

**Odd Semester 2017-2018**  
**Programming Assignment**  
**CS401-Introduction to Machine Learning**  
**CS806-Machine Learning**

**Date: 10/11/2017**

**Regression Tasks:**

**Dataset 1:**

- (a) Univariate data
- (b) Bivariate data

**Models to be built:**

1. Linear model for regression
2. MLFFNN based regressor

**Results:**

- (1) Scatter plot with target output on x-axis and model output on y-axis, for training data, validation data and test data
- (2) Comparison of MLFFNN with linear model for regression
- (3) Plot of the desired function and the actual function for the training data, validation data and test data

**Classification Tasks:**

**Dataset 2:** 2-dimensional artificial data of 3 or 4 classes:

- (a) Linearly separable data set
- (b) Nonlinearly separable data set
- (c) Overlapping data set

**Models to be built:**

1. Perceptron based classifier for Dataset 2(a)
2. MLFFNN based classifier for Dataset 2(a), 2(b), and 2(c)
3. SVM based classifier for Dataset 2(a), 2(b) and 2(c)

**Results:**

- (1) Decision region plots with training data superimposed
- (2) Classification accuracy tables for all datasets
- (3) Confusion matrices for all datasets

**Report should also include your observations about the performance and the nature of decision surface for each classifier, and for each dataset.**

**The report should be submitted in PDF form only. Submit your code and report strictly as one zip file by sending a mail to [veenat@nitgoa.ac.in](mailto:veenat@nitgoa.ac.in). Name the zip file as Group<num>\_Assignment.zip. Eg. Group01\_Assignment.zip**

**Deadline for submission of report: 5.00PM, Friday 24<sup>th</sup> November 2017**