

Attrition Prediction Model

Capstone Project

Overview

This project aims to analyze employee attrition within an organization and develop predictive models to identify factors contributing to employee turnover. By leveraging machine learning techniques, we seek to gain insights into the underlying causes of attrition and provide recommendations to mitigate its impact on organizational performance.

Problem

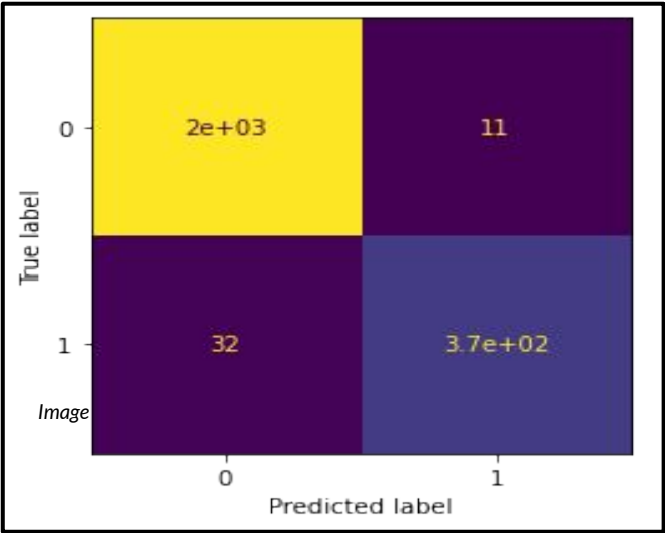
Employee attrition poses significant challenges for organizations, leading to increased recruitment costs, loss of expertise, and reduced productivity. Identifying the factors driving attrition and implementing effective retention strategies are crucial for maintaining a stable and engaged workforce.

Solution

Using machine learning algorithms such as Random Forest, logistic regression, and gradient boosting, we analyzed historical employee data to uncover patterns and relationships associated with attrition.

Details

- Satisfaction level was higher for employees who stayed, indicating its importance as a retention factor.
- Employees who left had higher numbers of projects and average monthly hours, suggesting potential overwork and dissatisfaction.
- Low salary types constituted 60% of employees who left, highlighting the importance of fair compensation.
- No attritions were observed for employees with a tenure of more than 6 years, indicating potential retention strategies for long-term employees.
- There was no significant correlation between promotion in the last 5 years and attrition, suggesting the need for a review of promotion practices.
- The model predictions yielded impressive results, with accuracy at 98.21%, precision at 91.96%, **recall at 97.08%**, and an F1 score of 94.45%.
- **High Recall suggests that high proportion of actual positives were identified correctly**



Alt-text: Distribution of the final prediction by the model on the test data.

Next Steps

Promotion Practices: Evaluate promotion practices to ensure fairness and transparency. Implement measures to motivate employees and reduce attrition through transparent and merit-based promotion practices.

Management Practices: Assess management practices related to performance evaluation and recognition. Ensure employees feel adequately recognized and rewarded for their contributions, while avoiding bias towards overworking employees.