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WEB BASED VOTING PLATFORM FOR INSTITUTIONAL ELECTION

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ABSTRACT : The Web Based Voting Platform for Institute Election is a secure and centralized web application designed to automate and manage institutional election processes with accuracy, transparency, and controlled access. The system replaces traditional manual voting methods by providing a structured digital environment that ensures voter authentication, vote uniqueness, and administrative control. The platform consists of two independent interfaces: an administrator module and a student voting module. The administrator module enables authorized users to securely log in, register and manage candidate information, maintain election records, and monitor final voting results. It also supports effective management of both current and historical election data. The student voting module ensures secure participation by validating a unique student identification number against the institutional database. Upon Successful verification, an OTP-based authentication mechanism is used to authorize the voting process through the registered mobile number. The system strictly enforces a one-vote-per-student policy, preventing duplicate voting attempts and maintaining election integrity. Students are restricted from accessing vote counts or intermediate results to avoid bias and influence. This web-based platform enhances election reliability, minimizes human intervention, prevents unauthorized access, and provides a scalable and efficient solution suitable for institutional election management.

Keywords: Web-Based Voting System, Secure Voting, OTP Authentication, Voter Verification, Election Management, One Vote Policy, Access Control, Data Integrity, Digital Elections, Authentication System.

INTRODUCTION

Election processes are essential for ensuring fairness, transparency, and proper representation within educational institutions. However, traditional paper-based voting methods are often time-consuming, resource-intensive, and susceptible to human errors, mismanagement, and security vulnerabilities. Manual ballot handling and vote counting increase administrative workload and reduce overall efficiency, especially when managing large student populations. With the advancement of web technologies and digital infrastructure, institutions are increasingly adopting automated systems to enhance operational control and reliability. A web-based voting system provides a centralized and structured platform

that streamlines election management through secure voter verification, controlled access, systematic record maintenance, and accurate result generation. Since security is a primary concern in electronic voting environments, mechanisms such as database validation and OTP-based authentication are implemented to prevent unauthorized access, eliminate duplicate voting, and maintain vote integrity. The proposed Web-Based Voting Platform consists of two distinct modules—an administrative interface for managing candidate information, supervising

election activities, and maintaining records, and a student voting interface that enables authenticated users to cast their vote securely. By reducing manual intervention and enforcing strict vote uniqueness policies, the system enhances transparency, scalability, efficiency, and overall integrity of institutional elections.

REVIEW OF LITERATURE

1.Web-Based Institutional Voting Systems

Previous studies emphasize replacing manual paper-based elections with web-based platforms to improve efficiency, accuracy, and centralized management. Digital systems reduce human errors, simplify vote counting, and enable structured candidate and record management within institutions.

2.Security and Authentication Approaches

Research highlights the importance of strong authentication mechanisms such as unique user IDs, password protection, OTP verification, and multi-factor authentication. Enforcing a strict one-vote-per-user policy and protecting voter data are considered essential to maintain integrity and transparency.

3.Challenges in Online Voting

Literature also identifies concerns such as cybersecurity risks, data security threats, and system reliability. Ensuring secure infrastructure, data protection, and uninterrupted system performance during elections remains a critical requirement for successful implementation.

OBJECTIVE

1. To develop a secure and centralized web-based voting system that digitizes and manages institutional election procedures in an organized manner.

2. To validate student identity through database verification and OTP-based authentication to ensure that only authorized students are permitted to participate in the voting process.

3. To implement a strict single-vote policy that guarantees vote uniqueness and prevents duplicate or unauthorized voting attempts.

4. To provide an administrator interface for secure login, candidate registration, election monitoring, record maintenance, and final result management.

5. To automate vote recording and result generation in order to reduce manual intervention, minimize errors, and improve operational efficiency.

6. To maintain confidentiality and controlled access by restricting visibility of intermediate voting results and protecting sensitive election data.

7. To ensure system reliability and scalability so that the platform can handle multiple users efficiently during the election period.

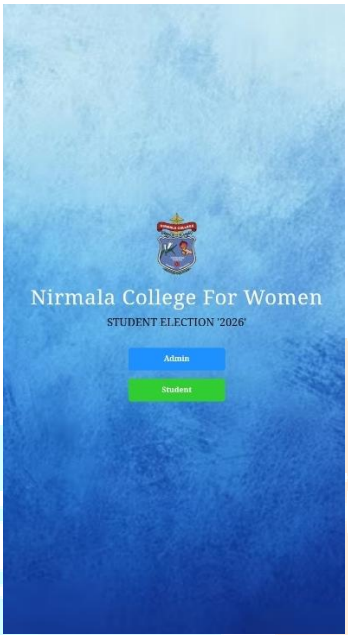
METHODOLOGY

The development of the Web-Based Voting Platform follows a structured and systematic approach to ensure security, reliability, and efficient performance. Initially, system requirements are identified by analyzing institutional election procedures, user roles, and security needs. Based on these requirements, the system architecture is designed with two separate modules: an administrator module and a student voting module, both connected through a centralized database for secure data storage and management. In the implementation phase, the administrative interface is developed to allow authorized login, candidate registration, election configuration, and result monitoring. Simultaneously, the student module is designed to validate user identity by verifying a unique student identification number against the institutional database. After successful verification, an OTP-based authentication mechanism is integrated to authorize access to the voting interface. The voting process is structured to enforce a strict one-vote-per-student rule by recording each vote in the database and restricting repeat attempts. Access control mechanisms are implemented to ensure that students cannot view intermediate results, while administrators have controlled access to election data and final outcomes.

