

M.Tech DS 2021-22(Odd)
First Semester – 2021-23 (Batch)
21DS602- Machine Learning
Assignment -2 – Evaluation -7 Feature Dimension Reduction Using Singular Value
Decomposition (SVD) and Classification Using Logistic Regression

28.12.2021.

Submission/Evaluation Date: 10.01.2022

Total Marks: 30 marks

Everyone must submit the ipython notebook with your roll number as file name.

Submission Link: https://amritavishwavidyapeetham-my.sharepoint.com/:f/g/personal/v_sowmya_cb_amrita_edu/EkfRDrZpvjtMtda9fWLX2MEByGBH9TgWtlJjQ1QzRQY8LA

Implement the following.

1. For the MNIST dataset, apply the feature reduction using singular value decomposition (SVD). (8 marks)
2. Classify the dataset using logistic regression before applying the feature reduction. (3 marks)
3. Classify the dataset using logistic regression after applying the feature reduction using SVD. (4 marks)
4. Find the optimal feature dimension based on the accuracy. (7 marks)
5. For the optimal feature dimension, evaluate the model before and after applying the feature dimension based on Precision, Recall and F1-Score for each class. (8 marks)

This evaluation aims at:

CO1: To understand the concepts behind machine learning algorithms.

CO2: To implement machine learning algorithms in Matlab/Python.

CO3: To evaluate the machine learning models.