Low Level Document (LLD)

H&M Personalized Fashion Recommendation System

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**DECLARATION**

I affirm that the content of this written submission reflects my own ideas expressed in my own words. Where I have incorporated ideas or words from others, I have provided appropriate citations and references to acknowledge the original sources. I further declare that I have adhered to all principles of academic honesty and integrity, refraining from misrepresenting, fabricating, or falsifying any idea, data, fact, or source in my submission.

I acknowledge that any violation of these principles may result in disciplinary action by the Institute. Moreover, failure to properly cite sources or obtain necessary permissions may lead to penal action from the respective sources.

**Revision History**

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| **Version** | **Date** | **Author** | **Reviewer** | **Approver** | **Comments** |
| 0.1 | 26-01-2023 | Prithviraj Shevade | Prithviraj Shevade |  | Draft version |
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Table of Contents

1. Introduction ………………………………………………………………………………….6

1.1 Scope of the document…………………………………………………………………6

1.2 Intended Audience………………………………………………………………………6

1.3 System Overview………………………………………………………………………..7

1. Project Briefing……………………………………………………………………………….
2. Problem Statement…………………………………………………………………………..
3. Problem Solution……………………………………………………………………………..
4. Objective of Project…………………………………………………………………………..
5. Scope of Project………………………………………………………………………………
6. Block Diagram…………………………………………………………………………………
7. Requirements Gathering…………………………………………………………………….
8. Analysis……………………………………………………………………………………….
9. Final Screenshot of Project Output…………………………………………………………
10. **Introduction:**

**1.1 Scope of the Document**

* This section will cover details regarding scope of the document
* Low level design document will be at component level i.e., for website portal there will be one LLD

**1.2 Intended Audience**

* This section will cover categories of audiences who will be referring/reviewing this document

**1.3 System Overview**

* This section will capture overview of system application i.e for what system is being developed
* Who are the stake holders of system?
* What are the customers last transactions?

1. **Project Briefing:**

Internet is source of information as well as it is used for recreation purposes among which purchasing stuff online has become the most common thing ever. Customers or the users can buy various things from the comfort of their own homes. They don’t need to wander outside, going through numerous shops and then selecting a particular thing they want. Through E-Commerce they shop as per their liking by simply searching the name of the product they want into the search bar and buying the product which will be then delivered to their given addresses. Many a times, customers have to go through hundreds and thousands of products to get the one they like or want. They waste a considerable amount of time browsing through different products. We can reduce this time spent by using recommendation systems. Many apps and websites use this type of systems to give their customers one of its kind experiences like Netflix, Shopping apps like amazon, flipkart. These websites take into account of their customers recent buys or transactions and based on these they recommend different products to them. In the proposed system, I present a recommendation system which gives recommendation based on last transactions of the customers given in the dataset of H&M Personalized Fashion Recommendation.

Firstly, viewing the dataset, as the dataset was quite large, I tried using google colab by uploading the files in the dataset but it was not getting uploaded. Then I switched to Kaggle from where the dataset was taken and then I started analysing the data, displaying the dataset, finding null values, finding a pattern, plotting different graphs, doing exploratory data analysis, importing various libraries, patterns through which we can get our recommender system. Then I designed a wireframe for a website through which we can give recommendations to the user. Website is made using html, CSS, JavaScript, bootstrap and its components. Based on the last transactions of the customer, the system gives recommendations. For the recommender I am using a library sklearn through which I am importing cosine similarity, this will give us similarities between the types of products purchased.

1. **Problem Statement:**

Garment purchasing through the internet has become an important trend for consumers. However, in various garment e-shopping systems, it systematically lacks personalized recommendations. To reduce the browsing time and also to enhance shopping experience, product recommendation is essential.

1. **Problem Solution:**

In the proposed system, I present the exploratory data analysis through which we can find a pattern in the transactions of the customers, product pricing as well as which product is more popular than other .

Defining a recommender and using cosine similarities we can get a recommendation as per our taste and also which group of customers buy a specific type of product can also be seen by plotting a graph.

1. **Objective of the Project:**

Objective of this project is to give personalized fashion recommendations to its customers based on their recent or last transactions using machine learning models.

1. **Scope of Project:**

It will helpful to customers who are frequent buyers as they prefer shopping online rather than in physical mode. Also, it will give them a personalized shopping experience.

1. **Block Diagram:**

Loading Libraries

Loading dataset

Selecting data

Importing modules

Converting String to index

Creating and training data

Evaluating

Converting back to string form

Providing Recommendations

Exporting

1. **Requirements Gathering:**

* Window 10 Operating system
* Visual studio software
* Few Github Non copyrighted source codes
* Kaggle Dataset
* PyCharm
* HTML, CSS- basics
* Stream lit
* Heroku

1. **Analysis:**

In this project I am using algorithms for recommendations. In recommendations, we generally use collaborative filtering and popularity based recommendation model as well. Many a times there are different algorithms suggested for the recommendation systems to run and choosing one of them can be tedious as well as a challenging task. Collaborative Filtering is the most common technique used when it comes to building intelligent recommender systems that can learn to give better recommendations as more information about users is collected. how to measure the accuracy of your predictions also has multiple answers, which include error calculation techniques that can be used in many places and not just recommenders based on collaborative filtering.

As we have used collaborative filtering instead of going to popularity based solutions we chose a matrix to get the answer of the problem statement. The machine learning model itself gives recommendations and the products which are bought together. This is done through the recent transactions of the user or customer of the application or the website. Because the dataset was huge this took a lot of time to analyse and suggest a specific algorithm which will give us exact solution. Different graphs were plotted which gave a graphical representation of the data. This recommendation system will surely help the customers who like shop online and they do so regularly. Based on the last transactions the machine learning model gives the results as in the recommendations i.e personalized fashion recommendations.

1. **Final Screenshot of Project Output**

