Project Title:

Employee Attrition Prediction and Analysis

Project Goals:

- Build a machine learning model to predict employee turnover (attrition) within an organization.
- Identify key factors that influence employee attrition, such as tenure, salary, performance ratings, and work-life balance.
- Provide actionable insights for HR teams to take proactive measures to improve employee retention.
- Develop and deploy a robust predictive model using MLOps practices, ensuring scalability and real-time performance monitoring.
- Create interactive visualizations and dashboards for stakeholders to track attrition trends and risk factors.
- Deliver a final presentation showcasing the model's value, insights gained, and business impact.

Team Members and Roles:

- Ibrahim Abdel-sattar Abdel-sattar - Milestone 1&2
- Ahmed Tarek Aboelnaga - Milestone 3
- Reem Ashraf Ahmed Mohamed - Milestone 3
- Yousif Saad Seddiek - Milestone 4
- Ali Ahmed Mahmoud Madian - Milestone 4
- Mohamed Abd el-meged El-batal - Milestone 4
- All Team Members - Milestone 5

Additional Information:

- The project follows the full data science lifecycle, including data collection, exploration, preprocessing, advanced analysis, feature engineering, model development, deployment, and monitoring.
- Tools and technologies used include Python, machine learning libraries (such as Scikit-learn, XGBoost), data visualization libraries (Matplotlib, Seaborn), and deployment frameworks (Flask, Streamlit, and cloud platforms).

- The model evaluation metrics include accuracy, precision, recall, F1-score, ROC-AUC, and confusion matrices.
- Future improvements may involve incorporating employee satisfaction scores, testing neural network models, and enhancing deployment scalability.