<u>Final Group Project Proposal for Group 7</u>
<u>Yu Xi and Aaron Skipper</u>

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We choose to work on the classification of images, as it will further enhance our understanding of applying networks to general problems as such, that are applicable to provide insightful solutions to various practical problems arise in the world.

We will be utilizing the Natural Image dataset.  The dataset large enough to train a deep network, as it is 171MB containing 6899 images from 8 distinct classes.  The classes include airplane, car, cat, dog, flower, fruit, motorbike and person.

Convolution (CNN) network will be experimented with for the natural image dataset.  CNNs notoriously work well for classification problems.  We will experiment with the application of tuning parameters and filtering techniques to capture the effects of the network's accuracy and performance.  Pooling and normalization will be addressed. The number of total layers and which order of the layers, will be experimented with, as well as the number of features (kernels), and size of features (kernels).  We will evaluate for best accuracies and fastest time to process.

We will use Pytorch and Caffe frameworks to analyze the natural image dataset, to gain more efficiency in working with the platforms that were presented to us in class, also, understanding that the capabilities of the platforms lend for desired performance evaluation and handles large datasets with the use of GPU.

Performance accuracy will be analyzed for the natural image dataset by applying the loss error function, along with confusion matrix to evaluate the accuracy of the network's classifications, True positives (TP), false positives (FP), false negatives (FN), and true negatives (TN).  The networks accuracy for each class will be evaluated.

For references, we will use class lecture notes and examples.

Timeline for project completion is presented as follows:

April 8-11- data loading and preprocessing
April 12–18 – Apply Caffe platform for CNN network
April 19-24 – Apply pytorch for CNN network
April 24–26 – Summarize findings and results
April 26-29 – Presentation and report