Table 1: Performance of the EMP and contenders for concerned models on the MNIST, CIFAR-10, and CIFAR-100. For MLP and LeNet, we conducted 5 repeated experiments using different initialization seeds, and reported the mean and standard deviation of the results. The standard deviation is marked as a subscript (e.g., $1_{0.1}$ indicates a mean of 1 with a standard deviation of 0.1). For the CIFAR-100 dataset, we only report the results of the first 10 logits.

Datasets		FP-MLP-2			T-MLP-2			FP-LeNet-5			T-LeNet-5			FP-VGG-13			T-VGG-13			FP-ResNet-18			T-ResNet-18		
	o	EMP	MP	PL-DNN	EMP	MP	PL-DNN	EMP	MP	PL-DNN	EMP	MP	PL-DNN	EMP	MP	PL-DNN	EMP	MP	PL-DNN	EMP	MP	PL-DNN	EMP	MP	PL-DNN
MNIST	0	$1.000_{1_{0.002}\pm 0.0101_{0.0008}}$	$1.081_{8_{0.026}\pm 0.2029_{0.401}}$	$0.908_{3_{0.0042}\pm 0.1957_{0.0250}}$	$0.995_{4_{0.0004}\pm 0.0103_{0.0010}}$	–	–	$1.000_{7_{0.0006}\pm 0.0101_{0.0002}}$	$1.180_{9_{0.0101}\pm 0.0217_{0.0069}}$	$1.277_{0_{0.0497}\pm 0.0158_{0.0011}}$	$1.002_{3_{0.0112}\pm 0.0109_{0.0017}}$	–	–	0.8923 ± 0.0089	0.5461 ± 0.0736	0.5420 ± 0.0741	0.8875 ± 0.0174	–	–	0.4773 ± 0.1225	–	–	0.3568 ± 0.1009	–	–
	1	$1.000_{0_{0.001}\pm 0.0100_{0.0008}}$	$1.081_{8_{0.026}\pm 0.2032_{0.400}}$	$0.908_{3_{0.0043}\pm 0.1957_{0.0250}}$	$0.995_{3_{0.0003}\pm 0.0104_{0.0010}}$	–	–	$0.999_{9_{0.002}\pm 0.0103_{0.0000}}$	$1.179_{3_{0.0104}\pm 0.0238_{0.0058}}$	$1.275_{9_{0.0499}\pm 0.0139_{0.0008}}$	$1.002_{3_{0.0111}\pm 0.0012_{0.0012}}$	–	–	0.8934 ± 0.0089	0.5476 ± 0.0688	0.5435 ± 0.0694	0.8873 ± 0.0177	–	–	0.4768 ± 0.1229	–	–	0.3563 ± 0.1005	–	–
	2	$0.999_{9_{0.001}\pm 0.0100_{0.0008}}$	$1.081_{8_{0.026}\pm 0.2031_{0.401}}$	$0.908_{6_{0.0044}\pm 0.1958_{0.0250}}$	$0.995_{5_{0.0003}\pm 0.0104_{0.0009}}$	–	–	$0.999_{0_{0.005}\pm 0.0118_{0.0007}}$	$1.179_{4_{0.0297}\pm 0.0239_{0.0060}}$	$1.274_{8_{0.0501}\pm 0.0170_{0.0015}}$	$1.002_{3_{0.0110}\pm 0.0117_{0.0011}}$	–	–	0.8937 ± 0.0091	0.5483 ± 0.0712	0.5442 ± 0.0718	0.8869 ± 0.0169	–	–	0.4769 ± 0.1224	–	–	0.3563 ± 0.1006	–	–
