CECS 551
Assignment 4
Total: 35 Points

General Instruction

- Submit uncompressed file(s) in the Dropbox folder via BeachBoard (Not email).

---

1. Design a neural network and test regularization methods using `keras` library.
   (a) Find `Assignment_4_regularization.ipynb` and `data.mat`.
   (b) (10 points) Design a neural network and implement it.
      - `train_X` and `test_X` have two features x_1 and x_2.
      - `train_y` and `test_y` includes the classes of (x_1, x_2), 0 or 1.
      - The objective of the network is classifying (x_1, x_2) as 0 or 1.
      - Use the cross-entropy loss function.
      - You should have your own design of the network to maximize classification accuracy.
   (c) (10 points) Implement a function to draw decision boundary based on training data set between two classes. You can refer *this site*.
   (d) (10 points) Implement L_2 and dropout regularization and tune the hyper-parameters to get higher test accuracy.
   (e) (5 points) Compare the decision boundaries between non-regularization and each regularization.

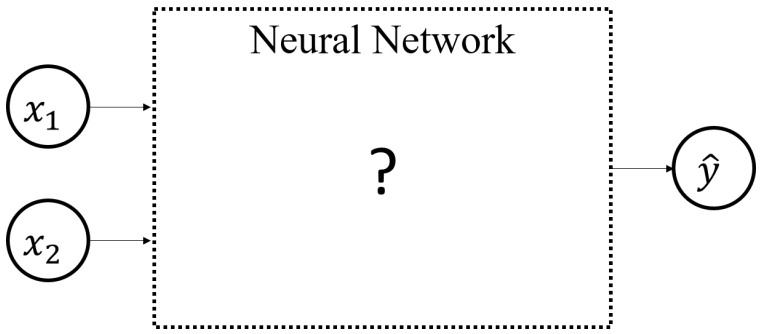

Figure 1: network design