UTILIZING MACHINE LEARNING TO FACILITATE ELECTRONIC VOTING THROUGH TWO-STEP VERIFICATION

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ABSTRACT

India is the world's biggest democratic organization. So it is significant to ensure that the governing body is elected in a fair election. India only has an offline voting system, which is ineffective and inefficient because it requires a big number of people and takes longer to process and publish results. To be effective, the system requires a redesign that addresses these shortcomings. The new system does not require a person's physical appearance to vote, making the process easier. We used deep learning techniques for face recognition for voting system. This paper examines a system that enables users to vote remotely from any location using a computer or mobile device, eliminating the need for voters to visit polling stations using a two-step authentication process involving facial recognition and an OTP (one time password) system. We used C-NN (Convolution Neural Network), these are perfect for activities involving facial and picture recognition. This paper also allows users to vote offline if they prefer to do so. The system verifies the image by two-step verification. The face scanning system is used to capture voters' faces before the election and is handy during voting. RFID tags, rather than voter identification, are used to improve the offline voting system. This technology also allows citizens to see the results at any moment, preventing situations that possibly will lead to vote ropes.

Keywords— Face voring, Deep learnig, C-NN algorithm, Two-Step Verification

INTRODUCTION

A vote is simply a formal expression of opinion or preference, whether during an election or during a conference. It allows individuals to have their views heard and contribute to decision-

making processes. Votes can be cast in a variety of methods, including marking a ballot paper, raising one's hand, or speaking during a meeting. In the context of elections, voting is a fundamental right that allows citizens to participate in the democratic process and elect their representatives. The total number of votes cast determines the outcome of an election, and the candidate or alternative with the most votes is usually considered the winner. Other situations for voting include business meetings and organizational decision-making processes. An inventive method for safe and transparent voting is a face-voting system. To confirm voters' identities and guarantee the legitimacy of votes, it makes use of facial recognition technology. Voter fraud is less likely thanks to facial recognition technology, which guarantees that only registered voters may cast ballots. Voters can cast their ballots remotely using computers or mobile devices, which makes it easier for people to participate in the voting process. Enhanced Transparency: The face voting system offers a clear and transparent record of the voting process, making it easier to audit and verify the results. 1. Facial Recognition: This technology employs algorithms to compare the voter's face to the image stored in the database. 2. Voter Registration: Before casting a ballot, voters must register their facial data and other personal information. 3. Secure Voting Platform: The voting platform employs encryption and other security measures to safeguard the voting process and assure the accuracy of the results. 3. Voter education: Informing citizens about their voting rights and the value of participating in elections might boost voter turnout. 4. Voting reforms: Adding features like online voting or automatic voter registration can make voting more accessible and convenient. 5. Civic engagement: Promoting civic engagement and community participation can contribute to a culture of voting and democratic participation.

DEEP LEARNING

Deep learning algorithms are a type of machine learning algorithm that uses artificial neural networks to evaluate and interpret data.

Deep Learning Algorithms:

1. Convolutional Neural Networks (CNNs): Used for image and video processing, including object recognition and picture classification.
2. Recurrent Neural Networks (RNNs): Used for sequential data, including speech, text, and time series data.
3. Autoencoders are used to reduce dimensionality, detect anomalies, and do generative modeling. 4. Generative Adversarial Networks (GANs): A technique for generative modeling and unsupervised learning.

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C-NN(CONVOLUTIONAL NEURAL NETWORK)

Convolutional Neural Networks (C-NNs) are a type of deep learning algorithm that are frequently used for image and video processing tasks. Some of the tasks that these algorithms are used for include: Key Components of C-NN Algorithm 1. Convolutional Layers: these layers apply filters to small regions of the input image, scanning the image in both horizontal and vertical directions. 2. Activation Functions: these functions give the model non-linearity, which enables it to learn complex patterns in the data. 3. Pooling Layers: these layers down sample the input image, reducing its spatial dimensions and retaining only the most important information. Fully Connected Layers: these layers are used for classification, taking the output from the convolutional and pooling layers and producing a probability distribution over the possible classes.

Two-Step Verification

A security procedure called two-step authentication, or two-factor authentication (2FA), requires a user to supply two distinct authentication factors in order to get access to a system, network, or application.

1. First Step: Username and Password: To start the authentication process, the user inputs their username and password.
2. Second Step: Additional Authentication Factor: The user is asked to supply a second authentication factor, either a biometric scan or a code texted to their phone.
3. Verification: If the second authentication factor's value is what was expected, the system checks it and allows access.

CONCLUSION

To summarize, face voting systems have the potential to transform the electoral process by providing a secure, efficient, and accessible method of voting. As technology advances, it is critical to address the issues and concerns related with face voting systems in order to assure their successful deployment. A face voting system is a technological innovation that employs facial recognition technology to verify voters' identities and safeguard the integrity of the election process. This system offers numerous benefits, including Improved Security, as it prevents impersonation and fraudulent voting. Furthermore, it simplifies the voting process, reducing human error and manual verification.

FUTURE WORK

The future of facial voting systems appears promising, with numerous potential avenues for advancement. 1. Image Validation: Incorporating enhanced image validation methods to thwart

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spoofing attempts and maintain the integrity of the voting process. 2. Advanced Facial Recognition Algorithms: Advancing facial recognition algorithms to enhance precision and minimize inaccuracies. 3. Real-Time Feedback: Offering immediate feedback to voters during the authentication phase to elevate the overall user experience. 4. User-Friendly Interfaces: Crafting intuitive and accessible interfaces to streamline the voting process and diminish errors.

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