Defense Announcement

Investigating Neural Networks with Memory Capacity to classify Images using small number of samples

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Despite recent breakthroughs in the applications of deep neural networks, “One-Shot Learning” remains a persistent challenge. Traditional neural networks require huge data to learn, often through extensive iterative training. The models must relearn their parameters to adequately incorporate the new information when new data is encountered without catastrophic interference. Architectures with augmented memory capacities offer the ability to quickly encode and retrieve new information and hence can potentially obviate the downsides of conventional models. This thesis work is focused on demonstrating the ability of a memory-augmented neural network to rapidly assimilate new data and leverage this data to make accurate predictions for multi-class classification after only a few samples. We compared the results of MANN with that of the AlexNet and a linear classifier (Logistic Regression) and MANN outperformed others given a small set of samples.