# Mini-Project 1. Feature Extraction and Transfer Learning

Group member:

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Contribution:

LIANG Weijian: (MNIST-VGG16.ipynb)

* Extract features from MNIST using pretrained network VGG16.
* Visualize extracted feature using PCA
* Train a simple neural network with extracted feature or raw MNIST data.

DENG Didan: (MNIST\_feature\_Pretrained\_Alexnet\_ImageNet.ipynb)

* Exploring the feature extraction using AlexNet: Even though AlexNet is relatively shallow NN, but the experiment results showed that AlexNet is good enough for feature extraction.
* Comparing the Visualization using two different methods: PCA and t-SNE. It turns out t-SNE has better performance of clustering, but it is way more time-consuming than PCA.
* Comparing the classfication results using two methods: SVM based on extracted features, and SVM based on pca\_100 major components. Both methods can achieve good test accuracy, but the second one is 44 times faster than the first one.

Randik: (transfer.py)

* Tackle the challenge task 4: transfer learning