



Online Voting System Using Face Recognition and Fingerprint Recognition

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Abstract: Online voting system in which the election data is stored and processed. To achieve higher level of security one levels of authentication techniques are used. The authentication technique used is a Face Detection and Recognition system. In this method of authentication, the voters face image captured during the registration is compared with the image captured by the webcam at the time of casting vote. After the first level of authentication is done a voter can casting the vote. These techniques provide a more secure platform thus overcoming vulnerabilities of the traditional voting system. The Online Voting System is a web-based application. The system has a centralized database to keep records of all the Voters and Candidates and Final Results. This Online Voting System is based on SMS sending to voters, to confirmation of Vote. This web-based system is time saving, workload reduced information available at time and it provide security for the data.

Keywords: Image Processing, Voting System, Face Recognition, OTP

I. INTRODUCTION

In Democratic countries like India, the voting system plays a major role during elections. Traditionally, the election commission in India uses electronic voting machines which need more manpower, time-consuming and also, they are less trustworthy. As we know, in every country Election is a basic process of democracy which allows people to show their opinions by selecting their candidate. India is spending huge money to improve our whole voting system to provide a better government to citizens. In India, voting system should be honest, translucent and fully secure for the better democracy. The current system is used to less transparency because there could be chances of cheating at the voting time[1]. Many people couldn't vote because the voter has to reach the poll booths to vote or some people like those who are living far away from their original birthplace where they are allowed to vote. So, to get rid of their drawbacks, a new System is introduced i.e. Online Voting System, which provides accuracy, security, flexibility, mobility etc. An online voting System in a web-based application to use in the election process. For the purpose of identifying the person, the concept of face detection and recognition is used in this proposed project. Voters may only cast their votes in an election if the photo they took matches the image in the database that relates to the voter. Otherwise, they will be disqualified from voting. The current method restricts security to a voter card, which implies that anybody may use a voter card to cast a vote on behalf of another person[1].

II. LITERATURE SURVEY

Many people couldn't vote because the voter has to reach the poll booths to vote or some people like those who are living far away from their original birthplace where they are allowed to vote. So, to get rid of their drawbacks, a new System is introduced i.e. Online Voting System, which provides accuracy, security, flexibility, mobility etc. An online voting System in a web-based application to use in the election process. For the purpose of identifying the person, the concept of face detection and recognition is used in this proposed project. Voters may only cast their votes in an election if the photo they took matches the image in the database that relates to the voter. Otherwise, they will be disqualified from voting. The current method restricts security to a voter card, which implies that anybody may use a voter card to cast a vote on behalf of another person[1].

An online voting system is a software platform that allows groups to securely conduct votes and elections. High-quality online voting systems balance security, accessibility, and the overall requirements of an organization's voting event. Facial recognition must be a required component of the online voting process in order to reap the majority of the benefits. It is very easy to use, and it is very less time consuming. It is very easy to debug. The system can manage the information data very efficiently. The proposed system is more reliable, faster, accurate and easy to handle compared to existing manual system. It helps to computerize everything and reducing the errors as compared to manual voting system



III. REQUIREMENT ANALYSIS

3.1 System Requirements.

Following hardware and software are necessary for the project all details mentioned below.

3.1.1 System requirements.

1. Operating System: Any Operating System.
2. Front End: XML (Extensible Markup Language (XML)).
3. Backend Database: Firebase.
4. Android Studio.

3.1.2 Hardware requirements.

1. Ram: Mandatory for any RAM.
2. Hard disk or Mobile Storage: 4 GB.
3. Processor: All Processor.

3.1.3 Functional Requirements.

It deals with the functionalities required from the system which are as follows:

Use Case 1: Registration.

Primary Actor: User.

Main Scenario:

- Start the application.
- User prompted for registration.
- The user gives the required information for registration.
- The system does registration. The main screen is displayed.

Alternate Scenario:

- Registration will be failed if the email and username are already registered.

2. Use Case 2: User Login

Primary Actor: User

Main Scenario:

- Start the application.
- User prompted for email/username and password.
- The user gives the login id and password.
- The system does authentication. The main screen is displayed.

Alternate Scenario:

Authentication fails due to the wrong password typed or invalid login id then prompts the user that he typed the wrong password. Allow him to re-enter the password. Users who haven't created an account then suggest the user first create an account and then log in to the application.

3. Use Case 3: Person Detection

Primary Actor: User

Pre-Condition: User logged in, internet connection

Main Scenario:

- User clicks on Person Detection.
- The camera captures the photo and verifies it and if verifies the access is given.
- Code will be ready to share.

