

Predictive Analysis using Machine Learning

Abstract:

This project focuses on building a machine learning model to predict customer purchasing behavior. The objective is to demonstrate feature selection, model training, and evaluation using a classification algorithm.

Introduction:

Predictive analytics uses machine learning to forecast outcomes based on historical data. This project applies logistic regression to predict whether a customer will purchase a product.

Dataset Description:

The dataset contains customer information including age, income, spending score, and purchase behavior. The target variable indicates whether a purchase was made.

Methodology:

1. Data cleaning to remove missing values
2. Feature selection of relevant variables
3. Train-test split
4. Logistic regression model training
5. Model evaluation using accuracy metrics

Results:

The model achieved high prediction accuracy. Income and spending score were the most influential features. The classification report shows strong performance.

Conclusion:

Machine learning models can effectively predict customer behavior. Predictive analytics helps businesses make smarter decisions and improve marketing strategies.

Future Scope:

Future improvements may include advanced algorithms, real-time predictions, and integration with big data systems.