

The Assistance E-Commerce Site with Collaborative Filtering and Basic Calculations which Authenticate User Using Face Detection

Shubham Kumar¹ Rajshekhar Upase² Amit Patel³

^{1,2,3}Student

^{1,2,3}Department of Computer Engineering

^{1,2,3}Dr. DY Patil School of Engineering Academy, Ambi., Pune, India

Abstract— Virtual Assistance, recommendation system and face detection are the part of artificial intelligent such as Google's virtual assistant and Apple's Siri, make the system intelligent and automate the task and also it become easier for system to interact with human. This technology makes system user friendly by recommending product and interact with human using voice. In this paper we develop a product assistance site that show products to users on the basis of collaborative filtering and Trending. For authenticating the users using face detection techniques. And finally apply two types of product search are text and voice. And the proposed System also involve E-commerce site that is rapidly increasing aspect in today technology that allow user to order or search product from home or outside the home. Recommendation System does not only have the potential to easy the search process but also improve the decision-making process that people make in daily life. The proposed System combine this technology together and allow user to search product using voice or text and recommend product and authenticate user using face detection.

Keywords: Collaborative Filtering, Voice-to-Text, Text-to-Voice, Voice Assistance, Face Detection

I. INTRODUCTION

We implement the Product Assistant site that authenticate users using Face detection and also encrypt users details in database. System supports types of input for searching the products that are text and voice recommend products to users on the basis of collaborative filtering and trending. Other than whenever users ask questions which is not related to product then system send the answers of that question those are available in database.

We implement the Product Assistant site that authenticate users using Face detection and also encrypt users details in database. The proposed System allow user to search and buy product through inbuilt E-commerce site. Here User can search product and add the product in to cart and purchase it. System allow user to search product via voice or text.

The Proposed System uses MFCC (Mel Frequency Cepstral Coefficients) Voice Recognition Algorithm to recognize voice. The MFCC is a technique that take voice as input, process the input and calculate unique coefficients. Here System allow user to register their face for security purpose, and usages face detection and face recognition to detect the face and recognize the face respectively.

The proposed System usages VIOLA JONES algorithm for face detection. This Algorithm detect the only face from other body part. Face detection algorithm detect the face structure like eyebrows, nose area, mouth area and differentiate them based on location and size and color.

The Proposed System usages the LBP (Local Binary Pattern Histogram) algorithm for face recognition. The LBPH

algorithm is a measure the intensity of pixel by comparing the pixel intensity of neighborhood pixel. And label them into binary number and create data set of particular image. After creating dataset, it compares dataset of other image and recognize the face.

The proposed system recommend product to using collaborative filtering. Collaborative Filtering uses the information filtering technique to recommend item or product that has been searched by different users around on the basis of previous search or taste. Other than that, whenever users ask questions system send the answers of that question those are available in database.

II. IMPLEMENTATION

In implementation phase of our project, we have implemented various module required of successfully getting expected outcome at the different module levels. With inputs from system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality which is referred to as Unit Testing.

A. Testing

The different test cases are performed to test whether the project module is giving expected outcome in assumed time. All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.

B. Deployments of System

Once the functional and non-functional testing is done, the product is deployed in the customer environment or released into the market.

C. Maintenance

There are some issues which come up in the client environment. To fix those issues patches are released. Also, to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

III. PROPOSED SYSTEM

The aim of this project is to present a system that authenticate user using face detection and allow user to search product or ask query using voice or text. And system also recommend product to user using collaborative filtering.