	3	$0.999_{8_{0.003}\pm 0.0100_{0.0007}}$	$1.081_{8_{0.026}\pm 0.2029_{0.401}}$	$0.908_{5_{0.0043}\pm 0.1958_{0.0250}}$	$0.995_{5_{0.0002}\pm 0.0105_{0.0009}}$	–	–	$1.000_{8_{0.004}\pm 0.0104_{0.0001}}$	$1.180_{8_{0.0101}\pm 0.0215_{0.0065}}$	$1.277_{0_{0.0498}\pm 0.0158_{0.0015}}$	$1.002_{3_{0.0110}\pm 0.0108_{0.0016}}$	–	–	0.8935 ± 0.0093	0.5489 ± 0.0722	0.5448 ± 0.0727	0.8873 ± 0.0174	–	–	0.4758 ± 0.1224	–	–	0.3565 ± 0.1012	–	–
	4	$1.000_{0_{0.002}\pm 0.0099_{0.0008}}$	$1.081_{7_{0.025}\pm 0.2030_{0.401}}$	$0.908_{4_{0.0044}\pm 0.1957_{0.0250}}$	$0.995_{6_{0.0004}\pm 0.0103_{0.0010}}$	–	–	$1.001_{0_{0.0006}\pm 0.0099_{0.0004}}$	$1.180_{7_{0.0304}\pm 0.0239_{0.0067}}$	$1.277_{0_{0.0497}\pm 0.0136_{0.0011}}$	$1.002_{3_{0.0109}\pm 0.0107_{0.0016}}$	–	–	0.8935 ± 0.0089	0.5490 ± 0.0727	0.5449 ± 0.0732	0.8875 ± 0.0172	–	–	0.4768 ± 0.1224	–	–	0.3575 ± 0.1013	–	–
	5	$1.000_{0_{0.001}\pm 0.0100_{0.0008}}$	$1.081_{8_{0.025}\pm 0.2031_{0.401}}$	$0.908_{4_{0.0044}\pm 0.1957_{0.0250}}$	$0.995_{4_{0.0004}\pm 0.0104_{0.0010}}$	–	–	$1.001_{0_{0.0006}\pm 0.0100_{0.0001}}$	$1.181_{5_{0.0300}\pm 0.0237_{0.0059}}$	$1.277_{3_{0.0498}\pm 0.0149_{0.0010}}$	$1.002_{3_{0.0109}\pm 0.0109_{0.0013}}$	–	–	0.8935 ± 0.0089	0.5492 ± 0.0704	0.5451 ± 0.0710	0.8868 ± 0.0173	–	–	0.4774 ± 0.1224	–	–	0.3565 ± 0.1007	–	–
	6	$1.000_{0_{0.000}\pm 0.0099_{0.0007}}$	$1.081_{7_{0.026}\pm 0.2030_{0.399}}$	$0.908_{4_{0.0043}\pm 0.1958_{0.0250}}$	$0.995_{2_{0.0005}\pm 0.0104_{0.0009}}$	–	–	$1.001_{1_{0.0007}\pm 0.0099_{0.0004}}$	$1.181_{8_{0.0298}\pm 0.0246_{0.0062}}$	$1.277_{4_{0.0496}\pm 0.0138_{0.0011}}$	$1.002_{3_{0.0112}\pm 0.0105_{0.0013}}$	–	–	0.8940 ± 0.0091	0.5495 ± 0.0702	0.5454 ± 0.0707	0.8874 ± 0.0176	–	–	0.4767 ± 0.1227	–	–	0.3575 ± 0.1009	–	–
	7	$1.001_{0_{0.003}\pm 0.0100_{0.0007}}$	$1.081_{8_{0.024}\pm 0.2032_{0.400}}$	$0.908_{4_{0.0043}\pm 0.1957_{0.0250}}$	$0.995_{2_{0.0005}\pm 0.0104_{0.0009}}$	–	–	$0.999_{9_{0.002}\pm 0.0099_{0.0002}}$	$1.180_{8_{0.0296}\pm 0.0245_{0.0067}}$	$1.275_{9_{0.0501}\pm 0.0145_{0.0009}}$	$1.002_{3_{0.0109}\pm 0.0103_{0.0011}}$	–	–	0.8934 ± 0.0090	0.5483 ± 0.0713	0.5442 ± 0.0718	0.8867 ± 0.0177	–	–	0.4756 ± 0.1225	–	–	0.3567 ± 0.1011	–	–
