

CNN regression: sensor analytics for localization.

Dataset	2500
Train	1700
Test	400
Val	400

Threshold **0.04** (For accuracy, the localizations inside (Euclidean) distance loss of 4 cm are considered correct regressions.)

Dataset 8x16 with disturbance (model with float32)

Sensors	MSE	Max dist. loss (m)	Ave dist. loss (m)	Accuracy
1	9.78E-03	7.67E-01	7.88E-02	23.07%
2	2.35E-03	6.44E-01	3.94E-02	59.71%
3	1.12E-03	1.89E-01	2.78E-02	81.59%
4	8.73E-04	1.85E-01	2.40E-02	88.08%
5	7.76E-04	1.44E-01	2.23E-02	91.49%
6	6.17E-04	1.17E-01	1.95E-02	94.66%
7	5.87E-04	1.19E-01	1.89E-02	95.45%

Dataset 8x16 with disturbance (model with int8 quantization)

Sensors	MSE	Max dist. loss (m)	Ave dist. loss (m)	Accuracy
1	9.92E-03	7.45E-01	7.93E-02	23.16%
2	2.46E-03	6.86E-01	3.99E-02	59.44%
3	1.11E-03	2.00E-01	2.75E-02	81.82%
4	9.29E-04	1.83E-01	2.50E-02	86.32%
5	8.17E-04	1.48E-01	2.30E-02	90.82%
6	6.51E-04	1.19E-01	2.02E-02	93.89%
7	5.96E-04	1.23E-01	1.91E-02	95.33%

Dataset 8x16 with disturbance (model with float6 (S1E4M1) quantization)

Sensors	MSE	Max dist. loss (m)	Ave dist. loss (m)	Accuracy	Accuracy gain (float6 over float32)
1	1.06E-02	7.32E-01	8.12E-02	23.96%	0.89%
2	2.17E-03	7.28E-01	3.71E-02	64.87%	5.15%
3	8.16E-04	1.86E-01	2.28E-02	90.14%	8.55%
4	5.87E-04	1.39E-01	1.84E-02	94.85%	6.77%
5	5.70E-04	1.34E-01	1.83E-02	95.36%	3.87%
6	5.79E-04	1.22E-01	1.81E-02	94.75%	0.09%
7	5.12E-04	1.20E-01	1.70E-02	96.27%	0.83%

CNN model.