Alternate Scenario:

If the face is not verified, then access is denied.

4. Use Case 4: Facial Recognition

Primary Actor: User

Pre-Condition: User logged in, internet connection

Main Scenario:

- The camera captures the photo and verifies it and if verifies the access is given. Alternate Scenario:
If the face is not verified, then access is denied.

5. Use Case 5: Vote

Primary Actor: User Pre-Condition: User logged in, internet connection

Main Scenario:

- After successfully securing your confidential data, the user must vote on the desired candidate from the candidates listed.

3.2 Feasibility Study

3.2.1 Economic Feasibility

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus, the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

Technical Feasibility

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands being placed on the client. A feasibility study evaluates the project's potential for success.

Social Feasibility

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

Behavioural Feasibility

This includes the following questions

- Is there sufficient support for the users?
- Will the proposed system cause harm?

The project would be beneficial because it satisfies the objectives when developed and installed.

All behavioural aspects are considered carefully and conclude that the project is behaviourally feasible. Online Voting System is behaviourally feasible and there will be no harm for the users.

IV. TESTING

4.1 Troubleshooting

Troubleshooting

Make sure you setup the app.

Check your internet connection and go to place where internet connection is proper.

Uninstall the app and reinstall it. After this give permission to the app in your handset.

If your login id and Password display incorrect.

Enter Your login id and password correctly once.

Check your internet connection to load the app.

Change your password and try again.

If your fingerprint is not recognized

Check if you have given fingerprint permission to your app and give permission if not.

How to give permission? Tap to your app icon for 2-3 seconds after these three icons are shown on your screen that is 1.

Share 2. App info 3. Uninstall Go Into app info icon. Search the permission option and give the permission for fingerprint recognition.

General Troubleshooting

Make sure you have proper internet connection.

Reset the app by either powering it off and on or pressing the reset button

4.2 Costing

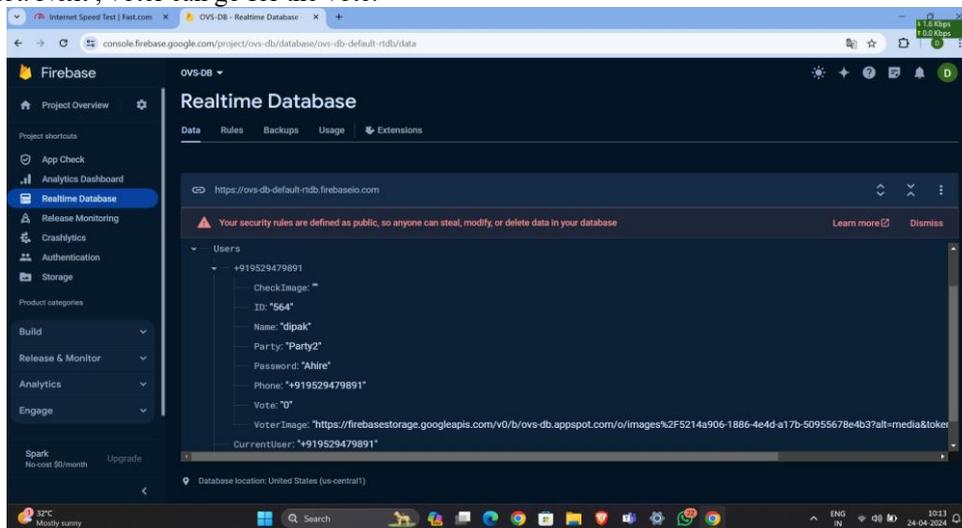
(Table 5.1 Constant Values)

