



## SIMATS ENGINEERING

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**Course Code:** DSA0613

**Slot:** A

**Course Name:** Data Handling and Visualization for Data Analytics

**Course Faculty:** Dr. Kumaragurubaran & T Dr. Senthilvadivu S

**Project Title:** Design & Implementation of an Automated Data Visualization System for Exploratory Data Analysis

**Module 1 :** User Interface & Dataset Handling

**Module Photographs:** (3 photographs –Module Photo, Individual student contribution module work in the project and presentation image)



**Module 1: User Interface & Dataset Handling**

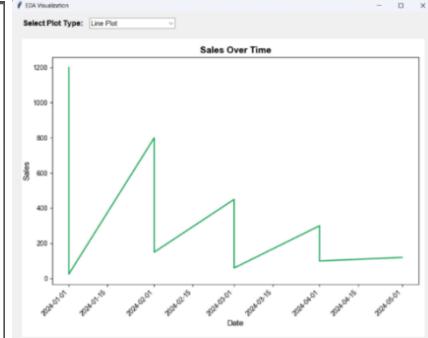
**Purpose:**  
To provide a simple and user-friendly interface that allows users to upload datasets and interact with the visualization system.

**Key Implementation Details:**

- Design a Tkinter-based graphical user interface
- Provide file upload functionality for CSV datasets
- Validate and load the dataset using Pandas

**Techniques Used:**

- Tkinter GUI components
- File handling and input validation
- Pandas for data loading



**Project Description:** (here you write what you did in this project (contribution) including Model Description)

The design & implementation of an automated data visualization system play a crucial role in simplifying exploratory data analysis by reducing the need for manual intervention. Such a system is designed to accept raw datasets and automatically perform essential preprocessing tasks, including data cleaning, detection of missing values, and identification of variable types. This automation ensures consistency & saves time, allowing analysts to focus more on interpretation rather than preparation. Once preprocessing is complete, the system analyses the dataset to compute basic statistical measures such as mean, median, variance, & correlations. Based on these insights, it intelligently selects suitable visualization techniques. Common visual outputs include histograms for distribution analysis, box plots for identifying outliers, scatter plots for relationship exploration, & heatmaps for correlation patterns. These visualizations help users quickly understand data trends & anomalies. The system is designed to be dynamic & adaptable, updating visualizations automatically when the underlying data changes. Its architecture emphasizes scalability and modularity, making it suitable for large & complex datasets.

**Student Signature**

**Guide Signature**