Support Vector Machines-1

Assignment Questions

PW SKILLS

Q1. What is the mathematical formula for a linear SVM?

Q2. What is the objective function of a linear SVM?

Q3. What is the kernel trick in SVM?

Q4. What is the role of support vectors in SVM Explain with example

Q5. Illustrate with examples and graphs of Hyperplane, Marginal plane, Soft margin and Hard margin in SVM?

Q6. SVM Implementation through Iris dataset.

- **Load the iris dataset from the scikit-learn library and split it into a training set and a testing set.**
- **Train a linear SVM classifier on the training set and predict the labels for the testing set.**
- **Compute the accuracy of the model on the testing set.**
- **Plot the decision boundaries of the trained model using two of the features.**
- **Try different values of the regularisation parameter C and see how it affects the performance of the model.**

Bonus task: Implement a linear SVM classifier from scratch using Python and compare its performance with the scikit-learn implementation.

Note: *Create your assignment in Jupyter notebook and upload it to GitHub & share that github repository link through your dashboard. Make sure the repository is public.*