	8	$0.999_{9_{0.002}\pm 0.0101_{0.0007}}$	$1.081_{9_{0.024}\pm 0.2030_{0.402}}$	$0.908_{3_{0.0044}\pm 0.1956_{0.0250}}$	$0.995_{1_{0.0004}\pm 0.0106_{0.0009}}$	–	–	$1.001_{4_{0.0007}\pm 0.0098_{0.0003}}$	$1.181_{4_{0.0301}\pm 0.0218_{0.0066}}$	$1.242_{0_{0.0714}\pm 0.0140_{0.0010}}$	$1.002_{1_{0.0111}\pm 0.0107_{0.0012}}$	–	–	0.8934 ± 0.0087	0.5504 ± 0.0734	0.5462 ± 0.0739	0.8874 ± 0.0173	–	–	0.4757 ± 0.1228	–	–	0.3567 ± 0.1005	–	–
	9	$1.000_{0_{0.001}\pm 0.0100_{0.0007}}$	$1.081_{9_{0.026}\pm 0.2031_{0.400}}$	$0.908_{4_{0.0043}\pm 0.1959_{0.0249}}$	$0.995_{4_{0.0004}\pm 0.0104_{0.0010}}$	–	–	$0.999_{9_{0.0004}\pm 0.0100_{0.0001}}$	$1.180_{1_{0.0298}\pm 0.0225_{0.0063}}$	$1.276_{9_{0.0497}\pm 0.0142_{0.0009}}$	$1.001_{9_{0.0111}\pm 0.0106_{0.0013}}$	–	–	0.8937 ± 0.0089	0.5505 ± 0.0706	0.5463 ± 0.0712	0.8876 ± 0.0172	–	–	0.4769 ± 0.1223	–	–	0.3576 ± 0.1008	–	–
CIFAR-10	0	$1.000_{0_{0.001}\pm 0.0077_{0.0009}}$	$1.191_{6_{0.281}\pm 0.2538_{0.0167}}$	$0.790_{5_{0.0258}\pm 0.3391_{0.0212}}$	$0.994_{7_{0.0007}\pm 0.0108_{0.0011}}$	–	–	$1.009_{8_{0.0017}\pm 0.0099_{0.0001}}$	$1.502_{9_{0.0445}\pm 0.0177_{0.0010}}$	$1.616_{7_{0.0559}\pm 0.0334_{0.0022}}$	$1.014_{1_{0.0133}\pm 0.0113_{0.0017}}$	–	–	0.8363 ± 0.0153	0.3579 ± 0.1387	0.3567 ± 0.1389	0.8441 ± 0.0382	–	–	0.4259 ± 0.1425	–	–	0.3275 ± 0.1117	–	–
	1	$0.999_{9_{0.003}\pm 0.0078_{0.0011}}$	$1.191_{2_{0.275}\pm 0.2535_{0.0165}}$	$0.790_{3_{0.0263}\pm 0.3389_{0.0213}}$	$0.994_{7_{0.0006}\pm 0.0106_{0.0013}}$	–	–	$1.009_{2_{0.0017}\pm 0.0105_{0.0001}}$	$1.502_{0_{0.0446}\pm 0.0207_{0.0011}}$	$1.615_{9_{0.0559}\pm 0.0298_{0.0022}}$	$1.013_{9_{0.0133}\pm 0.0115_{0.0018}}$	–	–	0.8358 ± 0.0152	0.3577 ± 0.1380	0.3565 ± 0.1381	0.8434 ± 0.0376	–	–	0.4250 ± 0.1425	–	–	0.3281 ± 0.1111	–	–
