Code Specifications

The codes contain three modules to carry out simulations of the iterative BP-CNN architecture. The three modules are generating data, training the network and testing the BP-CNN performance. The entrances of these modules are all in "*main.py*". To complete one round of simulation, the three modules need to be executed in order. To run these modules, a file containing the matrix $\Sigma^{1/2}$ is also needed. This file can be generated using the file "*Generate_cov_1_2.m*" in the folder *"Noise"*. The detailed description of these three modules are as follows.

Generating Data:

This module is executed by setting top_config.function to "GenData". The outputs of this module are two files containing the training data set and the validation data set. The validation data set is to test the network performance during training. Before running this module, you need to create two folders named *TrainingData* and *TestData.*

Training the Network:

This module is executed by setting top_config.function to "Train". This module will train a network and save the trained parameters in files.

Testing the BP-CNN Performance:

This module is executed by setting top_config.function to "Simulation". This module tests the BP-CNN performance by simulating channel encoding, transmission and channel decoding through the BP-CNN architecture. The bit error rates under different channel SNRs are calculated and saved in a file.

If you have other questions about the codes, please feel free to contact me. The email address is lfbeyond@mail.ustc.edu.cn