

# Employee Attrition Prediction System

HR Analytics • Machine Learning • MySQL • Streamlit

Fetch Data From MySQL

Data Loaded Successfully!

	Age	Attrition	BusinessTravel	DailyRate	Department	DistanceFromHome	Educat
0	41	Yes	Travel_Rarely	1102	Sales	1	2
1	49	No	Travel_Frequently	279	Research & Development	8	1
2	37	Yes	Travel_Rarely	1373	Research & Development	2	2
3	33	No	Travel_Frequently	1392	Research & Development	3	4
4	27	No	Travel_Rarely	591	Research & Development	2	1

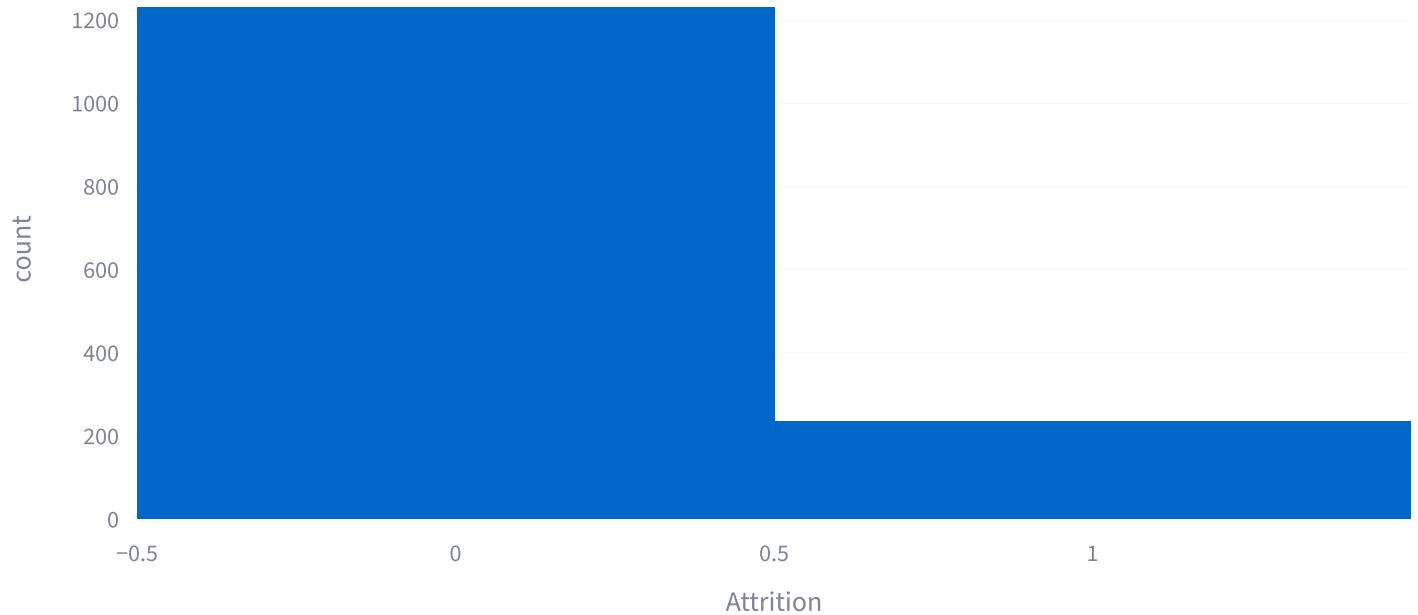
## Data Preprocessing

Categorical Columns Successfully Label Encoded

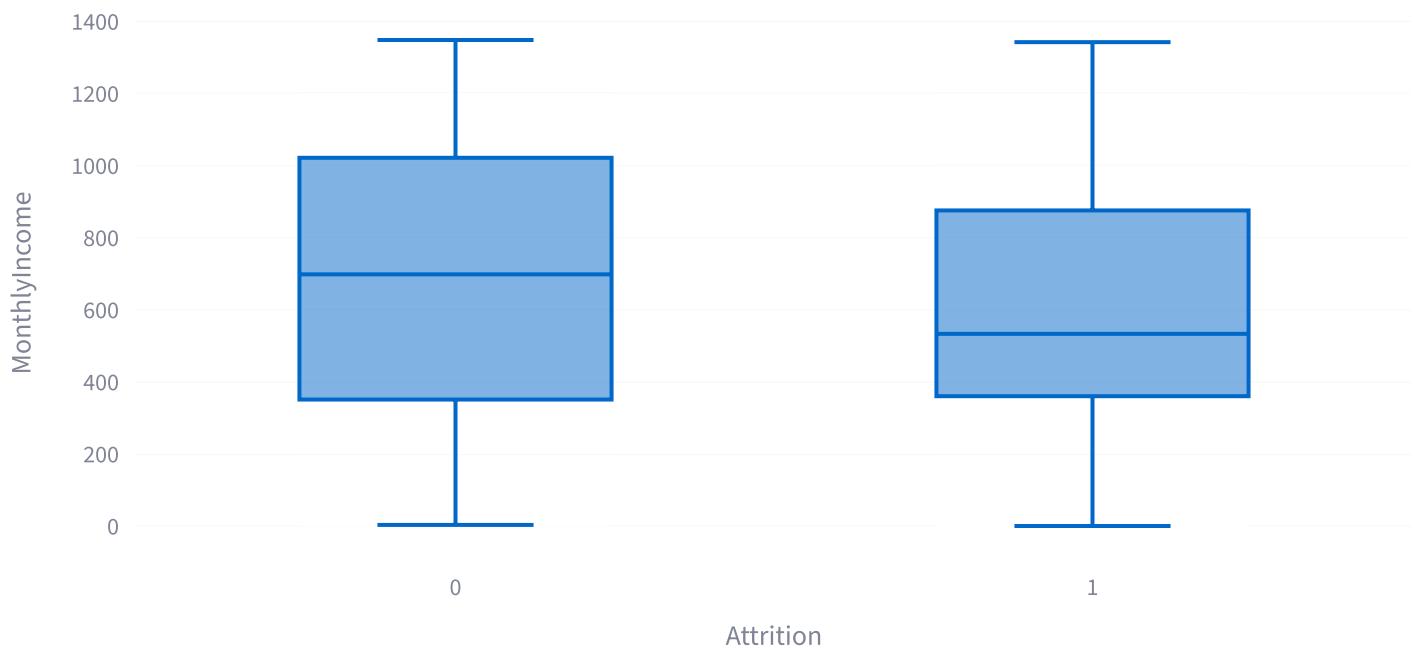
	Age	Attrition	BusinessTravel	DailyRate	Department	DistanceFromHome	Education	Education
0	23	1	2	62	2	0	1	
1	31	0	1	430	1	27	0	
2	19	1	2	261	1	11	1	
3	15	0	1	277	1	22	3	
4	9	0	2	629	1	11	0	

