

Graduation Project Proposal Form

1. Project Information

- **Project Title:** Retail Analytics Mastery
- **Course/Track:** AI and Data Science - Microsoft Data Engineer
- **Team Members:**
 1. Mostafa Alaa Eldin Hassan Mohamed
 2. Omar Ayman Farouk Ahmed
 3. Abdelrahman Mohamed Abdelmoneam Adly
 4. Ahmed Ashraf Galal Khaled
 5. Youssef Mohamed Abdelnabi Ahmed

2. Project Overview

- **Objective:** Leverage AI and analytics to enhance retail operations by optimizing sales, improving customer engagement, refining inventory management, and maximizing profitability.
- **Scope of Work:**
 - Data Integration: Consolidate and prepare data from various sources.
 - Sales Analysis: Forecast sales trends and analyze performance.
 - Customer Retention: Predict churn and personalize marketing.
 - Customer Insights: Segment customers and predict lifetime value.
- **Expected Outcomes:**
 - Comprehensive Data View: Integrated data from multiple sources for a unified perspective.
 - Sales Optimization: Accurate sales forecasting and performance analysis to drive better business decisions.
 - Targeted Marketing: Effective customer segmentation and lifetime value prediction for personalized strategies.
 - Improved Retention: Enhanced churn prediction and tailored marketing efforts to boost customer loyalty.

3. Problem Statement:

The current market lacks an integrated approach to effectively leverage sales data, understand customer behaviors, and improve customer retention. Companies face challenges in consolidating data from multiple sources, analyzing sales performance, gaining actionable customer insights, and implementing effective retention strategies. This results in inefficiencies in sales operations, poor customer engagement, and reduced retention rates. Our project aims to address these challenges by providing a solution that integrates data, analyzes sales performance, derives customer insights, and enhances retention efforts.

4. Proposed Solution

- **Technologies Used:**

- Data Integration Tools: ETL tools (e.g., Apache NiFi, Talend) for consolidating data from various sources.
- Data Analysis: Python libraries (e.g., Pandas) for analyzing sales performance.
- Customer Insights: Machine learning models for customer segmentation and lifetime value prediction.
- Customer Retention: Predictive analytics tools to identify potential churn and personalize marketing strategies.

- **System Architecture:**

- Data Integration: Implement ETL processes to consolidate and prepare data from various sources.
- Sales Analysis: Use Python-based tools to analyze sales performance.
- Customer Insights: Deploy machine learning models to segment customers and predict lifetime value.
- Retention Engine: Use predictive analytics to forecast churn and develop personalized marketing strategies

5. Resources Needed

Hardware/Software:

- Visual Studio Code
- Visual Studio integrated with SSIS Framework
- SQL Server Management Studio

6. Approval

- **Instructor/Advisor:** Dr. Moshera Ghaleb
- **Signature:**