**Data generation**

decode\_demo\_v2.m: generate a simulated training dataset,

decode\_demo.m: generate test dataset based on ground truth in path

/media/hdd/3dloc\_data/DECODE\_Setting/figure4a/DECODE\_ROI3\_LD\_DC.csv,

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | frame | Ground-truth point idx | x | y | znano | intensity |
| Min | 1 | 93 | 0.000269 | 0.0006 | -393.024 | 44676.42 |
| Max | 124829 | 6459856 | 82.91333 | 97.69227 | 399.9993 | 998495.1 |

Download the ground truth file from [here](https://oc.embl.de/index.php/s/SFM6Pc8RetX09pJ?path=%2FFigure%204a).

**Train**

For Figure4a (ground truth above), modify parameters to

Text

Description automatically generated

**Test**

Text

Description automatically generated

**Post-process**

Given ‘loc.csv’ in save\_path (/media/hdd/3dloc\_inference/1226\_figure4a\_v3),

decode\_postpro.m save estimations (pred\_label.csv) and evaluation performance (eval.csv).

Text

Description automatically generated

**Render super-resolution image**

Activate virtual environment ‘decode\_env’ download from [here](https://decode.readthedocs.io/en/release-0.10/installation.html).

render\_sr.py generate and save super-resolution image for 3 situations, grounth truth csv file, pred\_label (upsample\_factor=2 in train), pred\_label\_upsample (upsample\_factor=4 in train)

**Data exist**

Ground-truth csv files: /media/hdd/3dloc\_data/DECODE\_Setting/figure4a

Train set: /media/hdd/3dloc\_data/DECODE/simulation\_figure4a\_LD

Test set: /media/hdd/3dloc\_data/DECODE/figure4a\_LD\_v3

Trained models: /media/hdd/3dloc\_result/DECODE

Upsample\_factor=4 🡪 0110-lr0.0007-batchSize2-D250-Epoch200-nTrain9000-cnn\_residual

Upsample\_factor=2 🡪 1222-lr0.001-batchSize4-D250-Epoch200-nTrain9000-cnn\_residual

Test result & after post-process: /media/hdd/render\_sr

Upsample\_factor=2 🡪 1226\_figure4a\_v3

Upsample\_factor=4 🡪 0114\_figure4a\_v4\_upsample

Render super-resolution image: /media/hdd/render\_sr/hr