HR Analytics - Predict Employee Attrition

Introduction

This project focuses on predicting employee attrition using HR analytics techniques. As a fresher, I have applied analytical methods and machine learning models to understand key factors influencing employee resignation.

Abstract

The aim of this project is to analyze HR data to identify the main causes of employee attrition and predict future resignation risks. By leveraging data analytics, machine learning models, and visualization tools, the project provides insights for attrition prevention.

Tools Used

- Python (Pandas, Seaborn, Scikit-learn, SHAP)
- Power BI (Dashboard creation and visualization)
- Joblib (Model saving and loading)

Steps Involved in Building the Project

- Performed Exploratory Data Analysis (EDA) to study attrition patterns across departments, job roles, and income levels.
- Preprocessed data by handling categorical variables and missing values.
- Built classification models such as Logistic Regression and Decision Tree.
- Evaluated model performance using accuracy score, confusion matrix, and classification report.
- Performed SHAP value analysis to explain model predictions.
- Designed a Power BI dashboard to visualize attrition factors and key insights.

Conclusion

This project helped me understand how HR analytics can be applied to predict employee attrition. Through data-driven insights, organizations can identify risk factors, improve employee satisfaction, and take preventive actions to reduce attrition rates.