

## Team Members:

Name	Role
Mohammed Mostafa Badran	1. Data Collection, Exploration & Preprocessing
Mohammed Mahmoud Naeem	1- Advanced Data Analysis and Feature Engineering 2- Final Documentation and Presentation
Ahmed Emad	1- Machine Learning Model Development and Optimization
Abdulla Atef Khamis	1- Machine Learning Model Development and Optimization 2- MLOps, Deployment, and Monitoring
Muhammed Mahmoud Muhammed Hassanein	1- Machine Learning Model Development and Optimization 2- MLOps, Deployment, and Monitoring

## Project Overview: (;

The Employee Attrition Prediction and Analysis project focuses on building a machine

learning model to predict employee turnover (attrition) within an organization.

By identifying employees

who are likely to leave, companies can take proactive measures to improve retention. The project follows a

data science lifecycle, from data collection and exploration to model

deployment and monitoring, aimed at

improving organizational retention strategies.

## Project Timeline:

### Milestone 1: Data Collection, Exploration, and Preprocessing:

**Start Date:** October 3, 2025

**End Date:** October 9, 2025

### **Task:**

- Data Collection
- Data Exploration
- Preprocessing and Feature Engineering
- Exploratory Data Analysis (EDA)

### **Deliverables:**

- EDA Report
- Interactive Visualizations
- Cleaned Dataset

## **Milestone 2: Advanced Data Analysis and Feature Engineering:**

**Start Date:** October 10, 2025

**End Date:** October 18, 2025

### **Tasks:**

- Advanced Data Analysis
- Feature Engineering
- Data Visualization

### **Deliverables:**

- Data Analysis Report
- Enhanced Visualizations
- Feature Engineering Summary

## **Milestone 3: ML Model Development and Optimization:**

**Start Date:** October 19, 2025

**End Date:** November 1, 2025

### **Tasks:**

- Model Selection
- Model Training
- Model Evaluation

- Hyperparameter Tuning
- Model Comparison

### **Deliverables:**

- Model Evaluation Report
- Model Code
- Final Model

## **Milestone 4: MLOps, Deployment, and Monitoring:**

**Start Date:** November 2, 2025

**End Date:** November 12, 2025

### **Tasks:**

- MLOps Implementation
- Model Deployment
- Model Monitoring
- Model Retraining Strategy

### **Deliverables:**

- Deployed Model
- MLOps Report
- Monitoring Setup

## **Milestone 5: Final Documentation and Presentation:**

**Start Date:** November 13, 2025

**End Date:** November 20, 2025

### **Tasks:**

- Final Report
- Final Presentation
- Future Improvement

## **Deliverables:**

- Final Project Report
- Final Presentation

## **Project Plan:**

### **Data Analysis:**

Data Collection → EDA → Data cleaning → EDA → Advanced Data Analysis → Power Bi Dashboard

### **Model Development:**

Explore Models → Model Training → Model evaluation → Model monitoring & MLOps

### **Deployment:**

Web site design (Figma) → Front-end Development (React js - Fast API ) → Model integration

## **Data Source:**

### **Kaggle:**

<https://www.kaggle.com/datasets/stealthtechnologies/employee-attrition-dataset?select=train.csv>