

Python exercise sheet

Exercise 1: Random Forest classification

1. Open the Jupyter Notebook “plot_sparse_logistic_regression”
2. Change the classifier to a Random Forest Classifier, and test it on the same dataset

Exercise 2: Multi-layer Perceptron

1. Open the Jupyter Notebook “plot_multi_layer_perceptron_mnist.py”
2. From the Code, try to interpret what the images at the end of the notebook depict. What does one pixel in the image correspond to in the multi-layer perceptron? (Hint: you might want to print and compare the shape of the `mlp.coef_data` to the mlp architecture)

Exercise 3: Keras implementation

3. Open the python Script “mnist_convnet.py”
4. Add an additional convolutional layer at the start, with 16 filters, a kernel size of 3 x 3, and relu activation, as well as a Maxpooling2D Layer with `pool_size` of 2x2
5. Run the program and compare it to the original version