Product Development

Handling Employee Attrition

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Abstract

In the realm of human resources management, the challenge of employee attrition poses a significant obstacle to organizational stability and productivity. This project aims to address this issue by developing an Employee Attrition Prediction System (EAPS). Leveraging datasets encompassing employee demographics, job characteristics, and historical attrition records, alongside machine learning models such as logistic regression and random forest, the EAPS accurately identifies factors contributing to attrition and forecasts the likelihood of employee turnover. Statistical analysis reveals that salary emerges as the predominant factor influencing attrition. By analyzing variables such as work-life balance, job satisfaction, and compensation, the system provides actionable insights to HR professionals, enabling them to implement targeted retention strategies. During the model selection phase, Support Vector Machine (SVM) was also tested but did not perform as effectively, primarily due to its sensitivity to large feature sets and less effective handling of noise within the class labels in this specific context.

Background Information

The research delves into how competitive pay packages can significantly influence whether employees choose to stay with a company or seek opportunities elsewhere , aspects of compensation, such as salary, bonuses, benefits, and incentives, and how these factors contribute to employee satisfaction and long-term commitment to an organization. [1]

The study is likely to examine how leadership styles, management practices, and the quality of the relationship between employees and their supervisors impact an organization's ability to retain its workforce. It may also touch on the significance of leadership development programs in improving retention rates.[2]

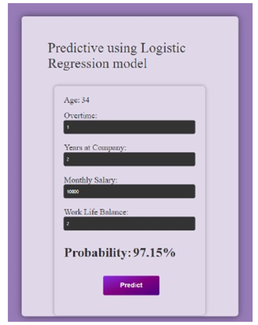
Research highlights the significant financial implications of employee turnover for organizations. It uses Fuzzy inference for finding strategies for reducing attrition, which could encompass best practices in recruitment, onboarding, and talent development to mitigate the financial impact of high employee turnover rates.[3]

The focus on the role of training and development programs in improving employee satisfaction and, consequently, their retention. The paper may delve into various aspects of professional growth, skill development, and how companies can invest in their employees to keep them engaged and loyal.[4]

Results and Conclusion

Our primary attrition prediction model, Logistic Regression, achieves high precision and balances specificity and sensitivity. With reasonable discrimination ability, it offers interpretability crucial for identifying influential factors, aligning perfectly with our goal of reducing attrition and retaining valuable employees.

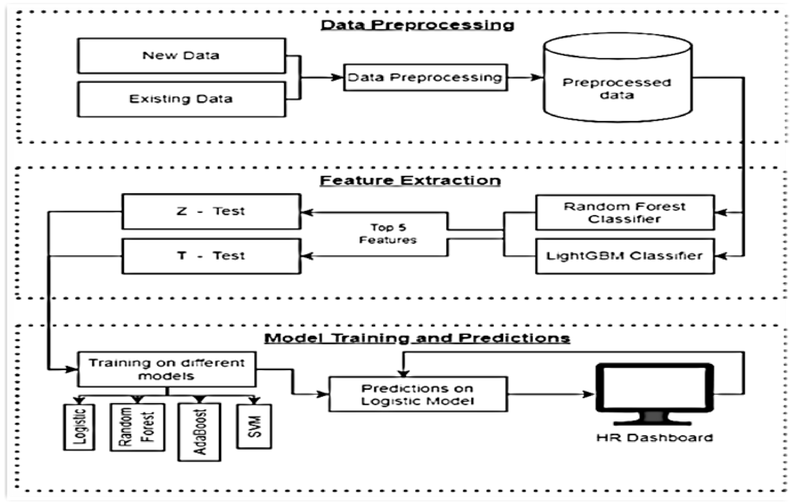
Model	Accuracy	Precision	CV Score	Sensitivity	Specificity	ROC Score
Adaboost Model	85.90	67.8	83.769	33.522	96.717	0.6512
Logistic Model	**83.57**	**88.8**	**83.479**	**4.5454**	**99.882**	**0.5221**
Random Forest	100	100	83.479	100	100	1.0000
SVM	82.89	NaN	82.896	0.00	100.00	0.500



Introduction

Employee attrition is a major challenge that affects organizational stability and productivity by increasing turnover costs and causing the loss of skilled staff. To address this issue, our project developed the Employee Attrition Prediction System (EAPS). This innovative system analyzes extensive datasets including employee demographics, job characteristics, and historical turnover records to identify key factors influencing employee departure. Our findings pinpoint salary as a critical determinant, along with other factors such as work-life balance and job satisfaction. The EAPS provides HR professionals with actionable insights, enabling them to proactively implement strategies that improve retention, thereby enhancing overall organizational health and stability.

Methodology



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