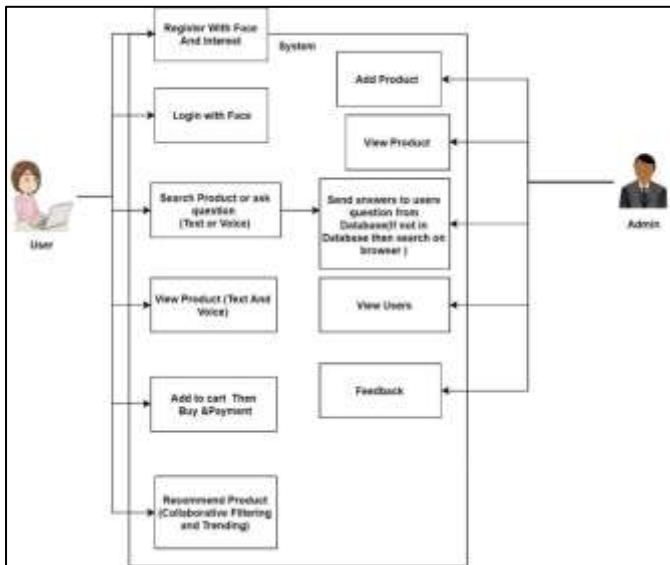


Fig. 1: System Architecture

This system has two modules: User and Admin

- User: Here System allow user to register using their face and other detail, after that user will be able to login using their face, after successful login they can search product by voice or text add into the cart and purchase it. Users can ask the question related to product or other than any product.
- Admin: It is another part of system where admin will able to add product, view product, also answer the user question if not in database it will search on browser. Admin can also see the Feedback on the product to Review it.

IV. HARDWARE AND SOFTWARE USED

A. Hardware

System Type: 64-bit or 32-bit

Device Name: Laptop with camera

B. Software

Operating system: window 10

Programing language: Java, python

IDE: Eclipse, Spider

Database: MySQL, XAMP server

V. METHODOLOGY

A. What is face detection?

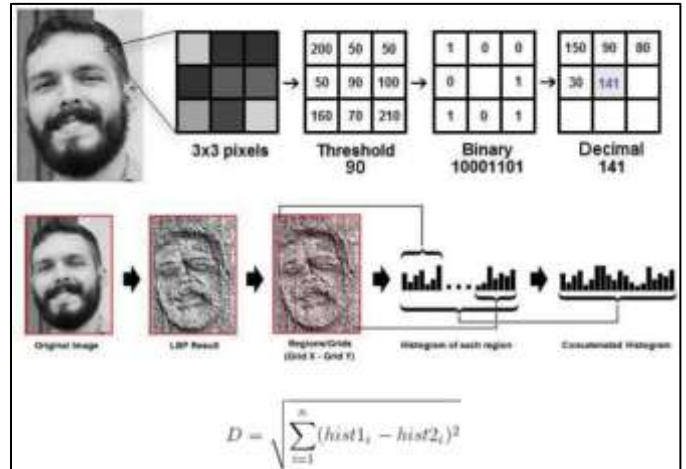
Face detection can be regard as a specific case of object class detection. In object class detection the task is to find the location and size of object in an image. This process detects the face of human on the basis of human facial structure, location of facial part.

B. Viola Jones Algorithm:

The Viola jones algorithm is used to detect particular object like face detection. This algorithm detects only face from other body part. Face detection algorithm detect the face structure like eyebrows, nose area, mouth area and differentiate them based on location and size and color.

C. LBPH (Local Binary Pattern Histogram):

The LBP is an algorithm used in face detection, this algorithm measure pixel intensity by comparing pixel intensity of neighborhood pixel. And label them into binary number. And then create a data set, compare with dataset of another image and recognize the image.



Speech-to-Text Conversion (STT):

MFCC (Mel Frequency Cepstral Coefficients):

Mel frequency cepstral technique is uses in speech recognition, here the frequency of sound is measured and scaled into the way human ear react closely.

Mathematical Model

System Description:

