

Smart Fashion Recommender Application

Team ID : PNT2022TMID49228

TEAM LEADER: P JEBAMALAR

TEAM MEMBER : S KAVEYA

J M PAVITHRA

S SINDHU

MENTOR : A POOBALAN

ABSTRACT

The increasing popularity of online fashion and online retail platforms is having a visible impact on the shopping experience of billions of customers, making millions of products available in online catalogues thus eliminating the need for physical visits to various stores and for waiting in long queues or trying on clothes in dressing rooms by providing personalized and affordable deliveries. This turn has created novel challenges for platform providers, within which proper understanding of fashion choices of shoppers plays a crucial role. Shoppers tend to feel overwhelmed by the sheer choice of the assortment and brands, not being able to receive effective suggestions matching their style preferences as well as not being able to spot the right size and fit during the shopping experience. As a result, recommender systems are gaining momentum by mining through large and diverse silos of product catalogues as well as customer datasets in order to provide personalized recommendations of outfits, complimenting the shopping session with similar and relevant products, understanding and suggesting the correct size and fit for shoppers, recommending with personalized styles and leveraging the social influence affecting the choice of style and buying behaviour of new generations of shoppers. To this end, within this chapter we aim to present a state of the art view of the advancements within the field of recommendation systems in the domain of fashion. We discuss in detail the open challenges and provide an outlook on current and future work in this exciting multidisciplinary field.

LITERATURE SURVEY

1. Mr. Samit Chakraborty and Mr. Saiful Hoque, in their paper titled **“FASHION RECOMMENDATION SYSTEMS, MODELS ANF METHODS”** in the year 2021 have presented a detailed explanation about fashion recommendation systems. The system implements a thorough logic on how to present the ideal fashion that satisfies the requirements of the user. The system takes in information from the user about the specifics on what is needed. The system then collects all the information provided by the user such as what type of material, style of clothing, brands if any, sizes, occasions, moods, personalities etc. and it dumps it all on the specific algorithm. The algorithm then calculates the result based on all the parameters provided. It generates a series of outputs or in other words suggestions or recommendations that suite the user’needs. From that it then filters out the best possible fit that the user islooking for.

2. Mr. Malcolm Bernard, in his book titled **“FASHION AS COMMUNICATION”** in the year 2008, has talked about the social lifestyle part of fashion. He delves deep into the idea of fashion as being an international language for communities. In this fully revised and updated edition, Malcolm Barnard introduces fashion and clothing as ways of communicating and challenging class, gender, sexual and social identities. Drawing on a range of theoretical approaches from Barthes and Baudrillard to Marxist, psychoanalytic and feminist theory, Bernard addresses the ambivalent status of fashion in contemporary culture.

3. Ms. Jia Jia and Mr. Ke Gao, in their paper titled **“TRIP OUTFITS ADVISOR: LOCATION ORIENTED CLOTHING RECOMMENDATION”** in the year 2016, proposed a hybrid multilevel convolutional neural network that is combined with SVM (Support Vector Machine) that captures the complex relations between attributes of clothing and location collectively. The CNN architecture has been adapted by the author to the multi label learning and has fine-tuned it using each clothing item. The recognized items are being given as input to SVM in order to learn their correlations using which the outfits are recommended to the user. After conducting experiments using three fashion datasets with an ideal destination outfit dataset shows that the proposed method outperforms several baselines by over 10.52-16.38% in terms of the map for clothing item recognition when ranking clothing by appropriateness for travel destination.

4. Mr. T. H. Ying Huang, in his paper titled **“OUTFIT RECOMMENDATION BASED ON DEEP LEARNING”** in the year 2017, proposed an outfit Recommendation System based on deep learning. This methodology consists of two important parts as follows:

Feature Extractor and Binary Classifier. In first step, the feature extractor is used to extract the information about the input like colour, pattern, etc. and then it is passed to the binary classifier to get the output as good or bad in the form of “1” and “0” respectively. As the network is huge for training, he made use of ResNet-50 as feature extractor in the model.

5. Mr. Gregory F. Cooper and Mr. Edward HersHKovits, in their paper titled **“A BAYESIAN METHOD FOR THE INDUCTION OF PROBABILISTIC NETWORKS FROM DATA”** in the year 1992, proposed a flexible method for modelling complex joint probability.

Due to the flexible nature of a Bayesian network, it is appropriate to represent the complex relations between preferences given by user and context. According to them, a user owns clothing items according to her / his preference so that the number of clothing items will not be the same for each color and that they assume it to be desirable for users that the system recommends items suitable to the specified temperature, season and occasion and that every item is recommended with equal frequency. The author constructs the Modified Bayesian network with an extra node for the system by two steps so as to satisfy the above two requirements.

6. Mr. Wei Zhang and Mr. Bo Begole, in their paper titled **“REAL TIME CLOTHES COMPARISON BASED ON MULTIVIEW VISION”** in the year 2008, proposed a method that recommends clothing that is “similar” and “different” than the clothing that a person is trying on in the mirror. This responsive mirror provides the user with “self” and “social” clothes comparisons. This will suggest cloths based on “similar” and “different” terminologies. Key components of this system are “motion tracking” and “clothes recognition”. It uses a technique called “Linear regression” to predict similar clothes. As it uses responsive mirrors, that is there are two cameras, one in the front side and another in the ceiling. As users try some new clothes, he has to come to the room where these cameras are fixed. Motion tracking factor captures the movement and clothing recommendation factor will suggest clothes based on his movement. There are two mirrors, left mirror shows the user in previous garments and similar pose, this will help the user to compare new clothes with the previous one. Whereas the right side mirror gives people wearing similar styles or different styles, this enables the user to compare with social clothing. Although it allows self and social comparison but will suggest

clothes based on user's previous or other users choice, those suggestions may not be trendy and fashionable.

7. Mr. Yan Zhang and Mr. Xiang Liu, in their paper titled **“Fashion Evaluation Method for Clothing Recommendation Based on Weak Appearance Feature”** in the year 2017, proposed a method that evaluates the fashion level of an individual using weak appearance feature to evaluate fashion level. The proposed methodology put forward three major aspects of weak appearance feature to characterize fashion levels. It creates the first table as customer fashion level classification which characterized individuals based on the fashion level. The aim of this is to provide objective clothing recommendations to the customer. Then it creates the second table as a garment fashion level classification which is based on data from fashion designers, buyers, vendors, and producers. Then it extracts some features like the shape of the face, eyebrows placing, makeup, hair colour, accessories, etc. Finally, the customer's fashion level can be characterized by “support vendor product”. It has great impact on clothing recommendation system, sometimes recommend lower level fashion.

8. Mrs. Qingqing Mao and Mr. Aihua Dong, in their paper titled **“Intelligent Costume Recommendation System Based on Expert System”** in the year 2018, proposed a method that recommends clothing based on an expert system. This methodology provides customer collocation solution. This system will first find how expert systems will solve a particular problem and then apply some artificial intelligence techniques to solve that problem, supported with vast knowledge and expert's experience. This system will firstly fetch specific physical information of the user such as body shape, face shape, etc. using manmachine interface. Then based on

this physical information, the system will set up costume matching knowledge-based collected from experts and represents this knowledge with supporting production rules. And finally, they recommend the clothing to the customer with modified blackboard model reasoning. This system provides more personalized and professional clothing recommendations and costume matching knowledge from fashion experts. For this purpose, it uses serial blackboard model and index adding algorithm. With the use of these methodologies, the search rate can be improved. This system recommends cloths only based on physical traits like body shape, face shape, skin color, shoulder shape, etc. It will not consider any other factor for the recommendation.