

Novel Approach Towards a Digital Cloth Alteration System for Branded Cloth Store

¹Kuljeetsinh A. Jadeja, ²Dr. Ravirajsinh S. Vaghela

Abstract--*In the 21st century, people are merging themselves with technology the digital payment platform sets the most relevant example of it, which supports us to obtain our life in convenient ways. In the same way, cloth retailers are upgrading their shops with the most recent technology like online stock system, consumer's data, and feedbacks. All these luxury brand stores are typically producing one specific problem as they are repeatedly making offline cloth alteration records on paper slip likewise, one copy of slip has maintained by longtime customers. Furthermore, employees have been saving notes of cloth alteration slips for a long time which becomes messy when it is overmuch data. Besides, sometimes tailors may also mistakenly lose the paper slips. As a solution, we design an online system for storing frequent customer's cloth alteration data with a QR code generated the bill will be better. As a consequence, the employee will exactly send simple QR codes with their tailors and customers by WhatsApp or email, which is cost-effective and easy to track.*

Keywords--*Company, cloth alteration, employee, customers, Alteration, cloth, Industry, QR-code bill.*

I. INTRODUCTION

Cloth alteration system is simple and easy to understand by just exploring it, it will design on for employees and managers, and system does not require customer interaction. Update and edit options are available in each and every field. This standard system is flexible for future modification and changes for fostering fluent work environment. Information regarding work flow is describe under charts such as flow chart, state diagram and use case diagram. Additionally, one new sub-system proposed which generated QR-code with including all information related to alteration, time-date, employee name, etc. This system is completely developed for clothes retailers specially for clothing brand who are still using paper slips for storing alteration details similarly, upcoming version of this system is in under process which includes virtual reality for taking measurements of customers and store that particular data accordingly employees like excel sheet base, mailing to the customer about details, etc. In addition to that this VR system manage whole alteration task such as informing tailor about new alteration, updating system when alteration will be done, informing customers via a mail or message about alteration has been done.

II. LITERATURE REVIEW

2.1 Virtual sizing systems and methods

Chris Vandergriff, JeannmariePeifer [1] invented a Systems and methods for selecting, ordering, or furnishing apparel for independent members of a company such that the group associates dressed to project a mostly

¹CE-IT department, Marwadi University, Rajkot

²R.B. Institute of Management Studies, Ahmedabad.

government job holders. On initial stage one specific outfit would be chosen by the leader or manager after according to that each and every person utters his or her size data with a virtual machine. People come across this virtual method via one interactive application which is connected with computers and servers and operated by the expert, as a process it will gathered all the particular data related to size. Users common details collect by a network which will share with a virtual sizing server, and it will process virtual image based on pacific details of users, as a result it will give out of garments under limited standards.

2.2 Deviceis tailor to volume cloth

Developed a system in which main 3 phase of tailoring are connected with electrical operation. To begin with, the measuring mechanism is utilized for cloth length measurement used for the cloth shift. Second cutting mechanism work according to measuring the mechanism by perfect edge cutting and shaping of cloth. At Last, conveying mechanism connect measuring mechanism and cutting mechanism, all these three equipment are connected and handle by controllers which manage above all this operation. The utility model utilizes all the measurement data and operates automatically as a result it will save company's man power and other headache related to operations. Furthermore, the utility model analyzes and solves the error it would also make error list which help in future if any past error will appears again. Customizations of the model is possible and makes system flexible.

2.3 temporary hemming device

Sandra-Vernida, Ray King Garside[3]invented device for fast and temporary hemming device which includes flexible members having first end and second end and being made of comfortable materials for skin. Fastening device is available for fastening the first end and second end through garment, in which first part is attached with first end and second part is attached with second end and work simultaneously. A method for making a temporary hem includes overlapping an edge of a clothes, placing a temporary hemming device over the folded edge, and attaching the temporary hemming device to produce the temporary hem. A temporary hemming device includes a folded edge of a clothes and a temporary hemming device getting the folded edge in place.

2.4 Method and apparatus for temporarily and decoratively altering clothing

Stephanie Brasher [4] Proposed system in which a garment assembly includes a garment and a temporary hemming element. The garment includes one or more than one fold where a portion of the garment is folded back upon itself. The temporary hemming element contains a pin accepting a distal end extending from a second side of an outer portion. The outer part is located on the garment so that the pin expands through the fold until it sticks completely through the fold. An inner part of the temporary hemming element receives the distal end side of the pin of the outer part to produce a temporary attractive hem. The temporary hemming element can have at least two pins to obstruct movement of the temporary hemming element.

