Project I - Convolutional neural networks
Project Plan

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1 What we are going to test

1.1 Network architectures

We are going to test and compare the following network architectures:

- simple convolutional neural networks with various numbers of convolutional, ReLU and pool layers;
- pre-trained GoogLeNet (Inception) model;
- pre-trained ResNet (Residual Network) model.

1.2 Hyper-parameters

Hyper-parameters related to the training process:

- learning rate;
- momentum factor.

Hyper-parameters related to the regularization process:

- dropout rate;
- early stopping.

1.3 Augmentation techniques

Standard operations:

- image flips;
- image rotations;
- image shifts.

Selected more advanced data augmentation technique is *MixUp* augmentation.

2 Short schedule

The remaining three weeks will be devoted to the following tasks:

- week 1 - building and testing simple CNNs with various sets of hyper-parameters;
- week 2 - comparison of created CNNs and pre-trained models, along with augmentation techniques;
- week 3 - describing results and conclusions.