Alexandria National University
Faculty of Computer and Data Science
Program : Artificial Intelligence, Cyber Security
Course Title: Data Mining and analytics
Term: Spring 2025
Professor name: Dr. Magda Madbouly, Dr. Reem Essameldin
TA: TAs

Final Project

The main goal of this project is to practice and apply what you have learned to real-world tasks.

- **Cheaters ◆ will get negative grades for the project (we will have a cheaters list) Delivering an incomplete project will be much better than cheating, the lowest possible grade without cheating will be more than the highest possible grade with cheating.**

Project Description:

You will use the libraries of python tools for this project, and you should choose one of this Project to implement it:

1- Crime Rate.
2- Customers' preference

1. Crime Rate:

Project idea:

The crime rate is increasing now-a-days in many countries. In today's world with such a higher crime rate and brutal crime happening, there must be some protection against this crime. Here we introduced a system by which the crime rate can be reduced. Crime data must be fed into the system. We introduced data mining algorithms to predict crime. Crime data is analyzed which is stored in the database. Data mining algorithms will extract information and patterns from database. The system will commit group crime.Clustering will be done based on places where crime occurred, gangs who were involved in crime and the timing crime took place. This will help to predict crime which will occur in future. Admin will enter crime details into the system which is required for prediction. Admin can view criminal historical data. Crime incident prediction depends mainly on the historical crime recordand various geospatial and demographic information.

Dataset: SF Crime Rate Prediction | Kaggle

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2. Customers' preferences:

Project idea:

For a company, analyzing its customers' preferences is very important. Most companies have now started mining customers' data to understand their customers' choices and behavior better. This approach helps them recommend appropriate products to their customers and inventory management of their warehouses.

Dataset: FoodMart Dataset | Kaggle

Project Requirements:

1- **Understanding the Project and Setting Objectives:** Identifying the project objectives and having a good understanding of the requirements and necessary standards.
2- **Data Collection:** Gathering the necessary data for analysis and mining to discover patterns and trends.
3- **Data Preprocessing:** (Cleaning Data, Normalization)
4- Split your data set into train data and test data (If the data is not split)
5- **Application of Mining Techniques:** Utilizing tools and mining techniques **(Two Methods)** to extract knowledge from the data.
6- After prediction, you will work on **Evaluation metric**.
7- You will choose **(two or three)** the suitable visualization for your project by using Matplotlib library from python. (Histogram, pie chart, box plot, scatterplot, etc...).
8- **Documentation (Notebook Python):** Documenting all the steps taken during the data mining process and the results obtained.
9- **Report or Presentation Preparation:** To represent why you chose this project.

Good luck ♥