	2	$1.000_{1_{0.003}\pm 0.0077_{0.0011}}$	$1.191_{2_{0.278}\pm 0.2537_{0.0165}}$	$0.790_{5_{0.0264}\pm 0.3390_{0.0213}}$	$0.994_{8_{0.0006}\pm 0.0109_{0.0012}}$	–	–	$1.009_{0_{0.0018}\pm 0.0127_{0.0002}}$	$1.501_{7_{0.0447}\pm 0.0218_{0.0009}}$	$1.615_{6_{0.0560}\pm 0.0358_{0.0022}}$	$1.014_{0_{0.0135}\pm 0.0116_{0.0017}}$	–	–	0.8361 ± 0.0146	0.3590 ± 0.1466	0.3584 ± 0.1447	0.8442 ± 0.0385	–	–	0.4251 ± 0.1425	–	–	0.3271 ± 0.1112	–	–
	3	$0.999_{9_{0.002}\pm 0.0077_{0.0011}}$	$1.191_{6_{0.277}\pm 0.2537_{0.0165}}$	$0.790_{6_{0.261}\pm 0.3391_{0.0212}}$	$0.994_{5_{0.0005}\pm 0.0108_{0.0013}}$	–	–	$1.010_{0_{0.0017}\pm 0.0110_{0.0002}}$	$1.503_{1_{0.0446}\pm 0.0189_{0.0010}}$	$1.616_{9_{0.0558}\pm 0.0338_{0.0023}}$	$1.014_{3_{0.0133}\pm 0.0115_{0.0021}}$	–	–	0.8361 ± 0.0158	0.3569 ± 0.1392	0.3557 ± 0.1393	0.8442 ± 0.0385	–	–	0.4248 ± 0.1425	–	–	0.3271 ± 0.1118	–	–
	4	$0.999_{8_{0.002}\pm 0.0078_{0.0012}}$	$1.191_{4_{0.279}\pm 0.2538_{0.0164}}$	$0.790_{5_{0.263}\pm 0.3392_{0.0211}}$	$0.994_{7_{0.0007}\pm 0.0106_{0.0012}}$	–	–	$1.010_{6_{0.0017}\pm 0.0098_{0.0004}}$	$1.504_{1_{0.0446}\pm 0.0179_{0.0011}}$	$1.617_{9_{0.0557}\pm 0.0307_{0.0023}}$	$1.013_{7_{0.0136}\pm 0.0114_{0.0015}}$	–	–	0.8363 ± 0.0158	0.3562 ± 0.1389	0.3550 ± 0.1390	0.8441 ± 0.0383	–	–	0.4248 ± 0.1425	–	–	0.3274 ± 0.1117	–	–
	5	$1.000_{1_{0.003}\pm 0.0076_{0.0010}}$	$1.191_{3_{0.276}\pm 0.2539_{0.0169}}$	$0.790_{5_{0.262}\pm 0.3390_{0.0213}}$	$0.994_{8_{0.0007}\pm 0.0107_{0.0011}}$	–	–	$1.009_{9_{0.0017}\pm 0.0109_{0.0001}}$	$1.503_{0_{0.0445}\pm 0.0209_{0.0011}}$	$1.616_{7_{0.0556}\pm 0.0311_{0.0022}}$	$1.013_{9_{0.0133}\pm 0.0113_{0.0022}}$	–	–	0.8359 ± 0.0148	0.3560 ± 0.1377	0.3548 ± 0.1378	0.8441 ± 0.0381	–	–	0.4252 ± 0.1425	–	–	0.3274 ± 0.1114	–	–
	6	$1.000_{0_{0.003}\pm 0.0078_{0.0008}}$	$1.191_{5_{0.278}\pm 0.2538_{0.0168}}$	$0.790_{5_{0.263}\pm 0.3392_{0.0210}}$	$0.994_{9_{0.0008}\pm 0.0107_{0.0015}}$	–	–	$1.010_{3_{0.0017}\pm 0.0094_{0.0002}}$	$1.503_{9_{0.0445}\pm 0.0185_{0.0011}}$	$1.617_{4_{0.0556}\pm 0.0285_{0.0022}}$	$1.013_{9_{0.0134}\pm 0.0109_{0.0018}}$	–	–	0.8360 ± 0.0149	0.3571 ± 0.1418	0.3559 ± 0.1419	0.8444 ± 0.0375	–	–	0.4254 ± 0.1425	–	–	0.3282 ± 0.1114	–	–
