LOW LEVEL DESIGN

Customer Segmentation

1. Introduction

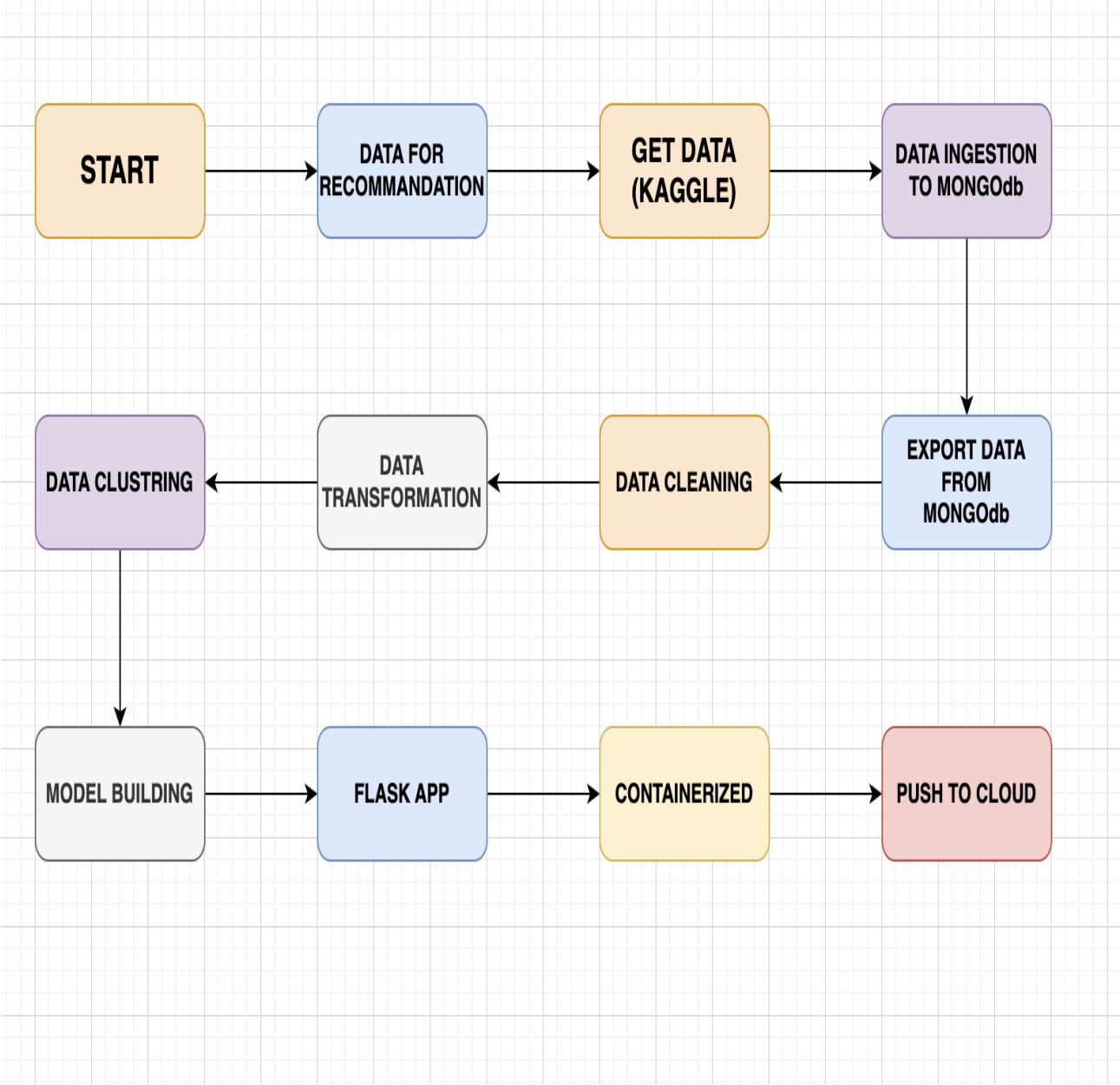
1.1 What Is Low Level Design

The goal of LLD or a low-level design document (LLDD) is to give the internal logical design of theactual program code for Food Recommendation System. LLD describes the class diagrams with themethods and relations between classes and program specs. It describes the modules so that the programmer can directly code the program from the document.

1.2 Scope

Low-level design (LLD) is a component-level design process that follows a step-by-step refinement process. This process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

2. Architecture



3. Architecutre Description

3.1 Inroduction

The introduction provides an overview of the project and sets the stage for the detailed technical documentation that follows. It explains the purpose of the customer segmentation project, highlights the objectives, and outlines the significance of the document. This section is meant to give readers a clear understanding of what the document will cover and why it is important for the successful implementation of the project.

3.2 System Architecture

The system architecture section delves into the structural design of the customer segmentation system. It describes the various components and modules that make up the system, illustrating how they interact and work together. Data flow diagrams and architectural blueprints are often included to visually represent the movement of data through the system and the relationships between different components. This part is crucial for understanding the overall framework and how the system is organized.

3.3 Data Preprocssing and Collection

In this section, the document details the sources of data used for the project, including customer demographics, purchase history, and behavioral data. It discusses the methods employed for cleaning and preprocessing the data to ensure its quality and suitability for analysis. This includes handling missing values, normalizing data, and selecting relevant features. The goal is to prepare the data in a way that optimizes the performance of the machine learning algorithms.

3.4 Algo Selection

This section justifies the choice of clustering algorithms used in the project, such as K-means, hierarchical clustering, and DBSCAN. It explains the criteria for selecting these algorithms, considering factors like the nature of the data and the specific requirements of the project. Detailed descriptions of each algorithm, including their strengths and weaknesses, are provided to give a clear rationale for their use. The document also outlines the parameters and configurations for each algorithm to guide the implementation process.

3.5 Model Implementation

The model implementation section provides a detailed guide on how to implement the selected clustering algorithms. It includes pseudocode or actual code snippets to demonstrate the step-by-step process of building the models. This part also lists the libraries and tools used, such as Scikit-learn, Pandas, and NumPy, offering practical insights into the coding and development aspects of the project. This section is essential for developers who need to understand the technical details of the implementation.

3.6 Error Handling and Optimization

This section addresses common issues and challenges encountered during the implementation of the algorithms. It offers solutions and best practices for handling errors and optimizing performance. Techniques for improving the efficiency and accuracy of the models are discussed, ensuring that the system operates smoothly and effectively. This part is crucial for troubleshooting and refining the implementation process.

3.7 Conclusion

The conclusion summarizes the key findings and outcomes of the project. It reflects on the effectiveness of the customer segmentation approach and its potential benefits for the business. This section also highlights possible future work and improvements that can be made to enhance the system. It provides a closing perspective on the project, reinforcing the significance of the work done.