

Indian Institute of Technology Madras

Web MTech Industrial AI

ID5002W: Industrial AI Lab

Assignment IV: Decision Trees and variants

Instructions

1. Assignment shall be submitted before the due date. Late submissions will not be entertained. If you cannot submit the assignment due to some reasons, please contact the instructor by email.
2. All the assignments must be the student's own work. The students are encouraged to discuss or consult friends or classmates. However, they have to submit their own work. Any malpractice will be reported to the authorities and actions will be taken as per the IIT Madras rules.
3. If you find the solution in the book or article or on the website, please indicate the reference in the solution.

Problem

Please use the dataset provided for this assignment. You have to work only with the file with your roll number specified on it. The feature columns are x_0 , x_1 , x_2 , ..., and the class column is y .

- Q1 Classify the dataset using Logistic regression. Also implement the LDA and QDA and find the model performance. [2 marks]
- Q2 Use the **Decision tree classifier** to classify the given dataset. Tune the model and identify the optimal hyperparameters. [3 marks]
- Q3 Classify the dataset using **Bagging Classifier** and **Random Forest classifier** models. Tune the model for the best hyperparameters. [3 marks]
- Q4 Compare the models and elaborate on your findings [2 marks]