AI & Machine Learning Projects Portfolio

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This document presents a collection of end-to-end Machine Learning projects developed as part of academic learning and practical implementation. Each project follows a complete ML lifecycle including data preprocessing, feature engineering, model building, evaluation, and deployment readiness.

Customer Churn Prediction

- Objective: Predict customer churn using demographic and service data.
- Models Used: Decision Tree, Random Forest.
- Evaluation: Accuracy, Confusion Matrix, ROC-AUC.
- Result: Random Forest achieved superior generalization performance.

Diabetes Prediction

- Objective: Predict diabetes using clinical health parameters.
- Model Used: Support Vector Classifier (SVC).
- Evaluation: Accuracy, ROC-AUC.
- Result: Achieved reliable classification performance.

Heart Disease Prediction

- Objective: Classify patients based on heart disease risk.
- Model Used: Logistic Regression.
- Evaluation: Accuracy, Confusion Matrix.
- Result: Provided interpretable and consistent predictions.

Loan Status Prediction

- Objective: Predict loan approval based on financial details.
- Model Used: Support Vector Classifier (SVC).
- Evaluation: Accuracy, ROC-AUC.
- Result: Successfully classified loan approval outcomes.

Movie Recommendation System

- Objective: Recommend movies based on content similarity.
- Technique Used: TF-IDF Vectorization and Cosine Similarity.
- Result: Generated personalized movie recommendations.

Spam Mail Prediction

- Objective: Classify messages as Spam or Ham using NLP.
- Model Used: Logistic Regression.
- Evaluation: Accuracy, Precision, Recall.
- Result: High performance in spam detection tasks.

Technologies Used:

- Python
- NumPy
- Pandas
- Scikit-learn
- Matplotlib
- Natural Language Processing (TF-IDF)
- Jupyter Notebook