Smart Voting System using Deep Learning Techniques

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***Abstract*—Electronic voting (e-voting) presents a convenient and cost-effective alternative to current paper ballot-based voting. It provides many benefits such as increased voter turnout and accuracy in the decision-making process. While presenting many improvements, e-voting still faces serious security challenges that hinder its adoption, especially when designed to be run over mobile devices. In this paper, we propose a novel remote evoting model for large-scale elections by proposing the participation of two conflicting parties to ensure election integrity and accountability. Our scheme can be implemented in IoT devices such as smartphones, which we believe can significantly increase voter turnout of the election process. Our proposed work is secure and preserves voter privacy through secure multi-party computations performed by parties of differing allegiances. It also leverages a blockchain running smart contracts as a publicly accessible and tamper-resistant bulletin board to permanently store votes and prevent double-voting. In our security and privacy analysis, we show that our proposed scheme is secure against potential security threats and provides voter anonymity. We show orthogonality between universal verifiability and coercionresistance in our proposed scheme, allowing an election to favor one over the other. Our performance analysis and smartphone simulation results show that the proposed scheme is practical for large-scale elections.**

***Index Terms*—Remote e-voting, voter anonymity, universal verifiability, coercion-resistant, unlinkability, blockchain**

I.INTRODUCTION

More than half the world’s countries are classified as democratic nations, employing governments that enforce and secure their democracies. While these governments may vary in structure, they all grant eligible members the ability to exercise their power by voting. However, guaranteeing that a democratic election is *free* and *fair* still remains a challenge for most governments. Let alone, proving the freeness and fairness of the election to everyone, especially to the losing candidates, is an even bigger challenge.

A free election should entail multiple imperative features [1]. Before voting, proper voter registration is required to grant voting rights only to eligible voters. Voters should be able to remain anonymous, maintaining an election free of ballots that could be linked to their voters. Furthermore, to ensure that votes are tallied properly, verifiability should also be integrated to prove to everyone the legitimacy of the election results and avoid controversy. Concurrently, for an election to be fair, all eligible voters should have equal registration and ballot casting availability and accessibility regardless of any limitations such as geographical location or economic status. This means that voters that are unable to physically access their poll-sites, for example, absent personnel serving in the military, should be able to cast their ballots remotely while maintaining the equivalent requirements of a free election. A fair election should also maintain the secrecy of the cast ballots throughout the voting phase to prevent last-minutes voters from skewing the final count.

II. RELATED WORK

Previous work that achieves coercion-resistance and remote e-voting date back to 2005 when the work by Juels *et al.* [6] was introduced and later refined resulting in Civitas [7]. Although proven to be secure, the security came at the price of tabulation which is quadratic in respect to the total number of ballots being submitted in an election. Shortly, Helios [8] was proposed as a web-based open-audit voting system for elections where coercion is not a serious problem. The system achieves privacy using mixnets [9] and was later improved by Demirel *et al.* [10] by replacing the mixnets with homomorphic encryption and multi-party tallying. However, these systems primarily focus on universal verifiability while intentionally not taking coercion-resistance into account.

In contrast, Selections [11] is a system that was proposed in which voter authentication relies on possession of certain voter passwords, allowing them to generate panic passwords in cases of coercion. This system relies on zero-knowledge proofs during the vote casting phase. Other systems such as [12], use a linear-time scheme to remove duplicated votes which may be submitted by voters to avoid coercion. This system also relies on voters indicating which electoral roll their votes belong to so that tallying authorities can identify which votes should be included in the total count. This results in faster tallying during the tabulation process. However, it requires additional trust in the elected trustees to add dummy ballots to make the system coercion-resistant.

Based on concepts from [11] and [12], a protocol was introduced in [16] that requires voters to specify an anonymity set where each voter claims to be one of the voters within the set. This resulted in additional voter overhead costs during the authentication phase. Later, Zeus [17] was proposed following the initial framework of Helios [8] where mixing is performed using external agents. Although it provides universal verifiability, the system is not coercion- resistant as it provides voters with receipts at the end of voting.

