

## MINI PROJECT

- **Manual Least Squares (Simple Linear Regression)**

- Implemented manually using one feature.
- Used to demonstrate regression and threshold-based classification.
- **Accuracy:** 0.8538

- **Perceptron (Full Features)**

- Uses all 30 breast cancer features after standard scaling.
- **Accuracy:** 0.9825

- **Support Vector Machine (SVM)**

- Kernel: `rbf`
- Tuned using `GridSearchCV` over `C` and `gamma`.
- **Best Params:** `C=10`, `gamma=0.01`
- **Accuracy:** 0.9825

- **PCA + Perceptron**

- PCA reduced dataset to 2D and 3D for visualization.
- Then a Perceptron trained on 2D PCA-transformed data.
- **Accuracy:** 0.9357

- **Logistic Regression (Full Features)**

- Baseline classifier using all features.
- **Accuracy:** 0.9883