

Executive summary templates

The model enables HR teams to proactively identify employees likely to leave and take data-driven steps to improve satisfaction, workload balance, and retention.

Title: Employee Attrition Prediction

Subtitle: Using Machine Learning to Identify Key Turnover Drivers

Overview

Employee attrition is a major concern for organizations, impacting productivity, morale, and costs. This project applies data analytics and machine learning to predict whether an employee is likely to leave the company based on factors like satisfaction, workload, and tenure.

Objective

Develop predictive models to identify employees at risk of leaving. Understand which factors most strongly influence attrition. Provide actionable insights for HR to improve retention and employee satisfaction.

Results

Three models were tested:

1. **Logistic Regression (Baseline):** Accuracy = **83.4%**
 2. **Balanced Logistic Regression:** Improved recall but reduced overall accuracy (**78.2%**)
 3. **Random Forest (Final Model):** Accuracy = **98.1%**, balanced precision and recall
- Key Insights:**
4. Low **satisfaction level**, high **workload**, and long **tenure without promotion** are major attrition drivers. Salary and department have smaller impacts.
- Top features:** satisfaction level, number of projects, time spent at company, and average monthly hours.
- Interpretation:**
- The Random Forest model outperformed others, offering both high accuracy and interpretability for HR decision-making.

Next Steps

Integrate the model into an HR analytics dashboard to monitor at-risk employees.
Conduct quarterly model re-evaluations to ensure fairness and accuracy.
Expand the dataset to include engagement and performance metrics for richer insights.
Use findings to design targeted retention and wellness programs.