

Computational Intelligence Report

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Semester 1, M.Sc. Computer Science

Dataset Introduction

Name : Hayes-Roth Data Set

Source : UCI machine Learning Repository

This is the link: <https://archive.ics.uci.edu/ml/datasets/Hayes-Roth>.

Attributes

Total **5** attributes

1 class label

4 attributes

Rows

There are total 132 instances

Neural Network

Layers in neural network in the project

With 2 hidden layers

Hyperparameters

1. First layer had 4 hidden units
2. Second layer had 3 hidden units

Activation functions used

1. Sigmoid :

$$\sigma(z) = \frac{1}{1 + e^{-(z)}}$$

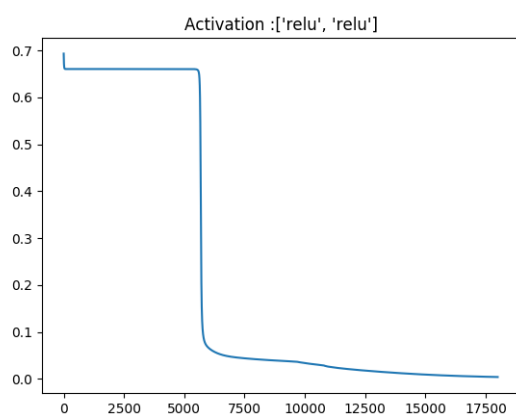
2. tanh :

$$\frac{e^z + e^{-z}}{e^z - e^{-z}}$$

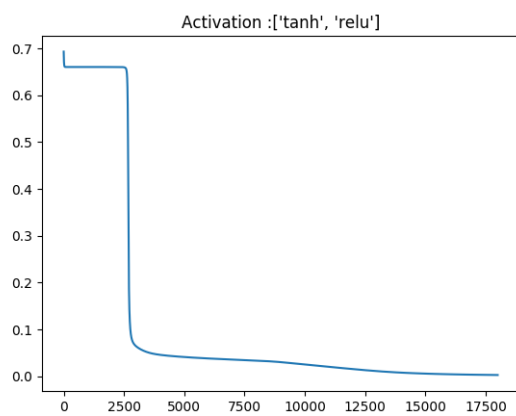
3. ReLu(Rectified Linear Unit)

$$\max 0, Z$$

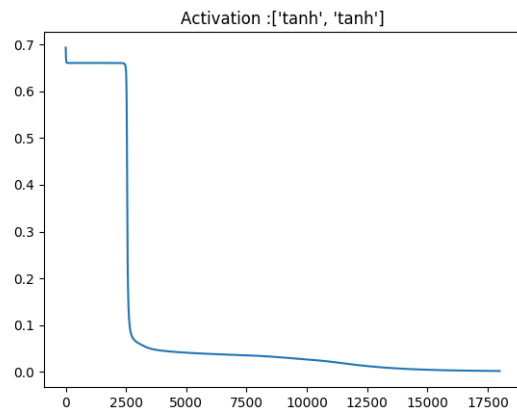
Accuracy = 100%, ReLu-ReLu



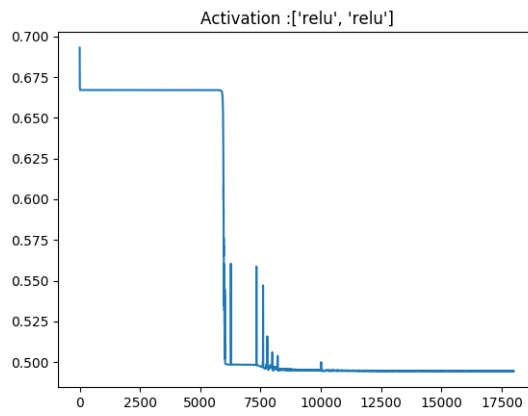
Accuracy = 100%, Tanh-Relu



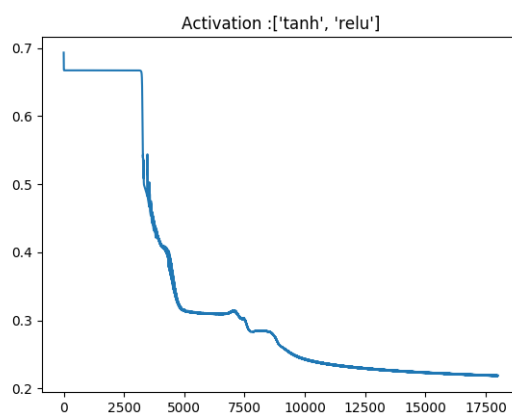
Accuracy = 100%, Tanh-Tanh



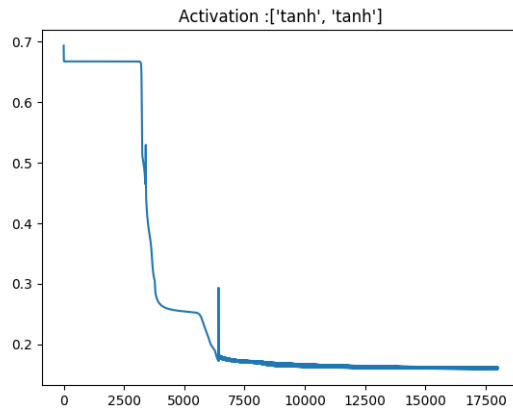
Accuracy = 71%, ReLu-ReLu



Accuracy = 87%, Tanh-Relu



Accuracy = 90%, Tanh-Tanh



Comparison between LogisticRegression and Neural network built so far

On Breast Cancer

Accuracy: 95.95% By LogisticRegression

Accuracy: 100% By Neural Network

Comparison between Neural with 1 and 2 hidden layers

Accuracy: 99% By 1 layer NN.

Accuracy: 100% By 2 layer NN.