61%	35.41%	50.19%	34.57%	40.68%	56.16%
Salt & Pepper Noise	99.71%	98.71%	88.60%	99.94%	99.43%	93.64%	99.96%	99.57%	94.95%
Gamma Correction	92.71%	33.59%	0.12%	95.83%	43.70%	0.38%	96.68%	48.15%	0.55%
Blurring	99.95%	99.39%	89.92%	100.00%	99.83%	94.21%	100.00%	99.89%	95.33%
Shearing	99.92%	99.24%	86.75%	100.00%	99.91%	92.36%	100.00%	99.96%	93.91%
Perspective Transform	51.73%	53.33%	77.81%	55.16%	57.65%	86.62%	57.65%	59.94%	89.10%
Warping	88.83%	89.17%	94.10%	97.17%	96.17%	96.93%	98.68%	97.59%	97.58%
Filters	99.80%	91.35%	19.67%	99.93%	94.64%	31.76%	99.97%	95.70%	36.97%
Overall	**70.75%**	**65.69%**	**60.72%**	**76.09%**	**71.51%**	**67.48%**	**78.26%**	**73.76%**	**69.78%**

Table 12. Results for the inter set experiment. The network is trained on Set 3 and evaluated on Set 2. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 2	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Flipping	30.02%	32.71%	33.86%	34.95%	37.91%	40.02%	37.36%	40.87%	43.68%
Scaling	85.05%	74.83%	83.66%	95.20%	81.59%	89.63%	97.36%	84.93%	91.32%
Translation	50.52%	55.42%	96.84%	71.59%	72.11%	98.86%	79.33%	78.46%	99.20%
Rotation	29.73%	36.34%	71.62%	46.92%	51.24%	83.66%	52.46%	56.94%	87.39%
Salt & Pepper Noise	99.93%	99.53%	92.29%	99.98%	99.90%	96.54%	99.98%	99.93%	97.74%
Gamma Correction	96.47%	45.02%	0.67%	98.61%	58.11%	1.39%	99.23%	63.51%	2.24%
Blurring	100.00%	99.90%	94.63%	100.00%	100.00%	97.16%	100.00%	100.00%	97.79%
Shearing	100.00%	99.85%	87.69%	100.00%	99.98%	93.76%	100.00%	99.98%	95.32%
Perspective Transform	56.77%	58.26%	86.77%	67.46%	66.39%	92.99%	74.35%	70.97%	94.43%
Warping	96.72%	95.47%	98.76%	99.70%	99.28%	99.65%	99.85%	99.53%	99.78%
Filters	99.95%	94.85%	33.48%	100.00%	97.56%	47.61%	100.00%	98.38%	53.51%
Overall	**76.83%**	**72.02%**	**70.93%**	**83.13%**	**78.55%**	**76.48%**	**85.45%**	**81.23%**	**78.40%**

Table 13. Results for the inter set experiment. The network is trained on Set 2 and evaluated on Set 4. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 4	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Black Hair	98.00%	92.00%	29.00%	99.00%	98.00%	51.00%	100.00%	99.00%	61.00%
Blonde Hair	100.00%	88.00%	26.00%	100.00%	97.00%	41.00%	100.00%	99.00%	56.00%
Brown Hair	93.00%	92.00%	27.00%	97.00%	97.00%	40.00%	99.00%	98.00%	49.00%
Gender	100.00%	97.00%	33.00%	100.00%	99.00%	63.00%	100.00%	99.00%	71.00%
Aged	100.00%	94.00%	46.00%	100.00%	98.00%	61.00%	100.00%	99.00%	70.00%
Overall	**98.20%**	**93.82%**	**32.20%**	**99.20%**	**98.16%**	**51.20%**	**99.80%**	**99.00%**	**61.40%**

