



Panda Mall

Project Proposal

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1. Abstract

During the COVID-19 pandemic online apparel shopping stores, in Pakistan, have grown exponentially in number. One major challenge for customers is that at any given time there are hundreds of stores to buy from, which makes shopping a tedious task. Panda Mall is a web-based recommendation system for fashion products. It aims to find the ideal brand and products for you. The profile, preferences, purchase history and feedback from customers helps the recommendation system engine to find the best products and then display in a simplified web interface for convenient access.

2. Introduction

The lock-down imposed in the wake of pandemic closed shopping malls to ensure social distancing. As a result, hundreds of online shopping stores emerged and customers are left with a tedious task of browsing through multiple websites and social media pages just to find the right products. Studies [1] show that this problem of “choice-overload” can be “detrimental” and lead to indecision, unsatisfactory experience.

The purpose of this project to solve this “choice-overload” problem with a Web based Artificially Intelligent (AI) software which uses a content-based Recommendation System (RS) model to filter out a manageable few best option to buy from, for a customer, based on their preferences, purchase history and feedback. Data about brands and products will be obtained from:

- i. Websites of brands directly.
- ii. Registration at Panda Mall

The results obtained from the model will be presented in a simplified web interface along with all the necessary information for customers to make a buying decision with ease.

3. Goals and Objectives

The primary goals and objectives of this project are:

- To design a user-friendly website that helps in recommending the best clothing products for the user.
- To provide a platform where items of multiple stores are listed and recommend the one of buyer's interest.

- To use Machine Learning (ML) models such as collaborative filtering and produce efficient and effective recommendation engine.
- To recognize correspondence between the user ratings and response to improve results.
- To simplify and centralize online shopping under a single hood
- Reduce browsing many websites and social media pages for shopping for customers

4. Scope of the Project

The project will be implemented in three components. In first component, brands and product data will be collected from both automated web scrappers and a manual store registration process at Panda Mall website. After data analysis, it will be exported to the second component. Second component will take the data to train a machine learning model using a custom-built variation of collaborative filtering algorithm.

Third component will consist of creating a website module for the users. User can register on the website. With the account user can search a product of their interest. The items can be filtered with the various options size, color and preferred brand etc. Items displayed on the result query will filter through the options before it is fed as input to the model trained in component two, the output will contain a filter of the best recommended product for the particular user. After the purchase of product, users will be reminded to fill out the feedback against the purchase. This feedback will be permanently recorded for future recommendations.

5. Initial Study and Work Done so Far

In the past few years due to growth in online clothing stores few personalized clothing recommendation systems have been produced by implementing several different algorithms. Hu et al. [2] researched on personalized clothing recommendation systems. He presented a functional tensor factorization approach to describe user-item and item-item interaction. Nogueira et al. [3] proposed a new collaborative filtering algorithm for better accuracy in clothing recommendation systems. After a lot of research, we have inclined towards collaborative filtering method for our recommendation system as we have found it more effective and accurate in these types of recommendation systems. Landia in [4] explains challenges faced during construction of fashion recommendation system. He has organized challenges into two categories namely retailer related and customer related. The prior consists of short lifetime of items and high volume of items, whereas seasonality and rapidly changing customer preferences make up some of the customer related challenges. Majority of the

recommendation systems deal with products from a single clothing store unlike our system which will deal with different type of clothes from different clothing stores.

6. References

- [1] Reutskaja, E., Lindner, A., Nagel, R. et al. “Choice overload reduces neural signatures of choice set value in dorsal striatum and anterior cingulate cortex.” *Nature Human Behavior*, vol 2, no. 925–935, Oct, 2018. [Online serial]. Available: <https://doi.org/10.1038/s41562-018-0440-2> [Accessed Sept. 30, 2021]
- [2] Y. Hu, X. Yi, and L. S. Davis, “Collaborative fashion recommendation: A functional tensor factorization approach,” in Proceedings of the 23rd Annual ACM Conference on Multimedia Conference, 2015.
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