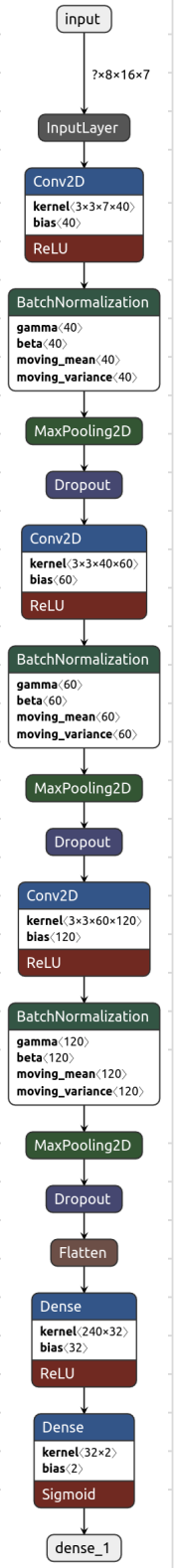
CNN regression: sensor analytics for localization.

Dataset	Samples
Total	**2500**
Train	**1700**
Test	**400**
Val	**400**

Dataset 8x16 with disturbance

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

CNN model.



CNN 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%**

CNN 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%**

CNN 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 with float5 (S1E3M1) quantization.

Sensors	MSE	Max dist. loss (m)	Ave dist. loss (m)	**Accuracy**	**Accuracy gain (float5 over float32)**
5	**5.44E-04**	**1.31E-01**	**1.75E-02**	95.76%	**4.27%**