EXPERIMENTAL RESULT

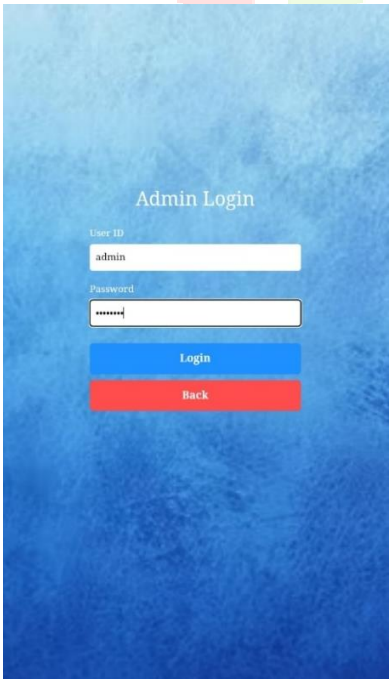
1.HOME PAGE

The home page is the initial interface of the web application. It displays the institute election title and provides separate access options for administrator and student modules, allowing users to choose their role before proceeding.



2.ADMIN LOGIN MODULE

The administrator login module allows authorized users to securely log in using valid credentials. This module ensures controlled access to election management features and prevents unauthorized entry into the administrative system.

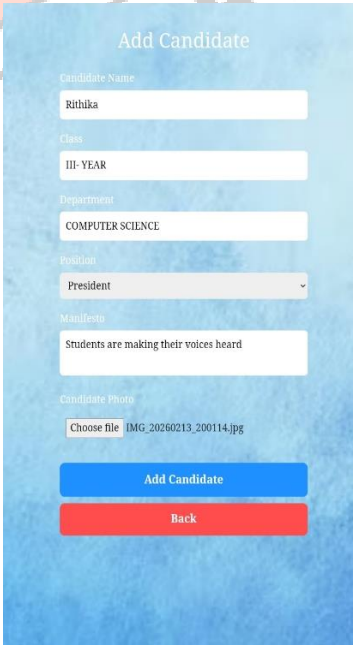


3.ADMIN DASHBOARD

The admin dashboard is the control interface where the administrator can register and manage candidate information, maintain election records, monitor voting activity, and view final results.

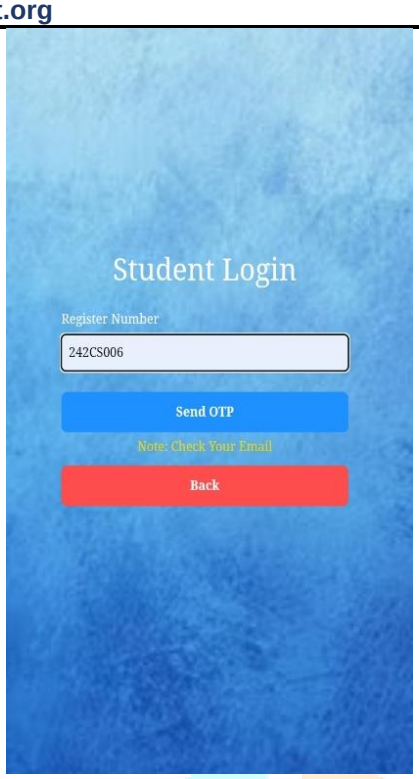
4.CANDIDATE REGISTRATION SCREEN

The candidate registration screen enables the administrator to enter and store candidate details such as name, position, department, and related information. This data is saved in the centralized database for election processing.



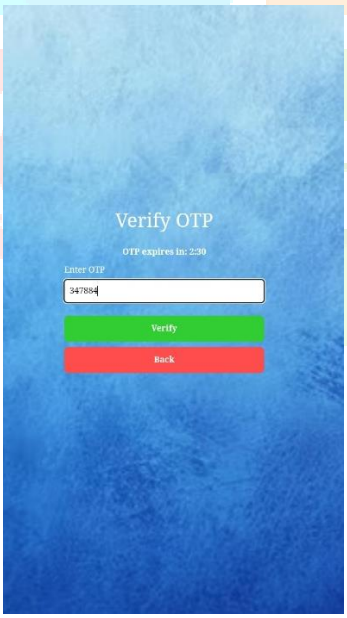
1.STUDENT AUTHENTICATION SCREEN

The student authentication screen validates the unique student identification number against the institutional database. Only verified students are permitted to proceed to the voting stage.



2.OTP VERIFICATION SCREEN

The OTP verification screen authorizes the voting process through a one-time password sent to the registered mobile number. This step ensures secure participation and strengthens voter authentication.



3.VOTING AND RESULT SCREEN

The result screen displays the final vote count after the completion of the election in real time, to the admin, maintaining transparency and accuracy.

CONCLUSION

The web based online voting system has been successfully developed and tested for conducting institutional elections in a secure and organized manner. The system provides controlled access through login credentials and OTP verification, ensuring that only authorized administrators and eligible students can access their respective modules. The administrator panel supports candidate registration, election configuration, data management, and result monitoring. The student module allows verified users to cast their vote through a simple interface while strictly maintaining the one vote per student policy. The implementation results confirm that the system performs accurately, maintains data consistency, and generates election results in a clear and transparent format. Overall, the system simplifies the election process, reduces manual workload, enhances security, and improves reliability in conducting institutional voting activities.

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