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Virtual Dressing View: A Survey

Ankita Keskar, Juilee Deo, Prajakta Shinde, Triveni Zambre, Prof Ratnaraj Kumar

Department of Computer Engineering, G.S Moze COE, Balewadi Pune, India

ABSTRACT: Real time virtual dressing room is used in shops, mall and any shopping center. Trying cloths in shopping center is actually a time consuming activity. Besides, it might not even be possible to try on clothes in such cases as online shopping. Our motivation is to increase time efficiency and improve the accessibility of clothes try on by creating virtual dressing room environment. There has been a great increase in interests towards online shopping. In case of purchase of products like apparels which always require a sense of knowledge on how cloths would fit upon a person. This is the major reason why less number of apparels are being shopped online. Hence, a virtual dressing room which would make people know how cloths personally fits in would be a great luxury for the online sellers which could give a wide choice for customers. For online marketers, this would be a great approach for enhancing its market.

KEYWORDS: Color clustering, Human contour, -Online shopping, Virtual fitting.

I. INTRODUCTION

The dynamic-based clothes animation technique usually involves mathematical cloth model, numerical integration of ordinary differential equations, collision detection between the body and clothes, the self-collision detection of clothes, and other complex issues, resulting in the simulation performance is difficult to meet the real-time need of clothes animation. As an essential part of clothes animation, the dressing process also has important impact to the overall system performance and applicability, even restricting the prospect of clothes animation.

1.1 Overview

The system focus on dynamic-based clothes animation technique usually involves mathematical cloth model, numerical integration of ordinary differential equations, collision detection between the body and clothes, the self-collision detection of clothes, and other complex issues, resulting in the simulation performance is difficult to meet the real-time need of clothes animation. As an essential part of clothes animation, the dressing process also has important impact to the overall system performance and applicability, even restricting the prospect of clothes animation. The technique of Virtual Dressing Room for the virtual fitting of clothes to a person involves the recognition of human from the background with respect to light variations and with least disturbance of other objects. This is to be followed by detecting contour of both upper and lower body, which is done by taking laplacian filter and then edge detection. After then, feature points are extracted based on the basic structure of human. With these points as reference the sample shirt is warped to fit for the person perfectly.

1.2 Background

Basically this technique of Virtual Dressing Room for the virtual fitting of clothes to a person involves the recognition of human from the background with respect to light variations and with least disturbance of other objects. This is to be followed by detecting contour of both upper and lower body, which is done by taking laplacian filter and then edge detection. After then, feature points are extracted based on the basic structure of human. With these points as reference the sample shirt is warped to fit for the person perfectly. This algorithm mainly aims for men's wear. Generally men's wear has to be selected very carefully as ones clothing speaks very much about the person before they speak. And also the choice of matching the shirt and pants is of peculiar concern. The benefit of bringing the wide choice of online availability with the assistance of feeling how cloths would look, to the hands of person through the technology gives a great pleasure to the customers. A Virtual Dressing Room is to fulfill all the above necessities and would give the comfortability of online shopping of clothes and hence a wide choice to consumers. This also strengthens the platform

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of marketing to the producers of dress materials leading to the development of mass retailing of dress marketers. This Virtual dressing room also aims at costume designers to check how cloths looks before the actual manufacturing enabling one to try new more designs of both formals and casuals for men leading to a new trend set up and bringing out of wide and different products to the market.

II. LITERATURE SURVEY

[1] Srinivasan K. and VivekS. proposed Implementation Of Virtual Fitting Room Using Image Processing in IEEE International Conference on Computer, Communication and Signal Processing (ICCCSP-2017)

Author proposed a virtual dressing room approach using image processing. There has been a great increase in interests towards online shopping. In case of purchase of products like apparels which always require a sense of knowledge on how cloths would fit upon a person. This is the major reason why less number of apparels are being shopped online. Hence, a virtual dressing room which would make people know how cloths personally fits in would be a great luxury for the online sellers which could give a wide choice for customers. For online marketers, this would be a great tool for enhancing its market.

[2] Diplom-Ingenieur, Medieninformatik, Philipp Presle, "A Virtual Dressing Room based on Depth Data". In fakultat fur informatics (2012).