2.5 System and method for managing the alteration of garments

Charles Frankel, FangZhong, Ding Timothy, J. FindlowRobert, M. Millman [5] developed a system in which all the data of alteration managed by one program name workroom. This system includes a display and operating a garment alteration application system. In step-1 one, alteration ticket has been created which move further and store in data base with subjective information regarding size, time and date respectively. In step-2, ticket can be updated and edited according to workflow. In last step, all the record of clothes alteration is stored under workroom database which provides reports and statics by various database queries and most important that alteration ticket help both employee and customer for finding current status of particular garment.

2.6 Apparatus and method for the remote production of customized clothing

Philip J. Ramsey, Gerald S. Ruderman, Bethe M. Palmer [6] Provided a method for making custom fit clothes where customers give data regarding size such as length, height and much more, after that fabric would be selected by them. The dimensions related the data store under a database of computers because this data only determinable by specific person. Data send to custom tailoring machine which discover actual dimensions and made super fit clothes for customers similar to any branded clothes but fitting and alteration is acceptable by body with ease.

2.7 Computer aided custom tailoring with disposable measurement clothing

Joong H. Chun [7] Invented a method by that mass production of clothes measured and made perfectly by computer system, basically process is little bit complex to understand but it simply translation is that when person whom size idle for mass production is goes under measurement by wearing measurement tape around him/her, after that video recorder catch initial size details by including all part of body later this details pass through computerized way to other computer which calculate and convert this size signals into wire based a frame of similar and accurate body measurement of that person. All this details are then used for modification of the modifiable mannequin to the equivalent given size. At the end, tailoring and alteration work had been done on a mannequin without disturbing the first person for measurement.

2.8 clothing matching system and method

Pathak Shantha, Shah Swati [8] proposed system which find similar pattern in clothes for example finding matching article in bunch of garments would be harder by just comparing color and pattern. This system capture one image and identifies according three things are a face region, a torso region, and a bottom region. The clothing matching system further recognizes (1) Color combination and striking contrast of the captured image (2) a dress color and a pattern of clothes of the user in the captured image (3) a body classification of the user, and (4) a skin tone of the user in the captured image. The clothing matching system properly communicates accurate information related to the captured image to the secure server. The dedicated server receives and compares the information related to the captured image of the user with the training patterns stored in the ML model to compute a score for the captured image of the user for the dress combination.

2.9 System for designing custom-made, form fitted clothing, such as bathing suits, and method therefor

Michelle Deziel [9] Designed a system mostly for women bath suit which includes a video camera that capture front, side and back views of the female or human form and generates fronts, side and back video frame images. In one representation, the controller electronically identifies the front, side and back trunk of the female form using these images. The computer generates charts of the trunk. The operator consequently selects a plurality of vertically spaced measuring points along the front and side outline maps. The system calculates the lengths of a plurality of circumferential curves about the female at the measuring points based upon the front and side outline charts. The curve lengths are then converted into cutting dimensions for clothe after that operator selects one of a number of standard styles and size selections of formfitting clothing from a look-up table which is maintaining the standard pattern of unique maps. The computer generates custom dimensions of charts and completes altering at last it generates combined report of including cure size, outline and final map for main operators.

2.10 System for in-scene cloth modification

David Stanley Immel [10] invented system that provides animation body for design clothes and adjusting garments by choice. Modification panel is there to re-track all the changes step by step additionally relaxation of garment would be allow in new panel as well as it take shape of old panel too. On initial stage designer use animation model for drafting or creating apparel style around it after that simulation provide modification factor to re-design garments by choice, most important thing is panel provide all the changes record so, modification or re-simulation become easy for designer.

2.11 System and method for fitting clothing

Jacob Karl Kozinn [11] proposed method for fitting clothes by body dimensions of an individual's body, personal style and fit preferences so that clothing for that individual can be selected and/or manufactured. This method work according different steps. Step-1-Initiating standard body dimensions and ratios for a given clothes style. Step-2-fashion and design were chosen by individual's preference. Step-3-take proper knowledge about individual's fitting and size detail for perfect dimension. Step-4-Scanning all the information regarding the individuals personal style and fit preferences and creating cloth according body dimension.

2.12 Method and Apparatus for Apparel Customization

Burr Elizabeth [12] figured out methodology for apparel mass customization in which customer only gave sizing data only one time after that, it would store under virtual data base and also record maintain and modification done according customer choices by the time data will can be deleted or edited for long term serving. The most important thing is that customers can track and reorder new apparel in modern styles and fabrics at any time. There is one pattern making algorithm which make different pattern for controlling data and also provide certain modification to basic style data. At the end, combination of all data would use for stitching new apparel, as above

mention mass customization is possible because same data use for many garments and style moreover, changes in fabric and size is flexible by changing automated pattern.