$S = \{I, P, O, Sc, Fc\}$

Where $I = \text{Input}$ $I = \{U, A\}$ Where $U = \text{No of Users}$

$A = \text{Admin}$ $P = \text{Process}$

$P = \{AP, VU, \text{Reg LF, FD, FR RP, SP or Q, VP or Q}\}$

Reg = Register New user

LF = Login Users with face

FD= Face Detection done by Viola Jones Algorithm

FR = face Recognition done by LBP algorithm

Where $I = \text{Input}$ $I = \{U, A\}$ Where $U = \text{No of Users}$

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Reg = Register New user

LF = Login Users with face

FD= Face Detection done by Viola Jones Algorithm

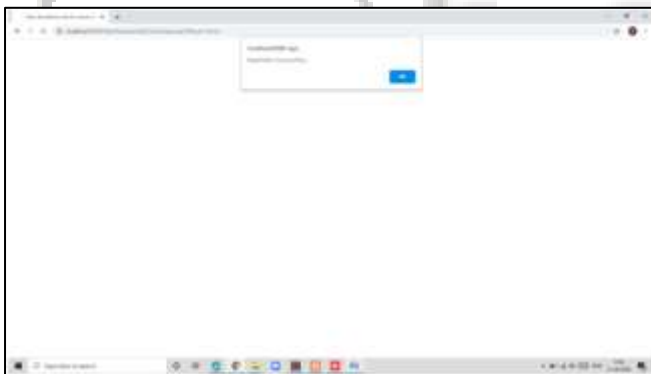
VI. RESULTS AND DISCUSSIONS



Screen Shot 1



Screen Shot 2



Screen Shot 3



Screen Shot 4



Screen Shot 5

Output of the system are: Outcome of the system are, to allows users to search product by text or voice. Users get Response from the system by Voice and Text. Firstly, our system authenticates the users using face detection technique and then store users details in encrypted format so that any attacker cannot get original details of the users. Users can ask the question related to product or other than any product. System Recommend products to users by using collaborative filtering and Trending also. Here users are register and login with the Face. The Face are detected by viola Jones algorithm and recognize using LBP algorithm.

VII. CONCLUSION

Here user is allowing to search product by text or voice. Users get Response from the system by Voice and Text. Firstly, our system authenticates the user using face detection and then store users details in encrypted format so that any attacker cannot get original details of the users. Users can ask the question related to product or other than any product. System Recommend products to users using collaborative filtering. Here users are register and login with the Face. The Face are detected by Viola Jones algorithm and recognize using LBP algorithm.

REFERENCES

- [1] "Study of Detection of Various types of Cancers by using Deep Learning: A Survey", International
- [2] Journal of Advanced Trends in Computer Science and Engineering, 2019, Volume 8 Issue 4, pp 1228-1233.
- [3] "A review paper on data mining techniques", International Journal of Engineering Science and Computing (IJESC), 2016, Volume 6 Issue 5, pp 6268-6271.
- [4] S Shubham, D Jagdish, P Amol and K Renuka, "Smart water management system in cities", 2017 International Conference on Big Data Analytics and Computational Intelligence (ICBDAC), 2017, March.
- [5] Sandeep Mali, Kishor Sawant and Nilesh Thombare. Article: A Survey on Public Batch Auditing Protocol for Data Security. IJCA Proceedings on National Conference on Advances in Computing NCAC 2015(7):39-42, December 2015
- [6] Dimitrios Rafailidis, Yannis Manolopoulos, "The Technological Gap Between Virtual Assistants and Recommendation Systems", Arxiv:1901.00431v2 [Cs.IR] 6 Jan 2019

- [7] Tatiana Ekeinhor-komi^{1;2}, Jean-leon Bouraoui¹, Romain Laroche¹, Fabrice Lefevre, "Towards A Virtual Personal Assistant Based on a User-defined Portfolio of Multi-Domain Vocal Applications", Globalsip 2016
- [8] Mohammad Aliannejadi, Dimitrios Rotaliids, Fabio Crestani, "A Collaborative Ranking Model with Multiple Location-based Similarities for Venue Suggestion", Arxiv:1807.04210v2 [Cs.IR] 13 Jul 2018
- [9] Lorraine McGinty and James Reilly on the evolution of critiquing recommenders. In *Recommender Systems Handbook*, pages 419-453. 2011.
- [10] Mehmet H. Goker and Cynthia A. Thompson. Personalized conversational case-based recommendation. In *Advances in Case-Based Reasoning*, 5th European Workshop, EWCBR 2000, Trento, Italy, September 6-9, 2000, Proceedings, pages 99-111, 2000.
- [11] Mehmet H. Goker, Pat Langley, and Cynthia A. Thompson. A personalized system for conversational recommendations. CoRR, abs/1107.0029, 2011.
- [12] Carlos A. Gomez-Urbe and Neil Hunt. The netix recommender system: Algorithms, business value, and innovation. *ACM Trans. Management*
- [13] Santosh K. Gaikwad, 'A review on speech recognition techniques', *International Journal of Computer Applications*, Volume 10– No.3, November 2010
- [14] Nitin N Lokhande, 'Voice Activity Detection Algorithm for Speech Recognition Applications',
- [15] *International Conference in Computational Intelligence (ICCI)*, 2011
- [16] Akshay S. Utane, 'Emotion Recognition Through Speech Using Gaussian Mixture Model and Hidden Markov Model', *International Journal of Advanced Research in Computer Science*.