Indian Institute of Technology Madras

Web MTech Industrial AI

ID5002W: Industrial AI Lab

Assignment VI: Support Vector Machines and Neural Networks

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

Q1 Use the dataset provided for classification in assignment IV.

(a) Build and train Support Vector Machine (SVM) classifiers for the given task of classification. Train two models, one with the 'polynomial' kernel and the other one with 'rbf' kernel. For the polynomial kernel, the choice of degree has to come from hyper-parameter optimization. Compare the model's performance on the basis of accuracy and ROC-AUC metrics[Marks: 5]

(b) Train a neural network model for the same task of classification. Report its performance [Marks: 5]

(c) (Optional) Train the above-mentioned neural network model with comparatively less over-fitting. (Hint: Use drop-out layers (or) early call back)