Table 14. Results for the inter set experiment. The network is trained on Set 4 and evaluated on Set 1. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 1	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Flipping	28.55%	31.38%	29.26%	31.20%	35.84%	32.61%	32.68%	38.15%	34.52%
Scaling	60.21%	75.93%	61.36%	68.99%	85.17%	71.68%	72.53%	88.44%	74.89%
Translation	31.97%	70.24%	85.06%	47.64%	86.03%	91.88%	54.40%	90.50%	93.60%
Rotation	16.80%	37.95%	35.28%	27.82%	54.31%	50.19%	33.26%	60.90%	56.16%
Salt & Pepper Noise	78.61%	58.74%	88.60%	84.65%	65.96%	93.64%	86.86%	68.92%	94.95%
Gamma Correction	46.89%	11.96%	0.12%	57.26%	18.33%	0.38%	61.46%	21.56%	0.55%
Blurring	85.46%	52.06%	89.92%	90.88%	63.62%	94.21%	92.72%	68.22%	95.33%
Shearing	98.74%	99.53%	86.75%	99.72%	99.92%	92.36%	99.82%	99.97%	93.91%
Perspective Transform	55.09%	60.27%	77.81%	60.99%	69.96%	86.62%	63.86%	74.20%	89.10%
Warping	79.47%	98.42%	94.10%	89.78%	99.79%	96.93%	92.75%	99.89%	97.58%
Filters	95.27%	63.57%	19.67%	97.50%	73.21%	31.76%	98.22%	76.77%	36.97%
Overall	**61.55%**	**60.00%**	**60.72%**	**68.77%**	**68.38%**	**67.48%**	**71.69%**	**71.59%**	**69.78%**

Table 15. Results for the inter set experiment. The network is trained on Set 4 and evaluated on Set 2. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 2	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Flipping	32.36%	37.31%	33.86%	37.89%	46.42%	40.02%	41.39%	50.47%	43.68%
Scaling	70.62%	85.97%	83.66%	80.87%	93.88%	89.63%	85.30%	96.07%	91.32%
Translation	51.79%	86.77%	96.84%	70.37%	96.44%	98.86%	76.54%	98.18%	99.20%
Rotation	30.42%	56.69%	71.62%	47.29%	76.52%	83.66%	54.65%	83.13%	87.39%
Salt & Pepper Noise	85.35%	66.29%	92.29%	91.64%	75.67%	96.54%	93.28%	79.78%	97.74%
Gamma Correction	58.51%	19.80%	0.67%	71.02%	31.27%	1.39%	77.06%	36.54%	2.24%
Blurring	91.89%	65.20%	94.63%	96.39%	78.76%	97.16%	97.59%	84.10%	97.79%
Shearing	99.63%	99.90%	87.69%	99.98%	100.00%	93.76%	100.00%	100.00%	95.32%
Perspective Transform	61.99%	72.79%	86.77%	72.89%	85.12%	92.99%	77.34%	89.30%	94.43%
Warping	90.02%	99.70%	98.76%	96.82%	99.98%	99.65%	98.21%	100.00%	99.78%
Filters	98.01%	73.66%	33.48%	99.40%	84.00%	47.61%	99.80%	87.61%	53.51%
Overall	**70.05%**	**69.46%**	**70.93%**	**78.60%**	**78.91%**	**76.48%**	**81.92%**	**82.29%**	**78.40%**

Table 16. Results for the inter set experiment. The network is trained on Set 4 and evaluated on Set 4. The accuracy is computed for the top 1, 5, and 10 closest matches.

SET 3	**Recall @1**			**Recall @5**			**Recall @10**		
Transformations	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**	**Triplet Loss**	**Siamese**	**Spatial Histogram**
Cycle GAN									
Van-gogh	86.37%	43.98%	5.07%	94.13%	61.89%	10.75%	96.32%	67.46%	14.03%
Monet	70.05%	8.36%	3.78%	82.99%	14.93%	8.26%	87.36%	19.30%	11.14%
Ukiyoe	24.78%	4.58%	0.70%	38.41%	8.86%	2.69%	43.28%	10.15%	3.98%
Cezanna	86.17%	35.82%	4.08%	93.53%	51.34%	8.46%	95.62%	57.71%	11.74%
Cartoon GAN									
Shinkai	83.08%	42.59%	7.76%	91.44%	55.62%	15.32%	93.23%	61.29%	18.81%
Hayao	70.05%	29.55%	6.27%	78.01%	41.39%	11.34%	81.19%	45.47%	16.12%
Hosoda	70.25%	30.25%	3.38%	83.08%	39.80%	7.06%	85.77%	43.48%	8.96%
Paprika	74.63%	29.95%	8.56%	82.19%	40.30%	14.93%	85.37%	44.28%	18.51%
Overall	**70.67%**	**36.11%**	**4.94%**	**80.47%**	**46.01%**	**9.88%**	**83.52%**	**49.90%**	**12.92%**