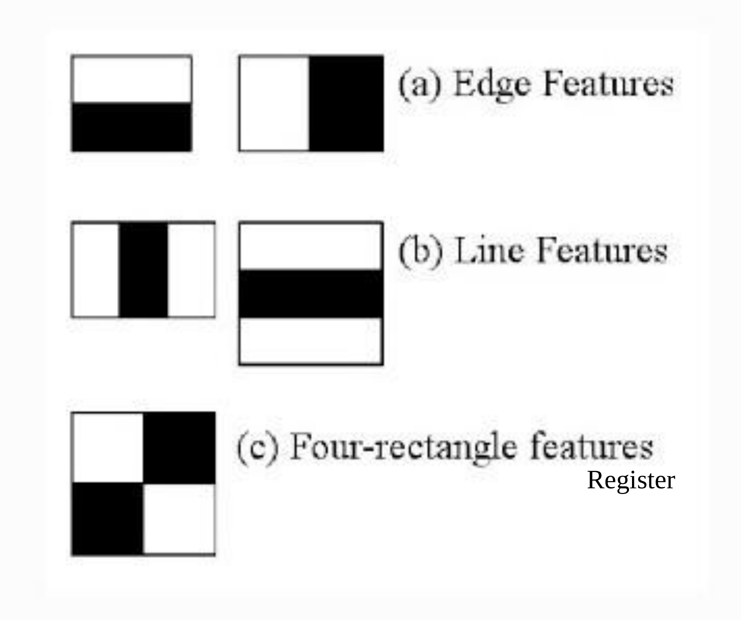
III.PROPOSED SYSTEM

System is used cast your vote through online via website using facial authentication and machine learning techniques . To get a high degree of accuracy from what is called "training data". Haar Cascades use the Adaboost learning algorithm. which selects a small number of important features from a large set to give an efficient result of classifiers. Initially, the algorithm needs a lot of positive images (images of faces) and negative images (images without faces) to train the classifier. Then we need to extract features from it. For this, haar features shown in below image are used. They are just like our convolutional kernel. Each feature is a single value obtained by subtracting sum of pixels under white rectangle from sum of pixels under black rectangle..

Figure 2: Work Of The Proposed System

Proposed Algorithms involved

Haarcascade algorithm



Register

Working of Algorithm

Convolutional neural network (ConvNets or CNNs) is one of the main categories to do images recognition, images classifications. Objects detections, recognition faces etc., are some of the areas where CNNs are widely used. In work project we are going to detect and classify drone in video using CNN algorithm.
Steps

- Provide input image into convolution layer

- Choose parameters, apply filters with strides, padding if requires. Perform convolution on the image and apply ReLU activation to the matrix.
- Perform pooling to reduce dimensionality size

- Add as many convolutional layers until satisfied

- Flatten the output and feed into a fully connected layer

(FC Layer)

Output the class using an activation function and classifies images

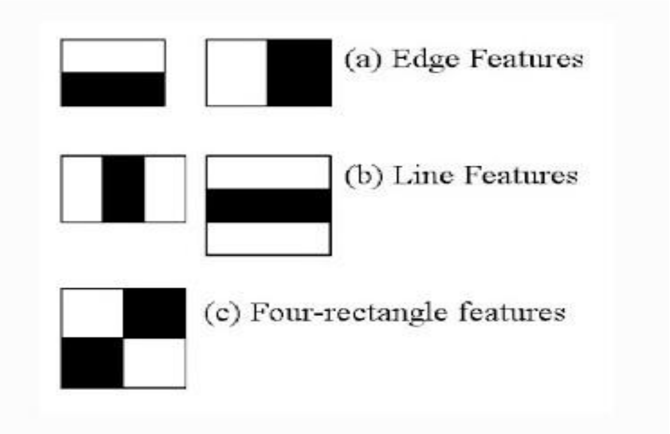
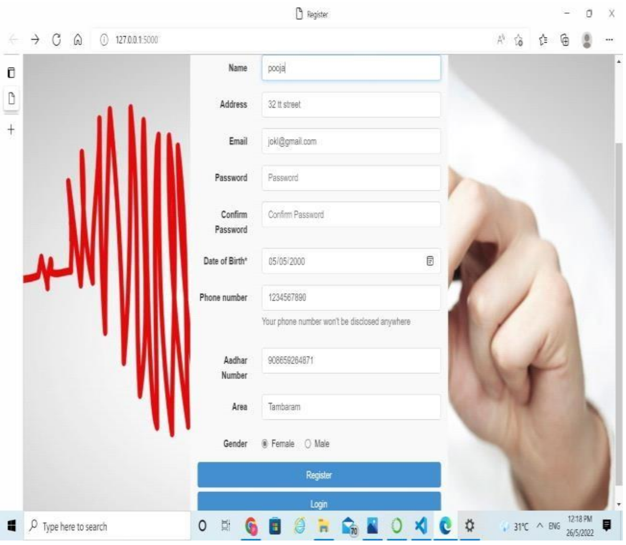