# Exploratory Data Analysis (EDA)

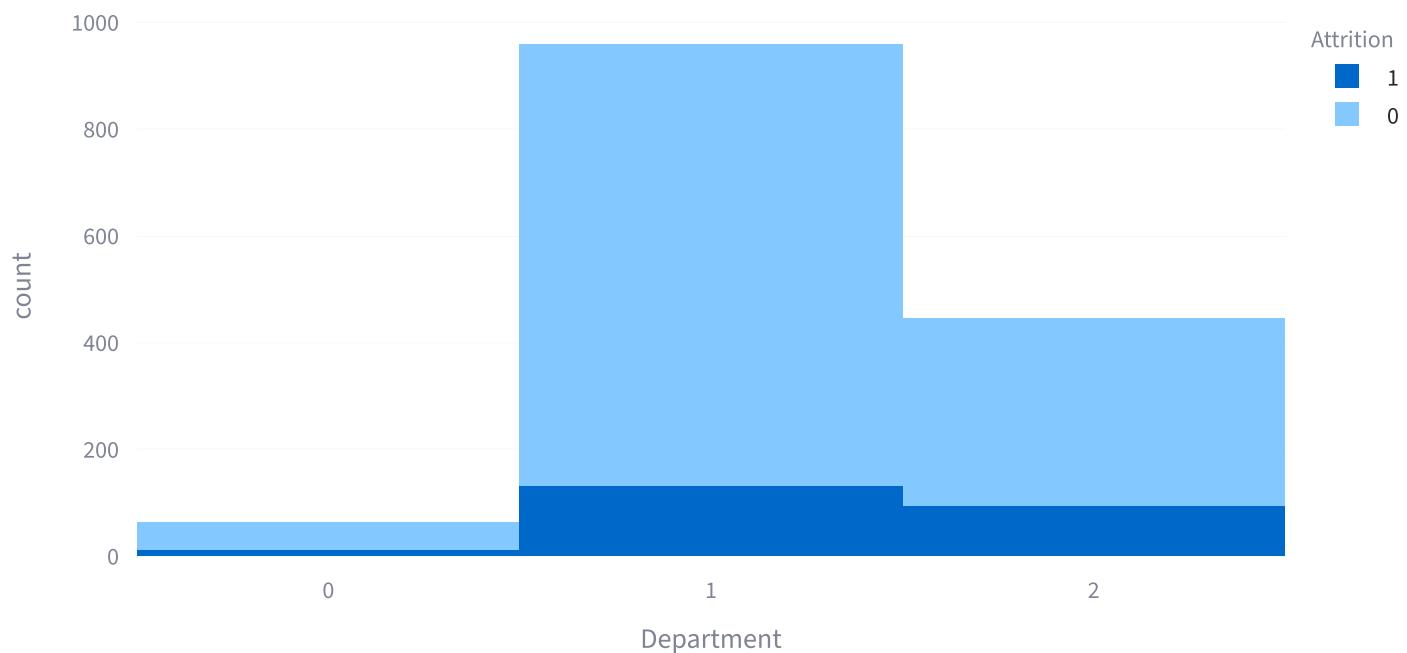
## Attrition Distribution



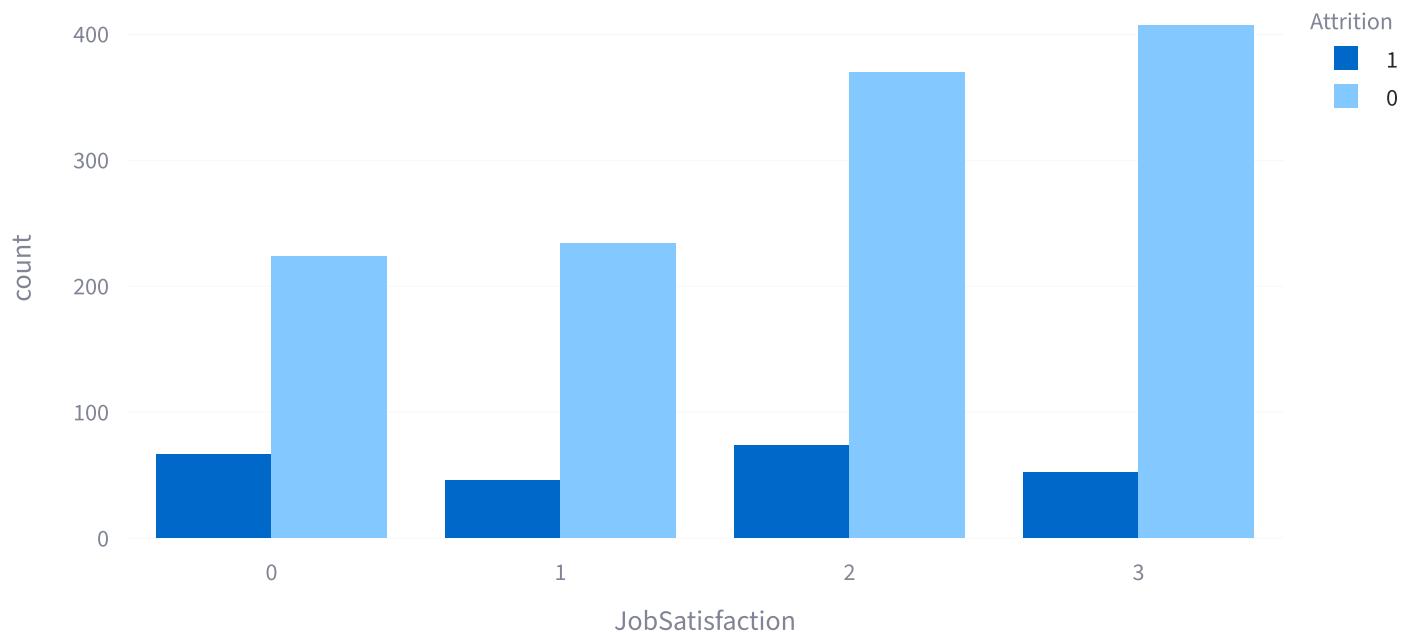
## Monthly Income by Attrition



