

Digital Election

Hackers Inside

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Abstract

An app for online voting system with face and facial expression recognition to uniquely authenticate each voter.

The app will encourage many people who are unable to cast their votes due to not being physically present at polling booths.

Current Difficulties

- Slow and inefficient system
- Requires the voters to be present physically in the polling booth
- Voters who can't come to the booth on the voting day lose their vote
- Takes a lot of time to count the vote
- Current voting system is easy to spoof
- Current physical voting can be rigged and manipulated .

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Our Solution

Idea

To make a simple and a spoof proof online voting system , a facial recognition followed by face expression recognition is done as authentication .That data is compared with the photo registered with the voter id of the user.

This can also be used as a tool for conducting mock elections (opinion polling).

Technological Stack

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- Android Studio (User end)
- FireBase (Server End and real time database)
- Git (for collaboration)
- Clarifi api(for face recognition)
- FireBase ML kit api (Facial landmarks extraction)
- Glide(for updating logos and photos of candidates and partys)

Methodology

Google sign in

Accepting Voter id

Facial recognition authentication

Viewing list of candidates

Casting of votes posted to the firebase database

Seeing the results by pulling data from firebase database

Accepting voter ID

Why?

The voter id will contain the constitution which the user belongs to so that the respective candidates will be displayed for voting

How?

The voters id is received from the user as an input which is checked with the Voters id data stored in the database. If the Voter id is a valid one the user can proceed for the Authentication.

Face Authentication

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Why?

To uniquely identify every voter and check if it matches with the input voter id.

How?

The users face input through the camera is compared with the voters id photo data to make a guess if it's the same person and if the match probabilities are high the user is taken to the next step. The clarifi api is used for predicting the image matching probability.

Facial Expression Authentication

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Why?

Often it is easy to spoof a facial recognition using the voters photo. So to verify the physical presence of the user an expression is suggested by the app (like smiling or winking) which is randomly generated to improve the security.

How?

FireBase ml kit is used for extracting different facial landmark point. These point are used for calculating various expressions which is used for authentication

Casting of vote

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Why?

To display the candidates and their details for the user to vote.

How?

An activity is created to display the list of candidates whose logo and details are stored in the firebase database which can be updated online by the election commission if needed.

Salient Features

- The same user cannot vote twice
- Results can be viewed in real time quickly.
- User can cast his/her vote from any part of the world
- High Security with easy authentication
- Encorages more no. of voters to cast their vote



ThankYou

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