Employee Attrition Prediction and Salary Analysis

A Machine Learning Based HR Decision Support System

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Abstract

This project presents a comprehensive machine learning pipeline that integrates classification and regression techniques to address employee attrition and salary prediction. The objective is to assist HR departments in making data-driven decisions to reduce turnover and improve financial planning.

Introduction

Employee attrition is a significant challenge, resulting in high costs related to recruitment, training, and lost productivity. This report outlines an end-to-end analysis of employee attrition prediction and salary forecasting using machine learning.

Problem Statement

Organizations need to understand attrition causes, predict which employees are likely to leave, estimate financial losses from turnover, and develop effective, data-driven retention strategies.

Objectives

Develop accurate attrition prediction models, simulate realistic salary growth, identify high and low attrition risk groups, estimate potential financial loss, and provide actionable insights.

Methodology

The methodology includes data preprocessing, machine learning pipeline construction, and performance evaluation.

Results

Random Forest and Gradient Boosting were top performers for classification and regression tasks respectively. Key features affecting attrition include Overtime and YearsAtCompany.

Strategic Recommendations

Focus on high-risk employees, tailor pay and benefits, introduce wellness programs, and align bonuses with performance.

Conclusion

This study successfully demonstrates how machine learning can support HR departments in managing attrition and salary forecasting with actionable insights.

Contributions

Vinay - 40%, Kundan - 17.5%, Harsha Sree - 17.5%, Daya - 12.5%, Rithvik - 12.5%

References

Include all references used in the report following appropriate citation format.