The amount of goods the buyers return may also be reduced due to a more precise representation than 2D images of the cloth they are willing to buy using Virtual Dressing Room that we will be introducing In this project .It offers a solution for the mentioned aspects. The application is based on a mirror, represented by a display that outputs the image of the camera [2]. If a person is standing in front of this virtual mirror, the person will be able to select desired clothes. The selected garment is then virtually superimposed with the image recorded by the camera. In general, this technique can be categorized under augmented reality (AR), where a real-time view of the reality is extended and additionally overlaid with additional information. This paper mainly focuses on the applications in cloth stores and also a home setup is possible as well.

[3] P. Ian Wilson and Dr. J. Fernandez "Facial feature detection using Haar classifiers," JCSC 21, 4 (April 2006).

For Haar classifier object detection the core basis is its Haarlike features. Rather than using the intensity values of a pixel, these features use the change in contrast values between adjacent rectangular groups of pixels. Then the contrast variances between the pixel groups are used to determine relative light and dark areas in the image. The haar-like feature is formed by two or three adjacent groups with a relative contrast variance. The haar features can be easily scaled and examined by increasing or decreasing the size of the pixel group. Haar like features as shown below can be used for face detection.

[4] Euratex (2000), Bulletin 2000/5, "The European Textile/Clothing Industry on the eve of the New Millennium," Brussels.

It is an open source software. OpenCV has C, C++, Python and Java interfaces which supports Windows, Linux and Android. It was basically designed for efficient computation. The OpenCV library can take advantage of multi-core processing as it is written in optimized C/C++. The usage ranges from interactive art, to the inspection of mines and also stitching maps.

[5] Philipp Presle "A Virtual Dressing Room based on Depth Data," Vienna University of Technology, Klosterneuburg.

One of the methods for the body parts detection is the use of the shape descriptors such as Histograms of Oriented Gradients(HOG)[5].

[6] K. Onishi, T. Takiguchi, and Y. Ariki, "3D Human Posture Estimation using the HOG Features from Monocular Image," in proceedings of 19th International Conference on Pattern Recognition, 2008.

Finding faces using images with controlled background: This is the easy way out. We can use images with a plain monocolour background and use them with a predefined static background. By removing the background, it will always give us the face boundaries[6].

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[7] D. Chai, and K. N. Ngan, "Face Segmentation using Skin-Color Map in Videophone Applications," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 9, no. 4, June 2014.

Finding faces by motion: If a real-time video is used, the reality that a face is almost always moving can help a lot. The face can be easily detected by calculating the moving area. The main disadvantage here could be, if there are moving objects in the background.

[8] J. Young Choi, Y. Man Ro and Konstantinos N. Plataniotis, "Color Local Texture Features for Color Face Recognition" in *proceedings of IEEE Conference*, 2011.

OpenCV comes with a trainer as well as detector. It can be trained with your own classifier for any objects like cars, cricket bat etc. We have used OpenCV to create one such trained classifier. Here we will deal with face detection. OpenCV already contains many pre-trained classifiers for face, eyes, smile etc. Those XML files can be stored at our desired path. We have developed face detector with OpenCV using haarcascades. Initially we need to load the required XML classifiers in our system. We have used the `haarcascade_frontalface_default.xml` as the base xml file. Later on the input image (or video) in grayscale mode which is captured by the camera of the system is loaded. Now we find the faces in the image. If faces are found, it returns the positions of detected faces as `Rect(x,y,w,h)`. We can create a ROI for the face detected, when this locations are detected [8].

[9] P. J. Phillips, H. Moon, S. A. Rizvi, and P. J. Rauss, "The FERET evaluation methodology for face recognition algorithms," *IEEE Trans Pattern Anal. Mach. Intell.*, vol. 22, no. 10, pp. 1090–1104, Oct. 2015.

Finding faces by color: If color images are used, the typical skin color to find face segments might be used. The main disadvantage here is it is not very robust under varying lighting conditions and doesn't work with all kind of skin colors [9].

[10] Brooks, A. L., Petersson, E. (2014), "Towards an Inclusive Virtual Dressing Room for Wheelchair-Bound Customers". In W. W. Smari, G. C. Fox, M. Nygrd (Eds.), *Proceedings of the 2014 International Conference on Collaboration Technologies and Systems (CTS 2014)*.

