

# CI Mini-Project 1

Deep Learning/Big Data

Due: October 27, 2017

## Project Description

For this mini-project, you will utilize all the concepts that have been discussed in the lectures for the CI and **develop**, **train**, and **test** a classifier for the CIFAR-10 dataset. This will involve utilizing your knowledge of loading the dataset, creating/modifying networks, training networks, and evaluating results. Overall you will be experimenting with many architectural setups and noting all results including accuracy values, time to train, classification performance, etc.

## Notable Knowledge

While developing your models, feel free to use any of the previously presented notebook and code as a starting point. There is no need to re-create a data loader for CIFAR-10 since it has already been done (however, it is paramount that you know how it works because you will need to load custom datasets in later assignments). The following is a list of things that have been covered that will be of use while you are developing your own networks and training them:

- Data loading
- PyTorch *nn*-module
- Linear layers
- Convolutions and convolutional layers
- Dropout and Max-Pooling
- Utilizing GPU for training

## Results & Deliverables

Begin with your initial networks developed a few weeks prior with simple linear layers. After training and testing a fully-linear (fully-connected) networks, change the network architecture to include convolutional layers, which should boost the accuracy slightly. Modify the network a few more times by changing the network parameters (i.e. number of layers, layer parameters, hyperparameters, etc.) and keep track of the results for all changes. Deliver a 1-2 page document explaining each network that you trained and show the results for each network. Also make a few conclusions about why you think some networks performed better compared to others.