**PROJECT INTIALIZATION DOCUMENT**

**1. DETAILS**

**Team Details:** Ms. Rutuja Bhujbal (bhujbalrutuja28@gmail.com)

**Project Name:** H&M Personalized Fashion Recommendations"

**2. DEFINING PROJECT AND ITS SCOPE**

**Understanding of the project:** Personalized Fashion recommendations helps the customer shop better. It can also predict the product for each user to have a personalized experience for each user by building a recommendation engine. As H&M is huge brand customers or users using it are in vast amount also their dataset becomes larger. This data is collected through online stores as well as physical stores but most used stores are those which are of online mode through which customers can order from anywhere and anytime. The store offers an extensive selection of products to browse through. But this also causes a problem as there are too many choices, customer may not quickly find what interests them or what are the looking for, which can lead to not making a purchase at all. To make this all easier for the user we are going to make product recommendations in which we will develop product recommendations based on data from previous transactions and also from customer and product meta data. We will build a recommendation using machine learning taking popular products, last transactions, last day of billings, training and testing the models thus recommending products to the user.

**Reason for choosing this project:** I chose this problem for my interest in the field of machine learning. Also being a fashion enthusiast, I quite like to shop online and having a personalized recommendation can boost up my searching process. It will not take up much of my time which I used to spent on searching through hundreds and thousands of products listed. It can be also useful for other customers like me. I have previously done small projects on machine like predictions projects and this project will be quite interesting as I am upgrading to the advanced version of machine learning. Also I have a keen interest in the python technologies and its usage in the machine learning field as well. Trying through various algorithms and predictabilities this project is to be made.

**Most challenging aspect of the project statement:** This problem statement was quite complex itself. Making a project with help of machine learning can be challenging sometimes. Wanting to learn more in depth of this technology I decided to choose this project as it have many prediction to be with the help of the dataset given which a large number of entries in it. Keeping a track of last transactions and training a model to do the task of the billings and the customers who made the payment for the products, their range, popularity can be a very difficult task.

**3. APPROACH OF PROBLEM CHOSEN**

**Approach:** We are first going to study the dataset given. Then we will start the coding for the project. Loading the various libraries for python like pandas for data processing, numpy for linear algebra, PySpark, etc.

Then we will load the data set into our notebook after installing pyspark. Importing various functions like min and max. Selecting data for the recommendation with different columns like date, year, month, day, customer id, article id, etc.

Importing different modules like RegressionEvaluator and ALS. As ALS only accepts integer values as parameters, we have to convert the string to index. Hence, we need to convert customer\_id and article\_id column in index form.Creating the data and then training it followed by testing the data.

Creating ALS model and then tuning the model using Parameter grid builder. Followed by evaluating with the help of Evaluator as RMSE, Build cross validation using Cross Validator. Next, we fit ALS model to training data.

Extract the best model from tuning exercise using Parameter Grid Builder and Generating Predictions and evaluate using RMSE.

Printing evaluation metric and model parameters and then providing recommendations by article\_id followed by Customer\_id. Finally, we convert the index back into string form and lastly, we export the predictions.

**Diagram/Flowchart (if possible):**

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

**Platform/Coding Language/Frameworks (if using):** Google Colab, Visual studio code, python, Pandas, Numpy

**Database/Cloud/Hosting (if using):** Using dataset from kaggle

**External tools (if using):**

**4. TEAMS ABILITY TO IMPLEMENT WINNING SOLUTION**

**Background of team members/individual:** As I am the only one in the team, the background of mine will be given. My name is Rutuja Bhujbal currently pursuing my third year of Computer engineering from Dr. D. Y. Patil Institute of Engineering, Management and Research, Pune. Always reading one or the other thing and also has a keen interest in the field of technology. How we can implement the academic studies into real life applications is my aim.

**Major Expertise of team members/individual:** I have learned about DSA, Web development using html, CSS, JavaScript. Majorly using Python as a programming language for machine learning projects. Also, about databases and MYSQL, MongoDB.

**Roles and responsibilities of team members/individual:** I will basically use the dataset given in the problem statement. Importing various libraries of python like pandas for data processing, numpy for linear algebra, etc. Training the model using equations for the recommendation section for the products. Testing the model by running it and observing if there are any errors or not if there are some, they will be corrected and then again the model will be tested.

**Previous projects undertaken:** I have projects with the help of C++ language which was a student information section, using Mysql I have made banking management system, With the help of python and machine learning I made projects like Titanic survival predictions, home price Prediction, and I am currently working on Pharmacy management system which will have both frontend and backend.

**Team/Individual strengths:** I have competitive spirit in me. Always been interested in the field of technology and my coding as well as DSA fundamentals are clear. I am quite creative when making any designs or presenting one’s projects.

**Team/Individual achievements:** I have certifications from Michigan University for Python, Udemy Certification for c++ and web development, also from coursera and great learning,

**Personal motivation:** As my approach is to use machine learning for personalized recommendations, applying mathematics like statistics and linear algebra for data visualization and analysis is very intriguing. It is quite exciting to make such a project for shopping and helping to reduce our time.