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) (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 can choose your own width and number of units.

    (b) (10 points) Implement a function to draw decision boundary based on training data set between two classes.

    (c) (10 points) Implement L_2 and dropout regularization and tune the hyper-parameters to get higher test accuracy.

    (d) (5 points) Compare the decision boundaries between non-regularization and each regularization.
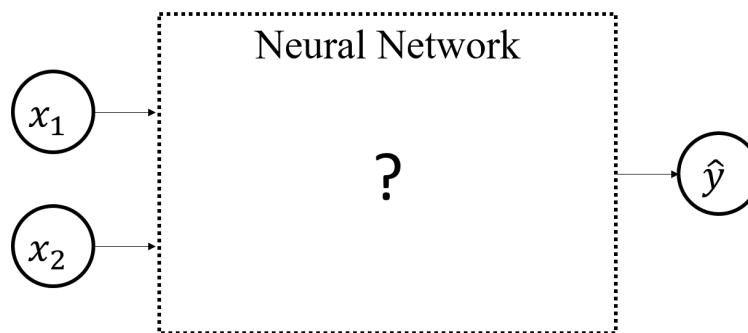

Figure 1: network design