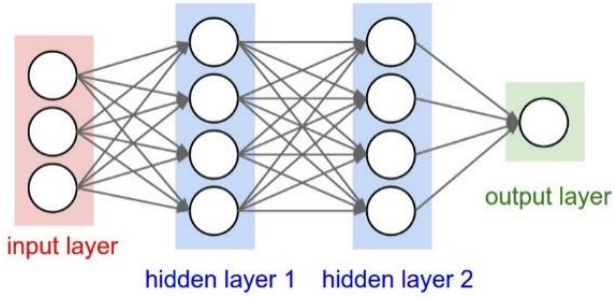
1. Briefly describe the following approaches with examples 1) Genetic algorithm, 2) KBANN, 3) Principal Component Analysis, 4) Decision tree, 5) Bayesian learning.
2. Compare and contrast batch gradient descent and mini-batch gradient descent algorithms. In addition, write their algorithmic steps for the training phase.
3. Briefly explain the situations where a polynomial regression model either overfits or underfits the data. Also discuss any two regularization strategies used to control overfitting in Machine Learning models.
4. Let a Neural Network has 4 layers with ReLU activation functions for hidden layers and sigmoid activation function for the output layer.



   Present the forward propagation and backpropagation processes of the above neural network with mathematical notations.
5. What are the requirements of having Recurrent Neural Networks (RNN) in comparison to regular Feed Forward Neural Networks? Illustrate a single layer RNN with weights, biases and activation functions.
6. Mention and briefly discuss any two major reasons behind the success of Deep Learning in recent years. Describe any two situations where Deep Learning is not required for solving a Machine learning problem.