Type	a	b	c	d
Organic	2.4	1.05	2.5	2.5

V. RESULT AND DISSCUSSION

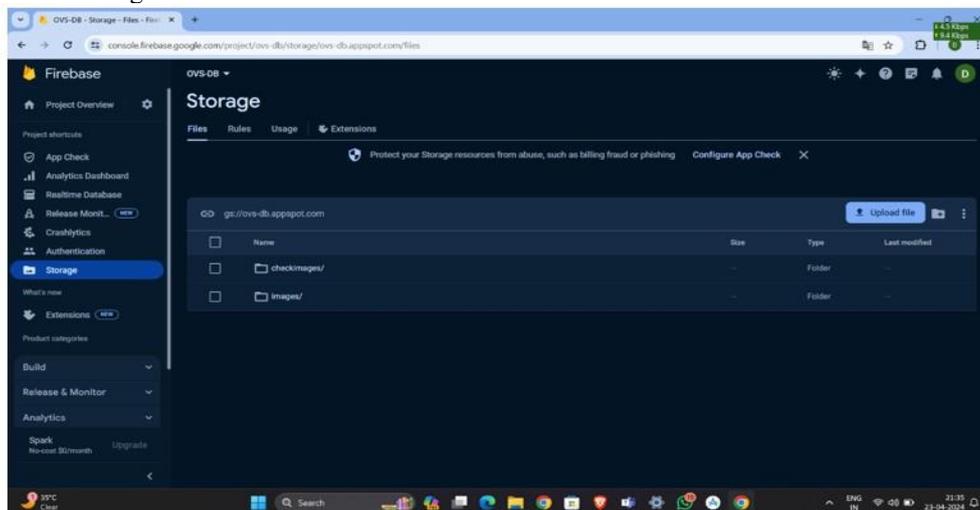
5.1 Result

In our project there are two user admin and voter. Admin will be the head of this. Voter has to register his name with the help of create account and if the name is registered then he can proceed using login. After this the user’s OTP will be verified and next the user will have to complete the process of fingerprint recognition. You have to enter your Voter ID in place of Voter ID. After this it will be checked through face recognition whether you are the correct person who done his voting or not. Next , voter can go for the vote.



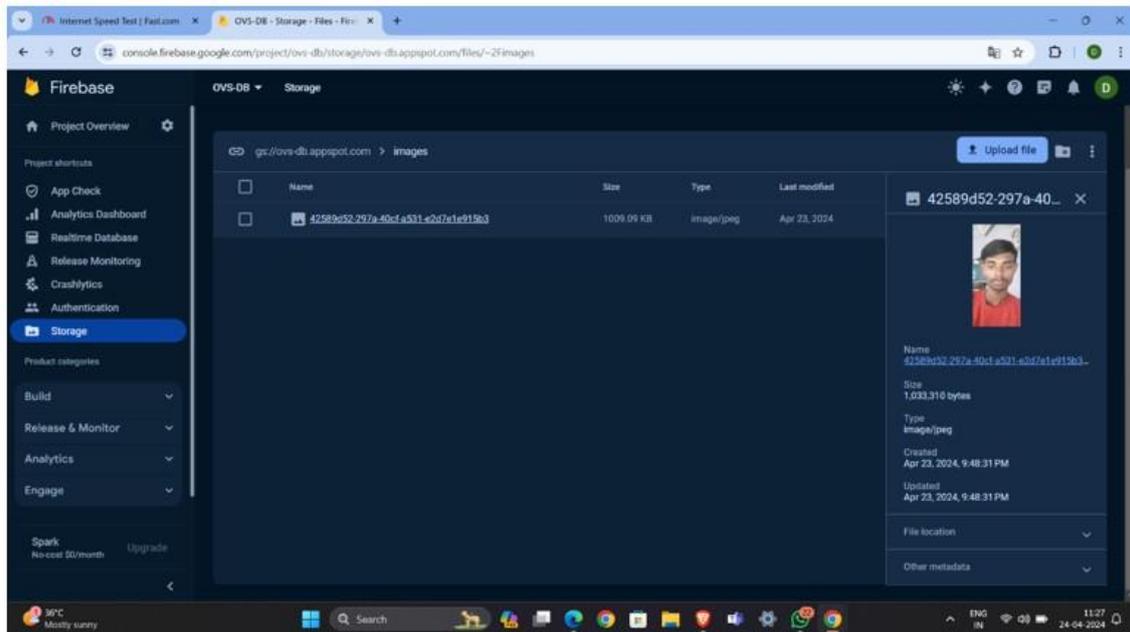
(Figure 5.1 User Database)

Figure 5.1 displays the stored database of the user(voter). This database shows the detailed information of the user. All detail that user fill while creating account display here. Voter image is store in storage of the database, here only we see the path of the stored image.



