

Employee Turnover Analytics

Project Write-Up

Project Overview :-

Portobello Tech hires many employees across different roles and departments. Over time, some employees leave the company. This project focuses on predicting which employees are likely to leave based on various work-related factors. Predicting employee turnover helps the HR department take early actions to improve employee satisfaction and reduce attrition.

Objective :-

The main objective of this project is to build a machine learning model that predicts employee turnover using historical HR data.

Dataset Description :-

The dataset contains information about employees, including :-

- Number of projects worked on
- Average monthly working hours
- Time spent in the company (in years)
- Number of promotions in the last 5 years
- Salary level (low, medium, high)
- Job satisfaction score
- Whether the employee has left the company (target variable)

Steps Involved :-

1. Data Understanding and Cleaning :-

Load the dataset, check for missing values, and clean the data to make it suitable for analysis

2. Exploratory Data Analysis (EDA) :-

Analyze patterns and relationships among variables such as satisfaction level, working hours, and turnover rate.

3. Feature Engineering :-

Convert categorical variables (like salary) into numerical form and standardize numerical columns for modeling.

4. Model Building :-

Apply various machine learning techniques, such as :

- Logistic Regression
- Random Forest Classifier
- Support Vector Machine (SVM)
- Ensemble models (Voting Classifier)

5. Model Evaluation :-

Evaluate model performance using accuracy, precision, recall, F1-score, and confusion matrix to find the best model for predicting turnover.

6. Insights and Recommendations :-

Identify key factors that influence employee turnover, such as low satisfaction or high working hours, and suggest HR interventions.

Conclusion :-

With this predictive model, Portobello Tech can proactively manage employee retention. The analysis can help HR identify employees at risk of leaving and take preventive measures like improving workload balance, salary revisions, or timely promotions.