2.13 QR QR code and terminal using the same

Martin Paul Moshal[13] created a program for fast billing using QR-code. All the data regarding bill such as items and there price, quantity and dates of buying are combine together and make one QR-code which can easily scan by mobile devices and sharing and storing comparatively less hard then paper invoices. It contain notifications types of feature like when scanning or sharing is happen it will give quick response to user about it additionally storing data in QR-code will be safe like encryption methods no one can directly access it. At last using this time billing system saves time of everyone because only one code will provide necessary information.

2.14 Virtual reality-based environments including user avatars

Nery J. Nieto [14] invented a method by using virtual reality system which scan person and his/her body measurement by VR based device. As a result, it will design one avatar according size after that this system checks various types of clothes and styles for that avatar. This whole process assists customers to find their most proper outfit without trying it, they can assure this fashion will be suitable for them. In addition, they can execute various experiments on that avatar by changing various fashion items. This system also has some error messages sets such as if avatar does not fit under particular cloth it will indicate size does not fit error, body measurement error will be also display if any size reaming to take.

2.15 System for generating virtual clothing experiences

Curtis A. Vock [15] proposed the system for virtual cloth experience. Initially person stand near wall and two or three cameras capture the entire body images, which are equivalent to the reflection of the person in a mirror this image will be ready to go under synthesize a process with image 2. Secondly, the same images capture by the camera again but with clothes and person together now, this image will be combine with image 1. As a result it will produce different virtual cloth experience on that specific person this data will store online on the data base so he/she can buy clothes online with perfect size information, moreover. These details might help to tailors for stitching cloth without measuring customers personally with measure tape

III. PROPOSED MODEL

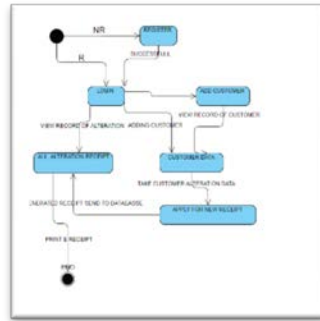


Figure 3.1

Here the flow chart illustrates the working flow of employees. First he/she requires to be register and has authorized employee Id after he/she can acquire thorough system any time with their ID, second he/she can add new customers and include all valuable data of customers regarding alteration, at last whenever they received recent alteration at that time they will create new alteration query with substantial information all this information store under genuine database, this query also generate one e receipt which will share with customers and tailor too.

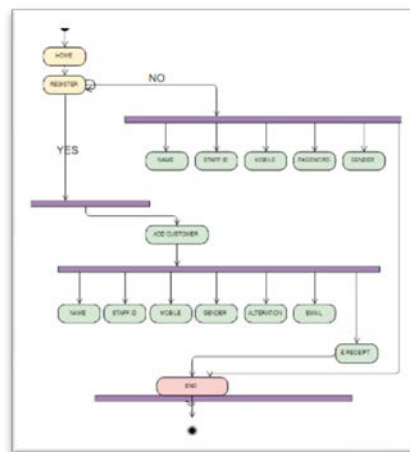


Figure 3.2

Given the state diagram demonstrates the various information fields are cover under which state, for example employee should provide his/her name, staff ID, mobile, password and gender. On other hand, employee will note down customer's name, age, size data, mobile number, email-ID, etc.

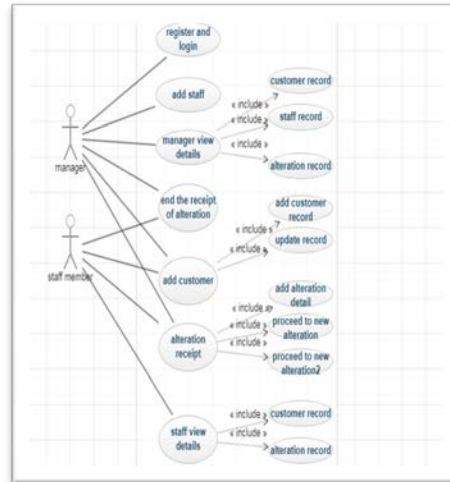


Figure 3.3

Above use case chart depicts user related task, what are the roles of manager and employees are clearly figured out moreover this chart define authority level of person and his limit of work.

IV. CONCLUSION

After reviewing and analyzing other systems I proposed simple working architecture which performs the task such as storing customer measurement data according to that it will generate one QR-code which will use by employees as well as tailors, so they would be altering the clothes by particular size. As the task will complete, the employee could update system status with done and will inform the customer to take their cloth. The most significant thing about this system is that, it would store all data under specific database and this data will again reuse, when that particular customer will be repeated by the time. Updating and editing options are available which make this system flexible for practical use. As a trail this system right now under use by ZION Apparels garments firm they have clothes franchise such as Louis Philippe and Van Heusen.