	7	$1.000_{3_{0.003}\pm 0.0077_{0.0011}}$	$1.191_{6_{0.275}\pm 0.2539_{0.0165}}$	$0.790_{7_{0.260}\pm 0.3392_{0.0211}}$	$0.994_{6_{0.0008}\pm 0.0108_{0.0015}}$	–	–	$1.009_{0_{0.0017}\pm 0.0099_{0.0003}}$	$1.501_{7_{0.0446}\pm 0.0184_{0.0010}}$	$1.615_{3_{0.0559}\pm 0.0307_{0.0022}}$	$1.013_{9_{0.0134}\pm 0.0120_{0.0014}}$	–	–	0.8348 ± 0.0152	0.3575 ± 0.1390	0.3563 ± 0.1391	0.8435 ± 0.0382	–	–	0.4258 ± 0.1425	–	–	0.3268 ± 0.1111	–	–
	8	$0.999_{9_{0.003}\pm 0.0079_{0.0012}}$	$1.191_{3_{0.277}\pm 0.2536_{0.0165}}$	$0.790_{6_{0.263}\pm 0.3392_{0.0212}}$	$0.994_{6_{0.0007}\pm 0.0107_{0.0011}}$	–	–	$1.010_{3_{0.0017}\pm 0.0093_{0.0001}}$	$1.503_{6_{0.0445}\pm 0.0179_{0.0010}}$	$1.617_{3_{0.0558}\pm 0.0312_{0.0022}}$	$1.014_{0_{0.0133}\pm 0.0118_{0.0015}}$	–	–	0.8356 ± 0.0147	0.3578 ± 0.1401	0.3566 ± 0.1403	0.8433 ± 0.0383	–	–	0.4258 ± 0.1425	–	–	0.3267 ± 0.1112	–	–
	9	$0.999_{9_{0.001}\pm 0.0078_{0.0011}}$	$1.191_{4_{0.275}\pm 0.2537_{0.0166}}$	$0.790_{4_{0.263}\pm 0.3391_{0.0211}}$	$0.994_{8_{0.0007}\pm 0.0105_{0.0012}}$	–	–	$1.009_{5_{0.0017}\pm 0.0100_{0.0001}}$	$1.502_{5_{0.0446}\pm 0.0179_{0.0010}}$	$1.616_{2_{0.0559}\pm 0.0314_{0.0023}}$	$1.014_{0_{0.0135}\pm 0.0109_{0.0020}}$	–	–	0.8362 ± 0.0151	0.3565 ± 0.1366	0.3553 ± 0.1367	0.8443 ± 0.0384	–	–	0.4249 ± 0.1425	–	–	0.3273 ± 0.1112	–	–
CIFAR-100	0	$1.000_{3_{0.008}\pm 0.0074_{0.0008}}$	$1.243_{2_{0.039}\pm 0.2675_{0.0154}}$	$0.663_{6_{0.217}\pm 0.4170_{0.146}}$	$0.994_{2_{0.0012}\pm 0.0104_{0.0014}}$	–	–	$1.013_{3_{0.0006}\pm 0.0128_{0.0002}}$	$0.660_{2_{0.0171}\pm 0.0979_{0.0034}}$	$0.573_{8_{0.0204}\pm 0.1323_{0.0040}}$	$1.013_{0_{0.0131}\pm 0.0112_{0.0016}}$	–	–	0.8238 ± 0.0246	0.3926 ± 0.1445	0.3914 ± 0.1447	0.8553 ± 0.0327	–	–	0.4247 ± 0.1393	–	–	0.3272 ± 0.1114	–	–
	1	$1.000_{4_{0.007}\pm 0.0070_{0.0006}}$	$1.243_{0_{0.041}\pm 0.2673_{0.0153}}$	$0.663_{0_{0.224}\pm 0.4170_{0.146}}$	$0.994_{6_{0.0016}\pm 0.0105_{0.0012}}$	–	–	$1.013_{4_{0.0006}\pm 0.0134_{0.0001}}$	$0.660_{3_{0.0171}\pm 0.0961_{0.0093}}$	$0.574_{0_{0.0205}\pm 0.1324_{0.0039}}$	$1.013_{2_{0.0128}\pm 0.0117_{0.0020}}$	–	–	0.8256 ± 0.0246	0.3922 ± 0.1439	0.3909 ± 0.1440	0.8544 ± 0.0321	–	–	0.4249 ± 0.1397	–	–	0.3273 ± 0.1119	–	–