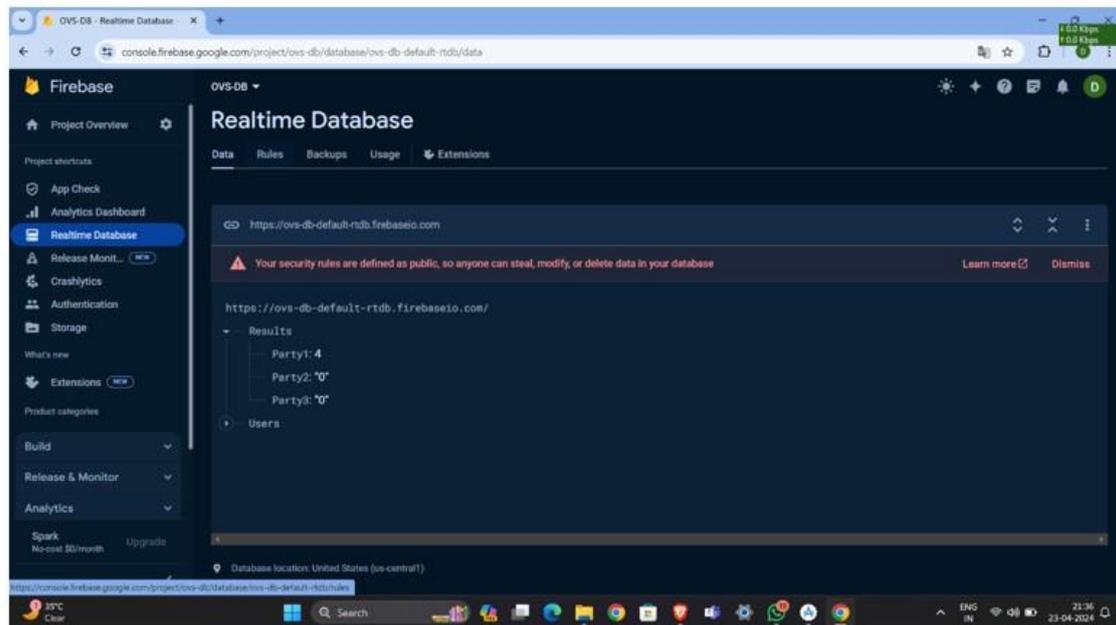
(Figure 5.2 Storage of images)

Figure 5.2 displays the stored image. In check images, check the user’s uploaded image. In images, check the captured image of user that recognized while voting.



(Figure 5.3 Recognized image)

Figure 5.3 displays the recognized image. In images, check the captured image of user that recognized while voting.



(Figure 5.4 Result)

Figure 5.4 displays the database of the result.

VI. CONCLUSION

This Online Voting system will manage the Voter's information by which voter can login and use his voting rights. The system will incorporate all features of voting system. It provides the tools for maintaining voter's vote to every party. There is a Database which is maintained on platform that is Firebase in which all the names of voter with complete information are stored. In this user who is above 18 years' register his/her information on the database and when he/she wants to vote he/she has to login by his id and password and can vote to any party only single time. Voting details store in database. By online voting system percentage of voting is increases. It decreases the cost and time of voting process.



It is very easy to use, and it is very less time consuming. Also, there is no chance of voter frauds and the money spent on security can be drastically decreased. Persons who have an internet connection at home with a web camera can vote without taking the strain to come to voting booths. This smart system involves the voters can cast their vote easily.

The system could be improved by incorporating blockchain technology for added security and auditability. While the online voting system offers many advantages over traditional paperbased voting, there are still some concerns and challenges to consider. Ensuring equal access and participation, protecting voter privacy, and preventing fraud and hacking are some of the key issues that need to be addressed. The online voting system has enormous potential to modernize the election process in India. It is important that the results are easily accessible, and that the system is implementation and future development will require a multistakeholder approach that includes government, transparent to maintain trust in the electoral process. Despite these challenges and concerns, addressing these issues and implementing a civil society, and the private sector. With the right strategies and investments, the online voting system could become a reliable and secure tool for democratic participation and decision-making.

REFERENCES

- [1]. BalaMurali, Potru Sarada Sravanthi, B. Rupa.” Smart and Secure Voting Machine using Biometrics”,2020 Proceedings of the Fourth International Conference on Inventive Systems and Control (ICISC), September 2020.
- [2]. K.C Arun¹, Shahbaz Ahmad², Saba Noor³, Iqra Mumtaz⁴and Mubashir Ali⁵.” Arduino Based Secure Electronic Voting System with IoT”.4th Global Conference on Computing Media Technology, July 2020.
- [3]. Aravindhana, M. Kalaiyarasi, S. Bharanikumar, P. Dhanapal, R. Dharmaraj “smart online voting system using facial recognition based on IoT and Image Processing” (2020), Department of Electronics and Communication Engineering V.S.B Engineering College, Karur, India
- [4]. Abbas Behrainwala, Amar Saxena, Ishika Navlani, Sakshi Sahay, Noshir Tarapore (2022), Computer Engineering, Science Technology, Vishwakarma University, Pune, India Mr. Santosh Kuma, Dr. Nitika Singhi, Abhijit Patankar (2020), Journal of Emerging technologies and Innovative Research (JETIR), April 2020.
- [5]. Faber D. Giraldo; Barbosa Milton C.; Carlos E. Gamboa, IEEE Latin American Transactions 10, October 2020