## Final Year Report (worked so far)

## SVM Model

1. Dry Bean Dataset Analysis
2. Data Collection: Acquired the dry bean dataset.
3. Data Preprocessing: Conducted thorough preprocessing to clean and prepare the dataset for analysis.
4. Exploratory Data Analysis: Utilized various visualization techniques to uncover insights and identify trends within the dataset.
5. Model Selection: Employed Support Vector Machine (SVM) algorithm for classification tasks.
6. Model Evaluation: Assessed model performance using metrics such as F1 score and confusion matrix.
7. Initial Accuracy: Achieved an accuracy range of 60-70% with the SVM model.
8. Hyperparameter Tuning: Adjusted hyperparameters of the SVM algorithm to enhance model performance.
9. Improved Accuracy: Enhanced accuracy to 91-92% by optimizing hyperparameters through manual tuning and Grid Search.
10. Documentation: Recorded results, including hyperparameters and corresponding accuracies, in an Excel file, timestamped for reference.

## Artificial Neural Network (ANN) Model Integration

1. Data Input: Utilized results from the SVM model, including hyperparameters and accuracies, for further analysis.
2. Data Standardization: Standardized the dataset to ensure uniformity and compatibility for ANN training.
3. Model Architecture: Developed a multi-layer ANN with three distinct layers for training.
4. Training Process: Implemented training procedures to optimize the ANN model for classification tasks.
5. Current Status: Despite efforts, the ANN model's accuracy remains low, prompting ongoing refinement and optimization efforts.