Figure 2 : Shows The Algorithm Work Design

IV.EXPERIMENTAL ANALYSIS

Registration module is the starting point of this project where a user gone make use of this system by registering him self into it.In this module user will a unique voter id and user gone register with some basic information about him after the user gone complete the registration by giving his face as input and system will read the face and load it in datasets after that registration



Register

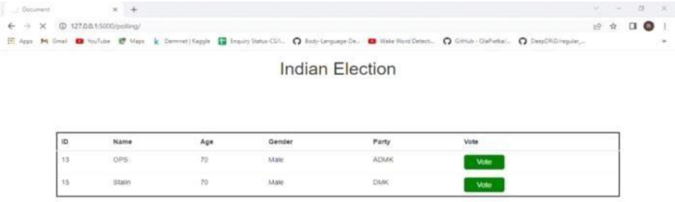
Name: pooja
Address: 32 tt street
Email: jokl@gmail.com
Password: Password
Confirm Password: Confirm Password
Date of Birth*: 05/05/2000
Phone number: 1234567890
Your phone number won't be disclosed anywhere
Aadhar Number: 908659264871
Area: Tambaram
Gender: ● Female ○ Male

Data Preprocessing

In this module the collected dataset from user in the time of registration will be stored in folder and all image are resized to standard and unique size and the image are converted to gray scale image and noise are remo

Admin upload candidates and assign election

Admin is the one who monitor the entire system.First admin has a standard login id and password . Admin can upload election candidates the candidates list must be in a csv file where the candidates detail like part name email and area the he gone compete with this detail the file will be uploaded from data the details will be uploaded to system.Admin can also monitor the registered user.Admin can also assign election on the upcoming dates .

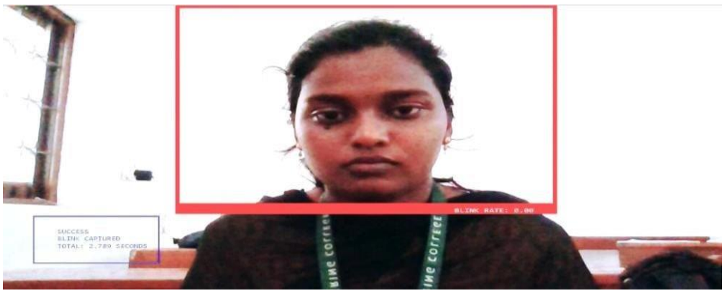


Indian Election

ID	Name	Age	Gender	Party	Vote
13	OPS	70	Male	ADMK	Vote
15	Stalin	70	Male	DMK	Vote

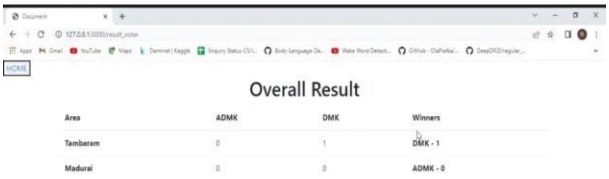
Face Recognition

Ever time a new user register or the existing user vote his face will be recognition to check weather user is authorized or not.



See the result

After the user voted his vote now the result will be automatic updated with the vote count .



HOME

Overall Result

Area	ADMK	DMK	Winners
Tambaram	0	1	DMK - 1
Madurai	0	0	ADMK - 0

TEST CASE

Testing, as already explained earlier, is the process of discovering all possible weak-points in the finalized software product. Testing helps to counter the working of sub-assemblies, components, assembly and the complete result. The software is taken through different exercises with the main aim of making sure that software meets the business requirement and user-expectations and doesn't fails abruptly. Several types of tests are used today. Each test type addresses a specific testing requirement.

Testing
Techniques

A test plan is a document which describes approach, its scope, its resources and the schedule of aimed testing exercises. It helps to identify almost other test item, the features which are to be tested, its tasks, how will everyone do each task, how much the tester is independent, the environment in which the test is taking place, its technique of design plus the both the end criteria which is used, also rational of choice of theirs, and whatever kind of risk which requires emergency planning. It can be also referred to as the record of the process of test planning. Test plans are usually prepared with signification input from tes

CONCLUSION

Smart Voting is primarily responsible for the majority of India's city . It should be considered as the main issue for the majority of us. The existing methods for Voting involves manual work with lot of human work and man power and also if convert voting to online it need secured voting system to cast voters vote . The Machine Learning technique. Are use to recognize person face and check whether voter is a authorized or not

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