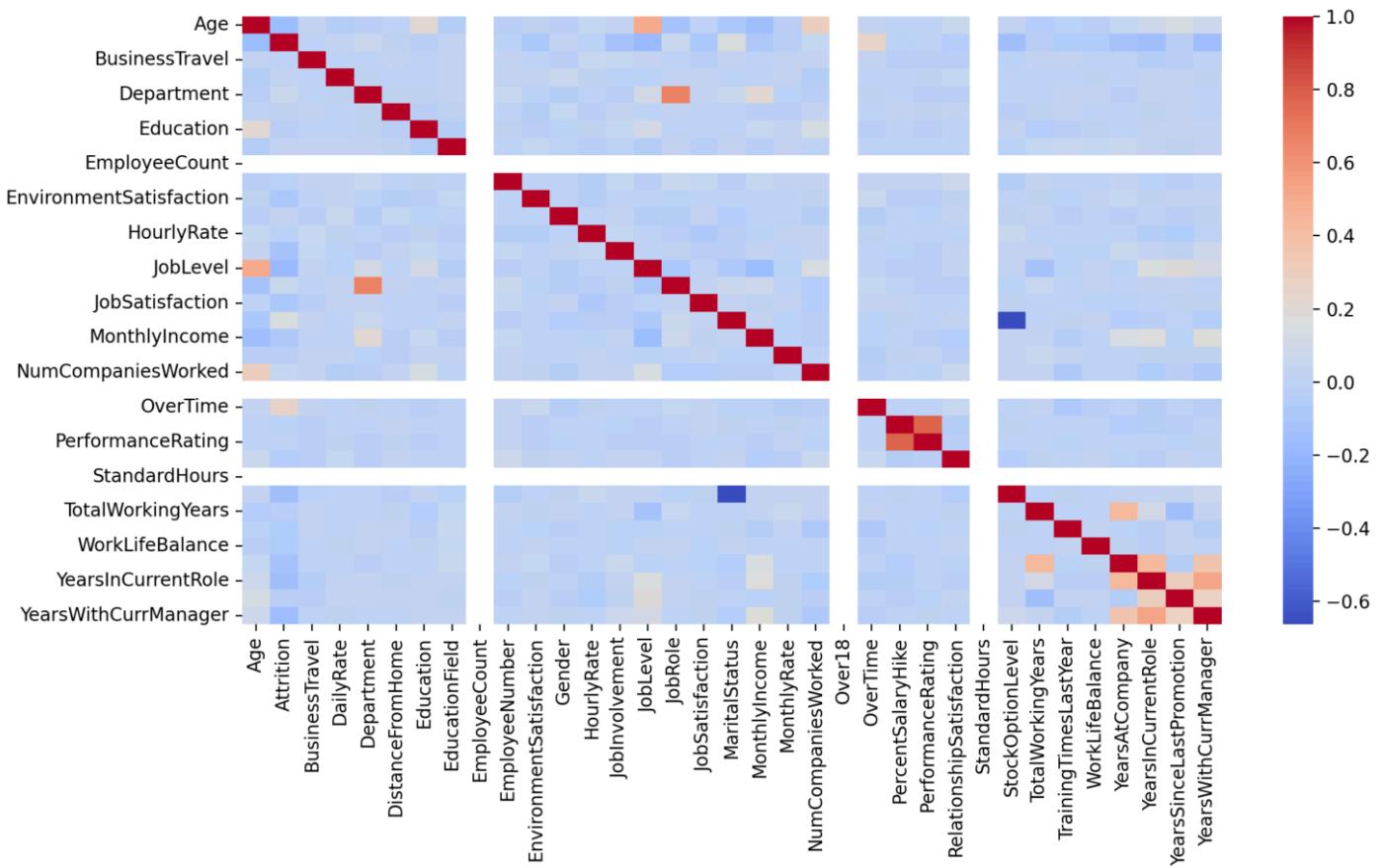
## Attrition by Department



## Job Satisfaction vs Attrition



# Correlation Heatmap



# Train/Test Split

Training Data Size: (1176, 34)

