Final Project Proposal

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Project Topic: Testing various CNNs and Capsule Networks

In this topic, we propose to use the MNIST dataset (handwritten digits) to check if the Capsule Network performs better than the other popular CNN architectures like (Inception, ResNet, AlexNet, VGG16, VGG19, Custom CNN) on augmented testing data. We cannot use other popular datasets like CIFAR100, CIFAR10 as they are RGB colored, and training images of such high quality would take a lot of time. Training MNIST on Capsule Networks itself takes about 13 hours. We do not have the resources like GPU or other Cloud Platform credits which also may not be enough. The only experimentation done on Capsule Networks with colored data took ~38 hours on the best GPU GCP could provide. The augmentation of test data would be rotating input images, scaling, normalizing, flipping and manipulating pixels. The main motivation for this is that Capsule Networks are specifically designed to do well on images which have components which are location invariant. This is also one of the main disadvantages of CNNs.