**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>