Indian Institute of Technology Madras

ID5055 Foundations of Machine learning

Tutorial VIII

Due date: 11:59 pm, October 21, 2023

Instruction

1. Assignment shall be submitted on 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 collaborate or consult friends. In the case of collaborative work, please write every student's name on the submitted solution.
3. If you find the solution in the book or article or on the website, please indicate the reference in the solutions.

Problems

Note: Refer to the tutorial notebook for details. Write your code in the cells mentioned. Please ensure your notebook runs correctly without errors when using **Kernel → Restart & Run All**

1. [Linear Regression & Linear Discriminant Analysis]
   As part of this tutorial you are supposed to use LDA and LR implementations in `sklearn` library and then carry out model fitting on datasets 5 and 6 as provided below. Both the datasets have already been split into train and test sets (can be done by running corresponding cells). On each of these datasets, fit both models on the train set and report classification statistics on the test set using `sklearn.metrics.classification_report`.
2. [Optional - 3d Decision Boundary]
   Using the `mpl_toolkits.mplot3d` module attempt to plot a decision boundary for 3d datasets (Dataset 5 and 6).
3. [Optional - Quadratic Discriminant Analysis]
   Using the `QuadraticDiscriminantAnalysis` function in `sklearn.discriminant_analysis` module, attempt to do QDA on the 2D datasets (Datasets 1 to 4) and visualize the decision boundary for the same.