PROGRESS REPORT 5

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Subsystem: Coding

Date of Submission: 02/05/2021

Reporting Progress from: 19/04/2021 To 02/05/2021

Progress:

Machine Learning

1) Completed Week 1-3 of "Machine Learning" course by Andrew Ng on Coursera

2) Learnt concepts of:

   a) Linear Regression
      i) Data Loading
      ii) Cost Function
      iii) Gradient Descent
      iv) Feature Normalization
      v) Data Plotting and Visualization
      vi) Normal Equation Method
      vii) Vector Implementation

   b) Logistic Regression
      i) Binary Classification Problem
      ii) Sigmoid Squish-ification function.
      iii) Cost Function of Binary Classification Problem
      iv) Gradient Function of Binary Classification Problem
      v) fminunc (Function to Minimise Cost Function Unconstrained)
      vi) Multiple Classification Problem using One vs All Technique.
      vii) Feature Regularization and consequently its Cost Function and Gradient Descent.

3) The code for the above exercises has been duly completed, verified by the Coursera auto grader and added to the github repository.

Python

1) Implemented Linear and Logistic Regression of Python, although I plan to update the code with following features:
   a) Data to be picked from CSV files using pandas
   b) Feature Normalization
   c) Normal Equation Method

2) All of the above mentioned work on Python was completed on Jupyter Notebook and code has been pushed to github.

Goals for Next Week

1) Implement the above mentioned changes to Python Code
2) Complete Week 4 of “Machine Learning” Course by Andrew Ng
3) Start “Modern Robotics” Week 1 by Northwestern University
4) Implement Linear and Logistic Regression from Boston Datasets

Issues faced:

1) Getting used to the NumPy and Pandas and Jupyter Notebook
2) Gradient Descent for Logistic Regression returns NaN values causing the cost function to behave erratically.