HR Analytics - Predict Employee Attrition

Introduction

This HR Analytics project focuses on predicting employee attrition using real-world employee data. It aims to help HR teams proactively identify at-risk employees, understand reasons behind attrition, and strategic retention plans. The project involves data cleaning, exploratory data analysis, visualization, and predictive modeling.

Abstract

Employee attrition is a key concern for organizations aiming to retain top talent. This project analyzes historical HR data to uncover patterns related to attrition. Using tools like Python and Power BI, we built predictive models and dashboards to support data-driven HR decisions.

Tools Used

- Python (Pandas, NumPy, Matplotlib, Seaborn, scikit-learn)
- Power BI
- Jupyter Notebook
- CSV Dataset (HR data)

Steps Involved in Building the Project

1. Data Collection: Loaded HR dataset (CSV format).
2. Data Cleaning: Removed null values, converted numerical flags (e.g., Gender, Attrition) to text.
3. Exploratory Data Analysis (EDA): Analyzed employee demographics, job satisfaction, attrition status.
4. Feature Engineering: Created new fields like Age Group, Departmental categories.
5. Visualization: Built Power BI dashboard to show Resigned vs Active employees, Attrition Rate, Age & Department analysis.
6. Modeling: Developed basic machine learning model to classify and predict attrition risk.

Conclusion

The project provided clear visibility into factors affecting employee attrition. The Power BI dashboard helps HR departments monitor trends and support strategic decisions. This predictive model can assist HR teams in identifying potential attrition early and developing retention strategies.