

Table 1

Dataset			OSSN	RKO	SVCM	BCOP
MNIST	Small	Clean	96.86 ± 0.13	97.28 ± 0.08	97.24 ± 0.09	97.54 ± 0.06
		Robust	42.95 ± 1.09	43.58 ± 0.44	28.94 ± 1.58	45.84 ± 0.90
	Large	Clean	98.31 ± 0.03	98.44 ± 0.05	97.93 ± 0.05	98.69 ± 0.01
		Robust	53.77 ± 1.02	55.18 ± 0.46	38.00 ± 1.82	56.37 ± 0.33
CIFAR10	Small	Clean	62.18 ± 0.66	61.77 ± 0.63	62.39 ± 0.46	64.53 ± 0.30
		Robust	48.03 ± 0.54	47.46 ± 0.53	47.59 ± 0.56	50.01 ± 0.21
	Large	Clean	67.51 ± 0.47	70.01 ± 0.26	69.65 ± 0.38	72.16 ± 0.23
		Robust	53.64 ± 0.49	55.76 ± 0.16	53.61 ± 0.51	58.26 ± 0.17

Table 2

Dataset		BCOP-Large	FC-3	KW-Large	KW-Resnet
MNIST	Clean	98.69 ± 0.01	98.71 ± 0.02	-	-
	Robust	56.37 ± 0.33	54.46 ± 0.30	-	-
CIFAR10	Clean	72.16 ± 0.23	62.60 ± 0.39	-	-
	Robust	58.26 ± 0.17	49.97 ± 0.35	-	-

Table 3

	KW	BCOP
Small		
Clean	54.39	64.53 \pm 0.30
PGD	49.94	51.26 \pm 0.17
FGSM	49.98	51.57 \pm 0.18
Large		
Clean	60.14	72.16 \pm 0.23
PGD	55.53	64.12 \pm 0.13
FGSM	55.55	64.24 \pm 0.12

	KW	BCOP
Small		
Clean (*)	63.00	74.20 \pm 2.23
BA (*)	60.00	61.20 \pm 2.99
PA (*)	63.00	74.00 \pm 2.28
Large		
Clean (*)	68.00	78.40 \pm 1.96
BA (*)	64.00	71.00 \pm 2.28
PA (*)	68.00	78.40 \pm 1.96

Table 4-Maxmin-lr-0.0001

		OSSN	RKO	BCOP
Wasserstein Distance	MaxMin	7.39 \pm 0.31	8.95 \pm 0.12	9.91 \pm 0.11

Table 4-ReLU-lr-0.001

		OSSN	RKO	BCOP
Wasserstein Distance	ReLU	7.06 \pm 0.72	7.82 \pm 0.21	8.28 \pm 0.19

Table 7

Dataset			BCOP-Fixed	RK-L2NE	BCOP
MNIST	Small	Clean	93.57 ± 0.17	95.85 ± 0.12	$\mathbf{97.54} \pm 0.06$
		Robust	7.51 ± 1.18	39.77 ± 0.73	$\mathbf{45.84} \pm 0.90$
	Large	Clean	69.12 ± 5.61	96.76 ± 0.11	$\mathbf{98.69} \pm 0.01$
		Robust	0.00 ± 0.00	37.79 ± 1.21	$\mathbf{56.37} \pm 0.33$
CIFAR10	Small	Clean	50.61 ± 0.65	58.82 ± 0.67	$\mathbf{64.53} \pm 0.30$
		Robust	36.44 ± 0.70	44.65 ± 0.61	$\mathbf{50.01} \pm 0.21$
	Large	Clean	47.70 ± 0.92	56.75 ± 0.68	$\mathbf{72.16} \pm 0.23$
		Robust	27.47 ± 1.37	43.40 ± 0.46	$\mathbf{58.26} \pm 0.17$

Table 8

Dataset		BCOP-Large	FC-3	MMR-Universal
MNIST	Clean	98.69 ± 0.01	$\mathbf{98.71} \pm 0.02$	-
	Robust	97.04 ± 0.03	$\mathbf{97.06} \pm 0.02$	-
CIFAR10	Clean	$\mathbf{72.16} \pm 0.23$	62.60 ± 0.39	-
	Robust	$\mathbf{62.53} \pm 0.21$	53.67 ± 0.29	-

Table 9

Dataset		BCOP-Large	FC-3	QW-3	QW-4
MNIST	Clean	98.69 ± 0.01	$\mathbf{98.71} \pm 0.02$	98.65	98.23
	Robust	$\mathbf{56.37} \pm 0.33$	54.46 ± 0.30	42.13	27.59
	PGD	86.38 ± 0.16	81.96 ± 0.16	86.86	86.25
	FGSM	$\mathbf{86.49} \pm 0.16$	83.64 ± 0.10	85.83	84.17
CIFAR10	Clean	72.16 ± 0.23	62.60 ± 0.39	79.15	77.15
	Robust	$\mathbf{58.26} \pm 0.17$	49.97 ± 0.35	44.46	31.41
	PGD	64.12 ± 0.13	50.05 ± 0.36	72.07	71.89
	FGSM	64.24 ± 0.12	50.21 ± 0.34	72.11	71.92