CECS 551
Assignment 4
Total: 25 Points

General Instruction

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

1. Design a neural network and test regularization methods using `Keras` library.

    (a) Find `Assignment_4_regularization.ipynb` and `data.mat`.

    (b) (5 points) Design your own neural network and implement it.

    - Intentionally, consider a complex network with high epochs to build a over-fitted non-linear decision boundary similar to Figure 1.
    - `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.

    (c) (5 points) Add L_2 regularization to the baseline model.

    (d) (5 points) Add Dropout regularization to the baseline model.

    (e) (5 points) Draw decision boundaries of the baseline model, the model with L_2, and the model with Dropout. You can refer *this site*.

    (f) (5 points) Compare the accuracy between models.
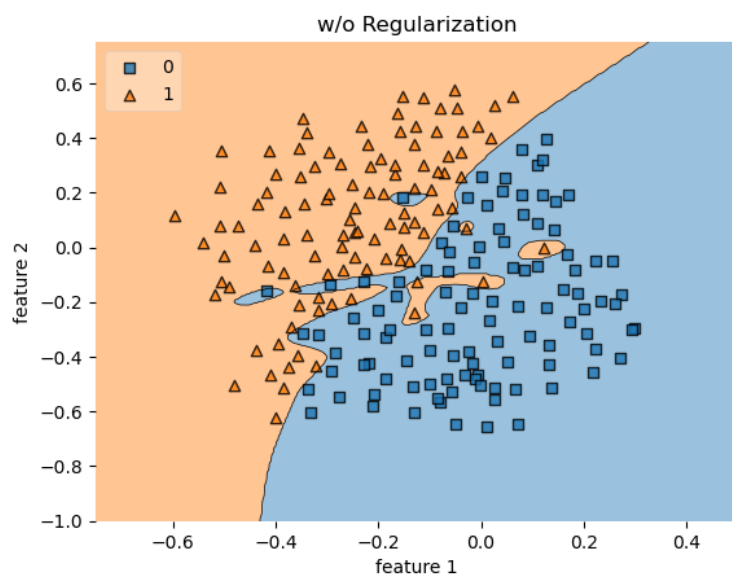
    (g) Submit your `Assignment_4_regularization.ipynb` file.

Figure 1: Highly non-linear decision boundary