The task of trying clothes in stores is one of the most time consuming tasks today. Usually long queue and time required are not acceptable, for example when standing in front of full fitting rooms. Additionally time is lost when changing clothes many a times. Reducing this time and helping people to put on a large collection of garment is reduced time was a relevant motivation for this project. Using modern technology - hardware as well as software - the try-on experience can be exponentially improved. Even in web shops people are very sceptic buying clothes because an option for try-on of clothes is not available and also the feel of clothes cannot be judged. Reducing return rate of cloths.

III. PROPOSED SYSTEM DESIGN

3.1 Objectives

- Implement a system for online cloths.
- Implement a system on android base applications.
- Use a system on any kind of website.
- Implement a system which can be work with any platform
- Achieve minimum time complexity

3.2 Problem Statement

In this proposed work to design and implement a system, that can be work for online cloths store, which can provide the virtual view base on different users image using image processing approach.

3.3 Project Overview

For the deficiencies of existing ways for dressing, we propose a new method which can automatically fit the clothes on the mannequin without suture information, taking into account the actual needs of garment e-commerce. In our method, there is no need to set reference points, only need to put the clothes at the vicinity of the corresponding parts of mannequin. In addition, it would be best if the clothes shape is similar to the posture of mannequin roughly.

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3.4 Development Methodology

The software packages used for implementing the system use Android SD and languages used in the proposed system are php in server side, java in client side. Android is an operating system based on Linux with a Java programming interface. The Android Software Development Kit (Android SDK) provides all necessary tools to develop Android applications. This includes a compiler, debugger and a device emulator, as well as its own virtual machine to run Android programs. Android Software Development Kit (Android SDK) with Eclipse ADT is used for client side or for main application implementation. SDK 19 is used to develop the application.

3.5 System Architecture

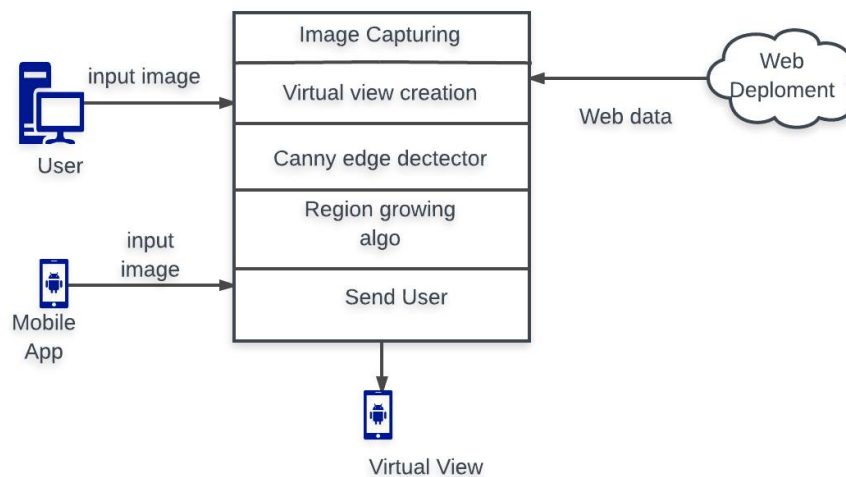


Figure 1 : Proposed System Architecture

IV. RESULTS AND DISCUSSION

This system analyzes show basic ideas of dressing methods as well implementation strategies, and proposes a new way of automatic dressing. The best advantage of our method is the dressing process takes only a few assumptions and manual intervention for various styles of clothes, making it is possible for dressing in virtual dressing room for clothes ecommerce applications.

V. SUMMERY AND CONCLUSION

. Growth in online shopping and the wish of people to have to enjoy its maximum utilization on purchase of dress with complete satisfaction of personal realization justifies the need to develop an algorithm which virtually dresses people with the selected dress. In order to achieve the above requirement, the algorithm in such a way that everything works reliably without the aid of external light adjuster or 3-D viewing or fixed camera, which is usually needed for the present algorithms creating the limitations of its own use, has been developed to reach out to all people. This algorithm would enable people to check out themselves with different dresses with less number of restrictions will give great pleasure to the online shoppers. The best advantage of our method is the dressing process takes only a few assumptions and manual intervention for various styles of clothes, making it is possible for dressing in virtual dressing room for clothes ecommerce applications.

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