**DS-GA 1016 Project Proposal - Object Recognition and Development**

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The aim for this project is to train an image classification model and analyze the learning process with or without noise added to the representation layer of the network.

We will use samples from the CIFAR-100 dataset to train our convolutional neural network. CIFAR-100 consists of 600 32x32 labeled color images for 100 classes each. The 100 classes are grouped into 20 superclasses (Krizhevsky et al., 2009). During training, we will study how our proposed algorithm learns the broad-to-specific differentiation between those images which resembles human’s cognitive development.

In addition to analyzing the coarse-to-fine pattern shown in the representation layer of the neural network, we also want to see how the model helps in understanding information with different degrees of random noise added to the data. To what extent does the model inform the specific-to-general deterioration progress in semantic dementia?

It is hoped that the representation of the learning process of our convolutional neural network will show a similar process as in human cognitive development in object recognition. With inclusion of noise, our model will help in understanding semantic dementia.

*Krizhevsky, A., Nair, V., & Hinton, G. (April 8, 2009). CIFAR-10. Canadian Institute for Advanced Research.* [*https://www.cs.toronto.edu/~kriz/cifar.html*](https://www.cs.toronto.edu/~kriz/cifar.html)