**PROJECT INTIALIZATION DOCUMENT**

**1. DETAILS**

**Team Details:** Mr. Prithviraj Shevade (shevadeprithviraj11@gmail.com)

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

**2. DEFINING PROJECT AND ITS SCOPE**

**Understanding of the project:** Personalized fashion recommendations are pivotal in enhancing the customer shopping experience, especially for a brand as expansive as H&M. By leveraging predictive analytics and building a recommendation engine, H&M can anticipate and cater to each user's preferences, creating a tailored and personalized journey for every shopper. With a vast dataset collected from both online and physical stores, the potential for personalized recommendations becomes even more significant. However, the abundance of choices on H&M's online platform can overwhelm users, potentially leading to abandoned purchases. To address this, our strategy involves developing a recommendation system that analyzes previous transactions, customer profiles, and product metadata to generate relevant and timely suggestions for users. By harnessing machine learning techniques and training models on historical data, we aim to simplify the browsing experience, increase user engagement, and drive business growth in the competitive fashion retail market.

**Reason for choosing this project:** I am drawn to this problem due to my dual passion for machine learning and fashion. As someone who enjoys online shopping and understands the frustration of sifting through countless products, I see the immense value in personalized recommendations to streamline the process. This project aligns perfectly with my previous experience in machine learning, particularly in prediction projects, and represents an exciting opportunity to delve into more advanced techniques. I am eager to explore various algorithms and predictive models, leveraging my proficiency in Python and its applications in the field of machine learning. Ultimately, I believe that not only will this project enhance my skills and knowledge but also provide a valuable solution for other customers who share similar shopping preferences and challenges.

**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 Prithviraj Shevade 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, 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 python language which was a blackjack game, using Mysql I have made library management system, With the help of python and machine learning I made projects like home price Prediction, and I am currently working on mobile price Prediction.

**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 for Python, Udemy Certification for c++ and web development, also from coursera.

**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.