	2	$1.000_{1_{0.006}\pm 0.0072_{0.0008}}$	$1.242_{4_{0.034}\pm 0.2661_{0.0145}}$	$0.663_{4_{0.215}\pm 0.4170_{0.45}}$	$0.994_{9_{0.0015}\pm 0.0105_{0.0011}}$	–	–	$1.013_{5_{0.0006}\pm 0.0131_{0.0002}}$	$0.660_{2_{0.0171}\pm 0.0949_{0.0034}}$	$0.573_{8_{0.0205}\pm 0.1314_{0.0040}}$	$1.013_{9_{0.0128}\pm 0.0114_{0.0018}}$	–	–	0.8256 ± 0.0253	0.3943 ± 0.1508	0.3931 ± 0.1510	0.8554 ± 0.0328	–	–	0.4252 ± 0.1385	–	–	0.3278 ± 0.1114	–	–
	3	$0.999_{7_{0.007}\pm 0.0066_{0.0011}}$	$1.242_{8_{0.039}\pm 0.2673_{0.0150}}$	$0.663_{1_{0.210}\pm 0.4174_{0.46}}$	$0.994_{8_{0.0015}\pm 0.0108_{0.0011}}$	–	–	$1.012_{2_{0.0006}\pm 0.0106_{0.0001}}$	$0.659_{8_{0.170}\pm 0.0974_{0.0033}}$	$0.573_{6_{0.0204}\pm 0.1330_{0.0039}}$	$1.013_{0_{0.0129}\pm 0.0114_{0.0017}}$	–	–	0.8251 ± 0.0247	0.3914 ± 0.1451	0.3902 ± 0.1453	0.8552 ± 0.0321	–	–	0.4252 ± 0.1386	–	–	0.3277 ± 0.1120	–	–
	4	$1.000_{3_{0.010}\pm 0.0070_{0.0012}}$	$1.243_{6_{0.037}\pm 0.2674_{0.0154}}$	$0.663_{5_{0.212}\pm 0.4170_{0.150}}$	$0.994_{6_{0.0015}\pm 0.0108_{0.0015}}$	–	–	$1.013_{4_{0.007}\pm 0.0121_{0.0002}}$	$0.660_{3_{0.171}\pm 0.0960_{0.0034}}$	$0.574_{0_{0.0205}\pm 0.1324_{0.0040}}$	$1.013_{2_{0.0129}\pm 0.0113_{0.0012}}$	–	–	0.8251 ± 0.0247	0.3906 ± 0.1448	0.3894 ± 0.1450	0.8556 ± 0.0328	–	–	0.4241 ± 0.1398	–	–	0.3266 ± 0.1114	–	–
	5	$1.000_{1_{0.004}\pm 0.0069_{0.0008}}$	$1.243_{3_{0.034}\pm 0.2673_{0.0150}}$	$0.663_{2_{0.207}\pm 0.4169_{0.144}}$	$0.994_{2_{0.0011}\pm 0.0107_{0.0012}}$	–	–	$1.012_{6_{0.0006}\pm 0.0120_{0.0002}}$	$0.659_{8_{0.171}\pm 0.0959_{0.0033}}$	$0.573_{6_{0.0204}\pm 0.1323_{0.0040}}$	$1.013_{2_{0.0128}\pm 0.0118_{0.0015}}$	–	–	0.8249 ± 0.0252	0.3905 ± 0.1434	0.3892 ± 0.1436	0.8548 ± 0.0326	–	–	0.4253 ± 0.1398	–	–	0.3274 ± 0.1115	–	–
