

EMPLOYEE ATTRITION PREDICTION USING ANN

Machine Learning

INTRODUCTION



Employee attrition refers to the loss of employees over time.



High attrition increases recruitment cost and affects productivity.



This project uses Artificial Neural Networks (ANN) to predict employee attrition.

PROBLEM STATEMENT



ORGANIZATIONS STRUGGLE
TO IDENTIFY EMPLOYEES
LIKELY TO LEAVE.



MANUAL ANALYSIS IS
INEFFICIENT AND
INACCURATE.



GOAL: BUILD A PREDICTIVE
MODEL TO IDENTIFY
ATTRITION RISK EARLY.

PROJECT OBJECTIVES



Analyze

Analyze employee data.



Identify

Identify key factors affecting attrition.



Build

Build an ANN model for prediction.



Evaluate

Evaluate model performance.

DATASET OVERVIEW

HR Employee Attrition Dataset.

Contains demographic, job, and performance-related features.

Target variable:
Attrition (Yes / No).

DATA PREPROCESSING

Handled categorical variables using encoding.

Feature scaling applied to numerical columns.

Split data into training and testing sets.

EXPLORATORY DATA ANALYSIS (EDA)

Analyzed attrition distribution.

Observed trends with age, salary, job role, and experience.

Helped understand patterns before modeling.

WHY ARTIFICIAL NEURAL NETWORK (ANN)?



Handles complex
non-linear
relationships.



Performs well with
large feature sets.



Mimics human
learning process.

ANN MODEL ARCHITECTURE



INPUT LAYER WITH
EMPLOYEE FEATURES.



MULTIPLE HIDDEN LAYERS
WITH RELU ACTIVATION.



OUTPUT LAYER WITH
SIGMOID ACTIVATION FOR
BINARY CLASSIFICATION.

MODEL TRAINING



Loss function:
Binary Cross-
Entropy.



Optimizer: Adam.



Model trained for
multiple epochs
to reduce loss.

MODEL EVALUATION

Accuracy used as primary metric.

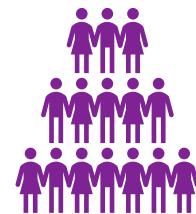
Compared training and testing performance.

Checked for overfitting and underfitting.

RESULTS



ANN model achieved
good prediction
accuracy.



Successfully identified
employees with higher
attrition risk.



Model can assist HR
decision-making.

BUSINESS IMPACT



Helps HR take preventive actions.



Reduces hiring and training costs.



Improves employee retention strategy.

LIMITATIONS

1

Model depends on historical data quality.

2

External factors not included.

3

Performance can improve with more data.

CONCLUSION



ANN IS EFFECTIVE FOR
PREDICTING EMPLOYEE
ATTRITION.



EARLY PREDICTION
SUPPORTS BETTER HR
PLANNING.



FUTURE WORK CAN
INCLUDE ADVANCED
DEEP LEARNING MODELS.