**Technical Requirements Document (TRD)**

**Data Sources:**

* **Dataset:** Mall Customers dataset

**Technologies:**

* **Programming Languages:** Python
* **Tools and Libraries:** Matplotlib, Seaborn, Scikit-learn,Google Colab
* **Visualization Tools:** Power BI

**Architecture:**

* **Data Preprocessing:** Clean and prepare the Mall Customers dataset for analysis.
* **Exploratory Data Analysis (EDA):** Analyze and explore the dataset to understand its characteristics and patterns.
* **Clustering:** Implement the K-Means clustering algorithm to segment customers based on purchasing behavior.
* **Visualization:** Utilize Matplotlib for detailed visualizations within Google colab and Power BI for interactive dashboards.

**Data Flow:**

1. **Import data:** Retrieve and load Mall Customers dataset into Jupyter Notebook.
2. **Clean data:** Handle missing values, outliers, and ensure data quality.
3. **Analyze data:** Conduct EDA to gain insights into customer behavior patterns.
4. **Segment customers:** Apply K-Means clustering to group customers into segments.
5. **Visualize results:** Create visualizations using Matplotlib within Google Colab and develop interactive dashboards using Power BI for comprehensive insights.