Bachelor of Technology

Project Presentation

Phase I

Department of Computer Engineering

Sardar Patel Institute of Technology

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A PRESENTATION ON

“Pocket Fashionista - A Complexion based Outfit Color Advisor using Neural Networks”

By

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Introduction

- Fashion is a popular aesthetic expression at a particular time, place and in a specific context, especially in clothing.
- There is always a case where we get the perfect T-shirt with the perfect color but can’t match the pants with that color.
- Or the cloth color does not match our complexion but it did match the model's skin tone.
- The conventional invention is focused on the coordination or sale of the product while the user directly dresses, and thus does not really help users who lack color sense or do not fully utilize the clothes they own.
- So the solution to this is a program which recommends the user a list of color combinations according to the user's skin tones. The model especially focuses on Indian skin tone.
- It can be a personal fashion advisor on the basis of users' complexion.

Literature Survey

Sr. No.	Paper Name	Methodology	Drawbacks	Conference
1.	Design of Intelligent Clothing Selection System Based on Neural Network	Applied SOM(self-organizing map) neural network to the classification function of the clothing recommendation system based on season, occasion, posture and skin color of the user.	Database is formed using user's information and recommendations are only based on that.	2019 IEEE 3rd Information Technology,Networking,Electronic and Automation Control Conference (ITNEC 2019)
2.	Powering Virtual Try-On via Auxiliary Human Segmentation Learning	Used CP-VTON and warping technique to provide virtual trials of clothes on the model's body in a 2D image.	As 2D images are used, clothes are simply added onto the model's body.	2019 IEEE/CVF International Conference on Computer Vision Workshop (ICCVW)
3.	Outfit Recommender System	Faster RCNN(Region-based Convolutional Neural Network) is used for recommendation by identifying the type of event through object detection from the user's uploaded picture.	Event identification leads to increased modules and efforts.	2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)

Literature Survey

Sr. No.	Paper Name	Methodology	Drawbacks	Conference
4.	Applying Image Warping Technique to Implement Real-Time Virtual Try-on Based on Person's 2D Image	Using Image Warping Algorithm, i.e ,by calculating mapping functions and resampling algorithm , feature points are decided on a 2-D image	Very few features points are considered	Second International Symposium on Information Science and Engineering
5.	Smart Closet -Statistical-based apparel recommendation system	On the basis of statistical frequency and history viewing module, the recommendations are provided.	Recommendations are not given spontaneously , but by studying the previous choices	2014 Third ICT International Student Project Conference (ICT-ISPC2014)
6.	Skin Segmentation based on Improved Thresholding Method	Using RGB color space with Kovac's Method for segmentation of skin colour and outfit is obtained	Facial elements are like eyes nose are also segmented as outfit.	15th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology

Literature Survey

Sr. No.	Paper Name	Methodology	Drawbacks	Conference
7.	Personalized Clothing Recommendation Based on Knowledge Graph	By constructing knowledge graph of user, clothing and context, utilize Apriori algorithm to capture correlations between clothing and context attributes. match the established KG according to the user's requirements and combine the Top-N algorithm to generate the recommendation results	It does not consider the similarity in different dimensions , and the accuracy of attribute weights is not considered comprehensively.	2018 International Conferences on Audio Language and Image Processing(ICALIP)
8.	Personalized Clothing-Recommendation System based on a Modified Bayesian Network	Considering user's personal preference and history of clothing items. Using Bayesian networks and the feedback of recommendation output evaluation by the user, recommend clothing combination from users wardrobe.	Need to keep track on history of clothing items. User need to give the feedback every time.	2012 IEEE/IPSJ 12th International Symposium on Applications and the Internet
9.	Weather-to-garment: Weather-oriented Clothing Recommendation	To learn the weather-oriented clothing recommendation model, define a scoring function. The function includes three potential terms to model the relationships. Use multi-class Support Vector Machine(SVM) / CNN to learn clothing attributes recognition.	The system is only restricted o weather based and pair match outfit. No consideration of other factor.	Proceedings of the IEEE International Conference on Multimedia and Expo (ICME) 2017

Literature Survey (Patents)

Sr. No.	Patent Name	Description	Drawbacks	Source
1.	Personalized clothing recommendation system and method	A method and system provides an automated clothes shopping recommendation based on personal style information and based on measurement information. On-site direction assistance is provided to the user through provision of an augmented reality display on a mobile electronic device.	As this invention is giving recommendations based on size measurements of the user, it may sometimes give wrong values of size thus reducing the efficiency of the system. The system takes user inputs for his style preferences which slightly is not an automated approach.	https://patents.google.com/patent/US20140180864A1/en?q=clothing+recommendation&oq=clothing+recommendation
2.	System and method for providing fashion recommendations	Providing fashion recommendations based on an image of clothing. Color, pattern, and/or style information corresponding to the clothing may be identified and used to find relevant clothing and/or accessories in an inventory to recommend to a user. The image may be a video of clothing and/or accessories on a human body in motion. Provides real-time recommendations to the user. The image may comprise clothing of interest that is associated with a celebrity.	The user's interests are not taken much into consideration while giving recommendations. The latest trends followed by celebrities are considered for giving recommendations somewhere without considering the user interests.	https://patents.google.com/patent/US20140310304A1/en?q=Clothes+Color+recommendation&oq=Clothes+Color+recommendation
3.	Intelligent dressing recommendation system based on weather	The invention discloses an intelligent dressing recommendation system based on a weather situation. Through the recommendation of a system, a user matches and wears clothes, the warm keeping effect and the comfort of clothes are guaranteed while the attractiveness of the user is both given consideration; the user selects to go out to reach a scene, so that the system can better recommend matching and dressing, and therefore, the user achieves an optimal dressing effect after reaching the scene.	The user's historical data such as his interests are taken into consideration which gives recommendations however, the user interests may change over time which may again lead to slight inaccurate predictions.	https://worldwide.espacenet.com/patent/search/family/062525795/publication/CN108170728A?q=Clothes%20color%20recommendation

