CSCM77 Lab Class 4

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This lab is about becoming familiar with deep-learning architectures designed for the purpose of pattern recognition and feature learning. We will be utilizing a library in Tensorflow called Keras to implement convolutional neural networks, region-proposal networks and recurrent neural networks. You will be provided with some example data on which you can practice classification.

Again, a Jupyter notebook is provided for you to work through the lab material. A demo dataset is also provided on Blackboard.

☐ Task 4.1

Run the notebook and understand the concepts covered. Explore the use of different network architectures and the learning of feature descriptors.

1. Download and study the new Jupyter Notebook and the demo data.
2. Run through the cells of `CVDL_Student_Lab4_DeepLearning.ipynb`.
3. This lab will let us train several fundamental types of deep-learning architecture that may be applied to classification problems:
   (a) neural networks (NNs)
   (b) convolutional neural networks (CNNs)
   (c) recurrent neural networks (RNNs)
   (d) long-short-term-memory networks (LSTMs)
4. Train and evaluate the performance of the various architectures on the given MNIST dataset.