



The Business Problem:

- High employee turnover increases recruitment costs and disrupts productivity.
- Current HR methods are reactive, not proactive.

The Solution:

- A Machine Learning tool to identify "At-Risk" employees before they leave.
- KPI: Reduce unexpected attrition and save replacement costs.

Employee Retention Intelligence System

Reducing Attrition through Predictive Modelling



The High Cost of Reactive HR

Why we need to predict attrition, not just measure it.

- The Financial Blow: According to Gallup (2019), replacing an employee costs 50% to 200% of their annual salary, depending on role complexity.
- The Blind Spot: Traditional HR relies on Exit Interviews (Reactive). By the time you know something is wrong, the employee is already gone.
- The Goal: Shift from "Damage Control" to "Early Warning" by identifying flight risk before the resignation letter lands.

The Dashboard & The Engine

User Input Features

Age

30

Daily Rate

800

Distance From Home (km)

10

Years At Company

5

Department

Sales

Business Travel

Travel_Rarely

Job Role

Sales Executive

Employee Retention Intelligence System

System Status: Online | Connected to Local Server

Employee Profile to Assess

	age	dailyrate	distancefromhome	yearsatcompany	department	businesstravel	jobrole
	30	800	10	5	Sales	Travel_Rarely	Sales Executive

Predict Retention Risk

Prediction Result

HIGH RISK: Employee is likely to LEAVE.

Confidence: 64.00%

Detailed Probability

– The Tool: A live "Retention Calculator" that translates 7 user inputs into a retention probability (shown: 64% Risk).

– The Engine: Powered by the Correlation Drivers (Right Bottom) and trained on the Imbalanced Distribution (Right Top) to detect rare attrition events.

– The Logic: Uses "Ghost Column" re-indexing to map simple user inputs to complex training data patterns dynamically.

A bar chart titled 'attrition' showing the count of employees for 'Yes' and 'No' attrition. The y-axis is labeled 'count' and ranges from 0 to 1200. The 'Yes' bar is blue and has a count of approximately 240. The 'No' bar is green and has a count of approximately 1220.

attrition	count
Yes	240
No	1220

A horizontal bar chart titled 'What drives Attrition? (Correlation Analysis)' showing the correlation strength of various factors. The x-axis is labeled 'Correlation Strength' and ranges from -0.15 to 0.05. The y-axis lists 25 factors. The bars are blue and extend to the right, indicating positive correlation. The factors are listed in descending order of correlation strength.

Factor	Correlation Strength
distancefromhome	0.07
numcompaniesworked	0.04
monthlyrate	0.02
performancerating	0.01
hourlyrate	0.01
percentsalaryhike	0.01
education	0.01
yearssincelastpromotion	0.01
relationshipsatisfaction	0.01
dailyrate	0.01
trainingtimeslastyear	0.01
worklifebalance	0.01
environmentsatisfaction	0.01
jobsatisfaction	0.01
jobinvolvement	0.01
yearsatcompany	0.01
stockoptionlevel	0.01
yearswithcurmanager	0.01
age	0.01
monthlyincome	0.01
yearsincurrentrole	0.01
joblevel	0.01
totalworkingyears	0.01