Literature Survey

Sr. No.	Patent Name	Description	Drawbacks	Source
4.	Coordinated referral system based on color combination	Extracts color from an cloth , and predicts suitable harmonious colors	Color combinations are recommended as per user input.	https://worldwide.espacenet.com/patent/search/family/054344180/publication/KR20150110836A?q=cloth%20recommendation
5.	Clothing matching recommendation method and clothing matching recommendation device based on pictures	Based on the dominant color or the on the basis of threshold ratio of colors another color is recommended	Dominant colour is the only factor for recommendations	https://worldwide.espacenet.com/patent/search/family/052758991/publication/CN104484450A?q=colour%20recommendation
6.	Digital wardrobe with recommender system	Outfits are matched as per the input by the user , i.e , from user wardrobe	Intelligent recommendations isn't provided.	https://patents.google.com/patent/US20140279186?oq=Outfit+Color+recommendation

Literature Survey

Sr. No.	Patent Name	Description	Drawbacks	Source
7.	System and Method for generating automatic styling recommendations	System categorised body shapes into standard groups of body. classifying garments into some garment mold. By receiving at least one parameter and based on that recommend min. one garment recommendation according to styling rules.	Outfit styling are based on a finite number of body groups, there are possibilities to give incorrect results while selecting body shape and size.	https://worldwide.espacenet.com/patent/search/family/059500720/publication/WO2017134599A1?q=personalized%20recommendation%20system%20for%20matching%20outfit%20%20
8.	Clothing matching system and method	Using wardrobe data and use a probabilistic model that comprises probabilities of clothing items being matched with each other based on one or more parameters. System will receive input from users as one or more parameters and algorithms perform an optimi-zation to generate optimal or near-optimal outfit suggestions from wardrobe data.	Need past and current data of wardrop of user's , which might not always give more optimal outfits recommendations.	https://worldwide.espacenet.com/patent/search/family/050685012/publication/WO2014074072A1?q=outfits%20color%20combination%20recommendation%20method
9.	System and Method for providing automated clothing fashion recommendations	Uses client-server social- network for providing automated clothing sugge-stions. fashion social network s/w, and a database to store user basis clothing information, fashion preferences, users social n/w linkage and fashion preferences.	Need CLient - server network for fashion social network.	https://worldwide.espacenet.com/patent/search/family/052111657/publication/US2015026084A1?q=outfits%20color%20combination%20recommendation%20method

Gaps/Issues Identified

Sr. No.	Paper Name	Gaps/Issues
1.	Design of Intelligent Clothing Selection System Based on Neural Network	1. The Skin tone classification done here is only restricted to Black and White. 2. The recommendations are based only on the database created from previous user inputs.
2.	Powering Virtual Try-On via Auxiliary Human Segmentation Learning	1. Only 2D images are used for trials. 2. The clothes images are pasted over the existing model image. 3. Proper fitting of clothes on the model's body is not shown as per the physical measurements.
3.	Outfit Recommender System	1. Event identification is automated with object detection which is time consuming. 2. Clothes recommendation is restricted to only 53 categories.

Gaps/Issues Identified

Sr. No.	Paper Name	Gaps/Issues
4.	Applying Image Warping Technique to Implement Real-Time Virtual Try-on Based on Person's 2D Image	1.Very few feature points are considered , resulting in vague fitting 2.There isn't any recommendation involved, output is provided only on the basis of users input. 3.Total 13 body marks are mentioned whereas feature points are implemented on just 5 marks
5.	Smart Closet -Statistical-based apparel recommendation system	1.Recommendations aren't spontaneous but only on the basis of user previous choices. 2.There is no processing on the basis of color recommendations. 3. Static Recommendations in terms of colors are provided
6.	Skin Segmentation based on Improved Thresholding Method	1.Skin colour detection is negligible. 2.Facial Elements such as eyes , nose are not segmented properly

Gaps/Issues Identified

Sr. No.	Paper Name	Gaps/Issues
7.	Personalized Clothing Recommendation Based on Knowledge Graph	1. Need to construct knowledge graph for user, clothing and context. 2. Used basic apriori algorithm which not give maximum accuracy as compare to other algorithm.
8.	Personalized Clothing-Recommendation System based on a Modified Bayesian Network	1. User need to give the preferences and feedback for every time. 2. Clothes item information is taken by RFID. 3. The Internet or refer to magazines to learn a user's preferences without direct user input,
9.	Weather-to-garment: Weather-oriented Clothing Recommendation	1. The system only restricted to weather condition so many time can not gives best recommendation. 2. Weather dataset need to update every time. 3. Used Alexnet & Normalized Discounted Cumulative Gain (NDCG) that is extra technology needed.

Problem Statement

- People usually find it difficult to get the best clothing color combinations that suit their skin tone well and go well with the existing fashion trends.
- The aim is to develop a complexion based clothing color recommendation system that will help to choose the best possible clothes color combinations.
- It will also allow the users to virtually visualize how they will look in the recommended color combinations.
- The application will allow users to make best choices with their clothes color combinations and thus saving their time and energy in even trying out the clothes.
- Easy for merchants to master the real-time demand of consumers.

Gaps/Issues Resolved

- Skin Color Detection especially the Indian skin tones , on the basis of 7 skin color meter.
- Intelligent color recommendations in the form of outfit wil, be provided according to the skin color.
- Weather and Occasion based recommendation will also be provided to the user.
- Virtual Trial Room System will be created for efficiently providing user , try-ons.

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THANK YOU