

# Project Title: A Short, Descriptive Title

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## ABSTRACT

A brief summary of your project. Mention the dataset, goal (e.g., clustering/classification/EDA), and key findings in 4–5 sentences.

## 1. EXPLORATORY DATA ANALYSIS (EDA)

### 1.1 Data Inspection

Describe your dataset: number of rows, columns, types of variables, missing values, and summary statistics. Include a short table or paragraph summarizing key properties.

Table 1: Dataset Overview		
Feature	Type	Missing (%)
Age	Numerical	2.3
Gender	Categorical	0.0
Income	Numerical	5.1

### 1.2 Visualisations

Include key plots to explore distributions or relationships:

- Histogram of key numerical features
- Boxplot to show outliers
- Pairplot / Correlation heatmap for relationships

### 1.3 Insights

Summarize interesting patterns:

- Which variables correlate strongly?
- Any skewed distributions or outliers?
- Early hypotheses about clusters or classes

## 2. DATA PREPROCESSING

### 2.1 Handling Missing Data

Explain how you dealt with missing data (imputation, deletion, etc.) and justify your choice.

### 2.2 Feature Engineering

List any new variables or transformations you applied (e.g., encoding, log transforms, ratios).

### 2.3 Standardisation / Normalisation

Discuss any scaling applied (e.g., z-score, min-max) and why it was necessary.

## 3. DATA MINING METHODS AND ANALYSIS

### 3.1 Methods

Describe which algorithms or analytical methods were applied:

- Clustering (e.g., K-Means, DBSCAN)
- Dimensionality Reduction (e.g., PCA, t-SNE)
- Classification/Regression (if applicable)

### 3.2 Results

Summarize the main results. Use figures/tables for clarity:

- Cluster quality metrics (e.g., silhouette score)
- Feature importances
- Visualizations of clusters or decision boundaries

### 3.3 Discussion

Interpret the results:

- What patterns or groups emerged?
- Were the methods appropriate?
- Any limitations or anomalies?

## 4. CONCLUSION AND REFLECTION

Summarize what you found and learned:

- Key insights from data mining
- Challenges faced and how you overcame them
- Potential future work or improvements

## Acknowledgements

(Optional) Acknowledge any data sources, collaborators, or funding.

## 5. ADDITIONAL AUTHORS

## 6. REFERENCES