	6	$1.000_{0_{0.004}\pm 0.0069_{0.0011}}$	$1.243_{6_{0.038}\pm 0.2676_{0.0149}}$	$0.663_{0_{0.213}\pm 0.4168_{0.149}}$	$0.994_{3_{0.0016}\pm 0.0105_{0.0012}}$	–	–	$1.012_{5_{0.007}\pm 0.0135_{0.0002}}$	$0.659_{6_{0.172}\pm 0.0951_{0.0034}}$	$0.573_{2_{0.0205}\pm 0.1316_{0.0040}}$	$1.013_{4_{0.0130}\pm 0.0117_{0.0019}}$	–	–	0.8258 ± 0.0251	0.3915 ± 0.1478	0.3902 ± 0.1479	0.8546 ± 0.0322	–	–	0.4247 ± 0.1392	–	–	0.3277 ± 0.1112	–	–
	7	$1.000_{2_{0.006}\pm 0.0073_{0.0008}}$	$1.242_{9_{0.037}\pm 0.2668_{0.0150}}$	$0.663_{3_{0.217}\pm 0.4171_{0.148}}$	$0.994_{3_{0.0013}\pm 0.0107_{0.0014}}$	–	–	$1.012_{6_{0.0006}\pm 0.0121_{0.0002}}$	$0.660_{0_{0.171}\pm 0.0970_{0.0034}}$	$0.573_{7_{0.0204}\pm 0.1333_{0.0040}}$	$1.013_{4_{0.0128}\pm 0.0118_{0.0019}}$	–	–	0.8250 ± 0.0248	0.3920 ± 0.1449	0.3908 ± 0.1451	0.8552 ± 0.0326	–	–	0.4242 ± 0.1393	–	–	0.3265 ± 0.1111	–	–
	8	$1.000_{0_{0.006}\pm 0.0066_{0.0006}}$	$1.243_{1_{0.034}\pm 0.2675_{0.0154}}$	$0.663_{2_{0.214}\pm 0.4169_{0.148}}$	$0.994_{3_{0.0017}\pm 0.0107_{0.0012}}$	–	–	$1.013_{3_{0.0006}\pm 0.0110_{0.0001}}$	$0.660_{3_{0.171}\pm 0.0964_{0.0033}}$	$0.573_{9_{0.0205}\pm 0.1328_{0.0039}}$	$1.013_{8_{0.0128}\pm 0.0110_{0.0019}}$	–	–	0.8251 ± 0.0247	0.3924 ± 0.1460	0.3912 ± 0.1462	0.8553 ± 0.0327	–	–	0.4248 ± 0.1398	–	–	0.3272 ± 0.1118	–	–
	9	$1.000_{0_{0.006}\pm 0.0071_{0.0012}}$	$1.243_{1_{0.039}\pm 0.2675_{0.0158}}$	$0.663_{2_{0.212}\pm 0.4168_{0.146}}$	$0.994_{8_{0.0013}\pm 0.0106_{0.0015}}$	–	–	$1.013_{1_{0.0006}\pm 0.0118_{0.0001}}$	$0.660_{3_{0.171}\pm 0.0966_{0.0033}}$	$0.573_{9_{0.0205}\pm 0.1327_{0.0040}}$	$1.013_{5_{0.0127}\pm 0.0112_{0.0017}}$	–	–	0.8253 ± 0.0253	0.3910 ± 0.1424	0.3898 ± 0.1426	0.8554 ± 0.0328	–	–	0.4243 ± 0.1385	–	–	0.3272 ± 0.1114	–	–

Table 2: Average accuracy and uncertainty of concerned models on the MNIST, CIFAR-10, and CIFAR-100. For MLP and LeNet, we conducted 5 repeated experiments using different initialization seeds, and reported the mean and standard deviation of the results. The standard deviation is marked as a subscript (e.g., $1_{0.1}$ indicates a mean of 1 with a standard deviation of 0.1).