Testing Data Size: (294, 34)

# Model Training

Model Trained Successfully ✓

Accuracy: 0.881

Precision: 1.000

Recall: 0.103

F1 Score: 0.186

AUC-ROC: 0.742

Classification Report:

precision recall f1-score support

0 0.88 1.00 0.94 255

1 1.00 0.10 0.19 39

accuracy 0.88 294

macro avg 0.94 0.55 0.56 294

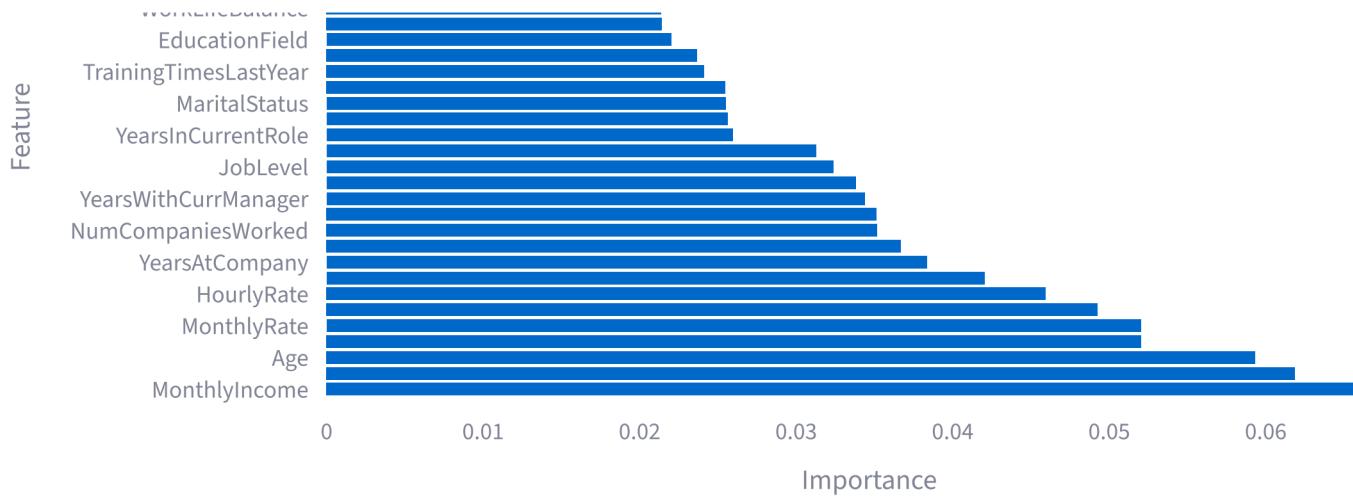
weighted avg 0.90 0.88 0.84 294

## Feature Importance (Key Attrition Drivers)

	Feature	Importance
17	MonthlyIncome	0.0659
21	OverTime	0.0619
0	Age	0.0593
2	DailyRate	0.052
18	MonthlyRate	0.052
8	EmployeeNumber	0.0493
11	HourlyRate	0.0459
27	TotalWorkingYears	0.042
30	YearsAtCompany	0.0383
4	DistanceFromHome	0.0367

### Feature Importance





## Employees at High Attrition Risk

	Age	Attrition	BusinessTravel	DailyRate	Department	DistanceFromHome	Education	Education
127	1	1	2	583	2	14	0	0
463	8	1	2	548	1	16	2	2
1332	11	1	1	538	1	16	1	1
688	1	1	2	513	2	13	2	2
1339	4	1	2	498	1	26	0	0
457	0	1	1	207	2	24	2	2
385	12	1	1	541	1	23	2	2
683	7	1	2	800	2	10	1	1
1153	0	1	1	595	2	22	1	1
1060	6	1	1	494	1	28	2	2

## HR Analytics Dashboard

Income   Satisfaction   **Tenure**

# Years at Company vs Monthly Income

