

CS-GY 6643 Project 2 Proposal

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Main Objective

The main goal is to implement the well-known "AlexNet" for image classification.

AlexNet is the name of a convolutional neural network designed by Alex Krizhevsky. It showed impressive accuracy in the *ImageNet Large Scale Visual Recognition Challenge* in 2012. The original [paper](#) is also one of the most influential in the field of computer vision. By reading the paper and implementing it, I can learn more about image classification, that is why I want to do this for project 2.

For the training data, I am planning to use a smaller subset of images in ImageNet. In the original paper, Krizhevsky mentioned that they used 1.2 million images for training (roughly 1000 images in each of 1000 categories). To shorten the training time, I am planning to use about 10,000 images (roughly 100 images in each of the 100 categories). If possible, I will try to feed more training data to the network and see how it scales.

The goal is to implement AlexNet without too much help from the libraries. In the project report I will justify the library functions I used and cite the sources (if any).

Libraries/Frameworks

For this project, I am planning to use Python and the following libraries

- `scikit-learn`: for data pre-processing
- `Matplotlib`: for reading images and making plots
- `TensorFlow`: for constructing the neural network

Deliverables

- A Jupyter Notebook with source code, comments, and plot.
- A project report that contains more detailed explanation (training data, sources, etc.)