Datasets	Models	Accuracy	Uncertainty	Reduction
MNIST	FP-MLP-2	$0.9761_{0.0002}$	$1.4697_{0.0082} \times 10^3$	$68.08_{0.1389}\%$
	T-MLP-2	$0.9752_{0.0005}$	$1.2572_{0.0236} \times 10^5$	
	T-MLP-2-MOMA	$0.9751_{0.0006}$	$4.0129_{0.0039} \times 10^4$	
	FP-LeNet-5	$0.9911_{0.0001}$	$1.7728_{0.0232} \times 10^3$	$98.55_{0.1201}\%$
	T-LeNet-5	$0.9903_{0.0003}$	$2.8113_{0.0490} \times 10^5$	
	T-LeNet-5-MOMA	$0.9885_{0.0006}$	$4.0906_{0.1433} \times 10^3$	
	FP-VGG-13	0.9985	4.6029×10^{-1}	20.95%
	T-VGG-13	0.9954	1.4500×10^1	
	T-VGG-13-MOMA	0.9957	1.1463×10^1	
	FP-ResNet-18	0.9963	6.9757×10^{-3}	43.78%
	T-ResNet-18	0.9938	4.2808×10^{-1}	
	T-ResNet-18-MOMA	0.9951	2.4067×10^{-1}	
CIFAR-10	FP-MLP-2	$0.4806_{0.0010}$	$5.8953_{0.1782} \times 10^3$	$86.20_{1.0919}\%$
	T-MLP-2	$0.4066_{0.0058}$	$5.6167_{0.3858} \times 10^6$	
	T-MLP-2-MOMA	$0.4355_{0.0059}$	$7.7525_{0.3044} \times 10^5$	
	FP-LeNet-5	$0.6651_{0.0003}$	$2.0605_{0.2572} \times 10^{-1}$	$98.53_{1.5265}\%$
	T-LeNet-5	$0.6140_{0.0062}$	$4.3177_{2.0793} \times 10^2$	
	T-LeNet-5-MOMA	$0.6138_{0.0066}$	$6.3389_{5.8414} \times 10^0$	
	FP-VGG-13	0.9263	3.1242×10^{-1}	52.05%
	T-VGG-13	0.9212	9.9900×10^1	
	T-VGG-13-MOMA	0.9096	6.7903×10^1	
	FP-ResNet-18	0.9395	4.4530×10^{-2}	18.27%
	T-ResNet-18	0.9174	2.9628×10^{-1}	
	T-ResNet-18-MOMA	0.9233	2.4215×10^{-1}	
CIFAR-100	FP-MLP-2	$0.0794_{0.0015}$	$1.0644_{0.0472} \times 10^5$	$69.90_{0.7244}\%$
	T-MLP-2	$0.0624_{0.0066}$	$9.9100_{0.1074} \times 10^6$	
	T-MLP-2-MOMA	$0.0725_{0.0022}$	$2.9831_{0.0641} \times 10^6$	
	FP-LeNet-5	$0.2950_{0.0024}$	$3.4251_{0.0548} \times 10^3$	$30.93_{0.5204}\%$
	T-LeNet-5	$0.2470_{0.0085}$	$1.0975_{1.7877} \times 10^5$	
	T-LeNet-5-MOMA	$0.2468_{0.0088}$	$7.5830_{0.4088} \times 10^4$	
	FP-VGG-13	0.7026	3.6694×10^{-7}	12.73%
	T-VGG-13	0.6806	2.1427×10^1	
	T-VGG-13-MOMA	0.6705	1.8700×10^1	
	FP-ResNet-18	0.7354	1.6989×10^{-2}	16.43%
	T-ResNet-18	0.6672	1.5869×10^{-1}	
	T-ResNet-18-MOMA	0.6880	1.3263×10^{-1}	