Predicting Employee Attrition

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The Impact Of Employee Attrition

- Increased onboarding costs

- Loss of organizational knowledge

- Decreased employee morale

- Disruption of workflow

- Reduced organizational effectiveness

Project Goals

- Building predictive models capable of predicting turnover

- Selecting the best model based on performance

- Ensuring the model remains effective on unseen data

HR Employee Attrition Dataset

- Sourced from Kaggle.com
- 1470 employee records and 35 features
- Includes features relating to employee:
    - Demographics
    - Marital Status
    - Job role
    - History at the Company
    - Compensation
    - Attrition

Model-Building Methodology

1. Data Exploration

2. Data Splitting & Processing

3. Model Training & Tuning: Logistic Regression

4. Model Training & Tuning: Decision Trees
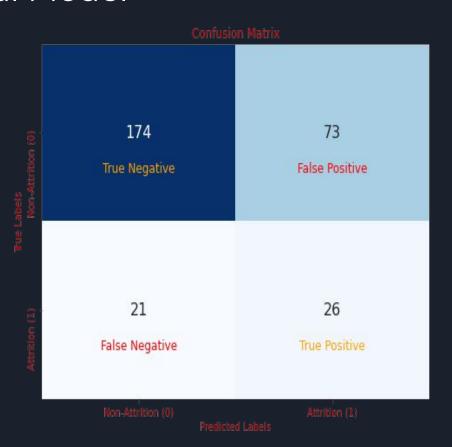
5. Model Evaluation

The Final Model

The Highest-Performing Model

- Tuned Decision Tree Model

Model Performance

- Predicted 55% of Attrition Cases
- 68% Overall Prediction Accuracy

Confusion Matrix

	Non-Attrition (0)	Attrition (1)
Non-Attrition (0)	174 True Negative	73 False Positive
Attrition (1)	21 False Negative	26 True Positive

True Labels / Predicted Labels

How It can Benefit Your Organization

- Identification of employees likely to turnover allows for targeted retention interventions
- These interventions facilitate increased retention leading to:
  - Reduced Onboarding Costs
  - Increased Productivity
  - Retention of Organizational Knowledge
  - Improved Team Dynamics
  - Superior Employer Branding
  - Reduced Disruption
  - Overall Improved Organizational Effectiveness

Limitations

- Dataset may not be fully generalizable due to organizational differences
- Targeted Interventions are required to make use of predictions
- Model misidentifies about 25% of non-attrition cases as attrition
- Model misidentifies about 45% of attrition cases as non-attrition

Summary

- Reducing employee attrition leads to:
  - Substantial savings
  - Improved productivity and morale
  - Retention of valuable organizational skills & knowledge
  - Overall stability
  - Increased Organizational Effectiveness
- The Final Model developed for this project:
  - Accurately predicts over half of attrition cases
  - Can lead to increased retention in conjunction with targeted interventions
  - Is limited in its accuracy
  - Can be improved by re-training it on more comprehensive data