Assignment-1:

1. Generate all possible boolean functions for 'n' inputs where $n \in \{1,2,3,4\}$.

2. How many of these functions are learnable by a L-layer ANN for $L \in \{1,2,3,4\}$

3. Implement the backpropagation algorithm for an L-layer ANN.

4. Train your ANN for classification of handwritten images of the MNIST dataset (0-9). Choose the number of layers and neurons accordingly.

5. Consider the same MNIST dataset to build a tree-type growing neural network. Each node learns a small neural network that tries to classify samples correctly. Child nodes are added to correct for misclassified samples. Plot the loss functions and accuracies for training, validation, and test as the network grows.