REFERENCES

1. Vandergriff, Chris, and JeannmariePeifer. "Virtual sizing system and method." U.S. Patent No. 7,548,794. 16 Jun. 2009.
2. HU YONGMING. "Device is tailor to volume cloth" China Patent No.201620364073. 2016.04.27
3. Garside, Sandra-Vernida Ray King. "Temporary hemming device." U.S. Patent No. 5,787,511. 4 Aug. 1998.
4. Brasher, Stephanie. "Method and apparatus for temporarily and decoratively altering clothing." U.S. Patent No. 6,865,751. 15 Mar. 2005.
5. Mathumathi.K.M. and SenthilPrakash.K.. "ENERGY SENTIENT QOS IMPLEMENTED NODE-DISJOINT MULTIPATH ROUTING PROTOCOLFOR MANET." International Journal of Communication and Computer Technologies 5 (2017), 67-75. doi:10.31838/ijccts/05.02.06

6. Frankel, Charles, et al. "System and method for managing the alteration of garments." U.S. Patent No. 6,151,531. 21 Nov. 2000.
7. Ramsey, Philip J., Gerald S. Ruderman, and Bethe M. Palmer. "Apparatus and method for the remote production of customized clothing." U.S. Patent No. 6,353,770. 5 Mar. 2002.
8. Chun, Joong H. "Computer aided custom tailoring with disposable measurement clothing." U.S. Patent No. 4,885,844. 12 Dec. 1989.
9. Shah, Swati, and Shantha Pathak. "Clothing matching system and method." U.S. Patent No. 9,811,762. 7 Nov. 2017.
10. AnjuMeshram, Nidhi Srivastava (2015) EpipremnumAureum (Jade Pothos): A Multipurpose Plant With Its Medicinal And Pharmacological Properties. *Journal of Critical Reviews*, 2 (2), 21-25.
11. Deziel, Michelle. "System for designing custom-made, formfitted clothing, such as bathing suits, and method therefor." U.S. Patent No. 5,163,006. 10 Nov. 1992.
12. Immel, David Stanley. "System for in-scene cloth modification." U.S. Patent No. 6,462,740. 8 Oct. 2002.
13. Kozinn, Jacob Karl. "System and method for fitting clothing." U.S. Patent No. 7,584,122. 1 Sep. 2009.
14. Burr, Elizabeth. "Method and Apparatus for Apparel Customization." U.S. Patent Application No.11/914,100.
15. Tamizharasi S, Rathi V, Rathi JC. "Floating Drug Delivery System." *Systematic Reviews in Pharmacy* 2.1 (2011), 19-29. Print. doi:10.4103/0975-8453.83435
16. Moshal, Martin Paul. "Invoice payment system and method." U.S. Patent Application No. 14/356,568.
17. Nieto, Nery J. "Virtual reality-based environments including user avatars." U.S. Patent Application No. 13/490,016.
18. Vock, Curtis A. "System for generating virtual clothing experiences." U.S. Patent No. 8,843,402. 23 Sep. 2014.
19. AgbonayeOsaru|"TAILOR MANAGEMENT SOFTWARE" – www.sarutech.com/product/tailor – 29th Dec 2014.
20. Textronics|"Tailor-i" – www.textronic.com/tailor-i.html – 12th Dec 1990.
21. FATbit Technologies|"Stitch" – www.fatbit.com/start-custom-clothing-online-store.html – 7th jun 2004
22. Arbelsoft|"TailorMax" – www.arbelsoft.com/en/wp-nonscript/products/tailormax – 8th jan 2002
23. Tech tailor|"Tech tailor" – <https://www.tech-tailor.com> – 17th may 2016
24. Agarwal, A. (2016). Development of Architecture of Wireless Communication. *The SIJ Transactions on Computer Networks & Communication Engineering (CNCE)*, 4(6), 1-11.
25. AnbuSelvan, N., Abirami, E., Arul Sangeetha, A., Beaulah Fanny, F., &Gomathi, V.(2017).Application of LI-FI Technology in the Transmission of Sound at the Base of PWM. *The SIJ Transactions on Computer Networks & Communication Engineering (CNCE)*,5(1),1-4.ec
26. de Castro, J.F.B. Reflections about parapsychology and the philosophy of science: Has parapsychology progressed as A science to the point where science can include psi and transpersonal views in its hard core? (2011) *NeuroQuantology*, 9 (1), pp. 106-117.
27. Parsons, D.F. A medical informatics view of quantum computation (2011) *NeuroQuantology*, 9 (1), pp.202-205.