

# ELEC 475 Lab 1, Alistair Barfoot and Luke Barry

## 1 Model Details

The model used for this lab was an simple Multi-Layer Perceptron (MLP) autoencoder. This network takes in an image, encodes it using the model, and then decodes it. The resultant image is a compressed version of the original image.

MLP consists of a network of artificial neurons organized in layers and connected between layers via a learnable weight. In the case of the encoder, there is one neuron for each pixel in the input image (in this case, that would be  $28 \times 28 = 784$ ). At each layer, the amount of neurons halves until reaching the final value known as the "bottleneck number". This model used a bottleneck number of 8.

In the case of the decoder, the same process is used, but in reverse. The number of artificial neurons starts at the bottleneck number, doubling at each layer until reaching enough neurons for each pixel in the image.

## 2 Training Details

For the training process, we used an Adam optimizer with a learning rate of 0.001 and a weight decay of 0.00001. The model was trained with a batch size of 2048 and for 50 epochs.

## 3 Results