College Online Voting System

Nandini Patel[1], Amruta Labade[2], Amruta Misal[3], Ms. P. B. Kasalkar[4]
[1,2,3]*Department of Computer Science & Engineering, D. Y. Patil Agriculture and Technical University, Talsande, Kolhapur, 416112, Maharashtra, India*
[4]*Guide, D. Y. Patil Agriculture and Technical University, Talsande, Kolhapur, 416112, Maharashtra, India*

***Abstract*—This project presents the design and development of a College Online Voting System using a centralized database and a web-based interface. The primary objective of the system is to provide a secure, reliable, and efficient platform for conducting college-level elections such as student council, class representative, or departmental elections.**

The system enables registered students to cast their votes online, thereby reducing manual effort, saving time, and minimizing errors associated with traditional paper-based voting. It also ensures real-time availability of voting information and maintains data security through proper authentication mechanisms.

In many colleges, student participation in elections is limited due to factors such as class schedules, lack of awareness, or absence from campus. Traditional voting methods involve manual vote counting, which is time consuming and prone to errors. The proposed College Online Voting System overcomes these limitations by allowing students to vote within the given election period using secure login credentials. All student details and votes are stored and managed in a centralized database, ensuring transparency and integrity of the election process.

I. INTRODUCTION

Elections in educational institutions play an important role in selecting student representatives and promoting leadership qualities among students. A college voting system must be secure, transparent, and easy to use so that students and authorities can trust the election results. A College Online Voting System is a web-based application that allows students to participate in elections digitally without the need for physical ballot papers or polling booths. In traditional college elections, students are required to be physically present on campus, and vote counting is done manually, which consumes time and may result in errors or invalid votes. In the proposed system, the entire voting and counting process is automated. Each student is allowed to vote only once, ensuring fairness and accuracy, and the system provides instant results after the election process is completed.

College elections are usually conducted using paper ballots, where students must be physically present at the polling location. This often leads to low voter turnout due to academic schedules, internships, or absence from campus. Manual voting also results in long queues, wastage of paper, and delays in declaring results. To overcome these challenges and encourage maximum student participation, a College Online Voting System is proposed. This system enables students to vote securely from anywhere during the election period, making the process more convenient and efficient.

In many colleges, student participation in elections is limited because of time constraints and inconvenience. Manual voting systems require significant human effort and are prone to counting errors. Therefore, the problem is to design a secure and efficient online voting system that allows registered students to log in, authenticate themselves, cast their vote only once, and view election results in a transparent manner.

The main objectives of this project are to develop a web-based voting system for college elections, simplify the voting process for students, increase student participation, prevent multiple voting and vote manipulation, provide secure authentication using OTP, and generate instant and accurate election results.

However, the primary concern of an online voting system is security. In this project, security is implemented using OTP-based authentication. Although OTP provides a reasonable level of protection, future enhancements such as biometric authentication can further strengthen the system and improve reliability.

The documentation of this project is organized into six sections: Section 1 presents the Literature Survey, Section 2 explains the Requirement Analysis, Section 3 describes the System Design, Section 4 discusses the Implementation and Results, Section 5 covers Testing and Validation, and Section 6 provides the Conclusion.

II. LITERATURE RESEARCH

In 1 Electronic Voting and Internet Voting Systems by Lorrie Cranor:
This work discusses the development of electronic voting systems and highlights their advantages over traditional paper-based voting. The study explains how internet voting can increase accessibility and participation by allowing voters to cast their votes remotely. It also discusses important security concerns such as voter authentication, privacy, and prevention of vote tampering. The research emphasizes that strong authentication methods and secure databases are essential for building trust in online voting systems.

In 2 E-Voting Misconceptions by David Dill:
This paper explains common misunderstandings about electronic voting systems. It focuses on the need for transparency, security, and verification in online voting platforms. The author highlights that without proper authentication and audit mechanisms, electronic voting systems may face security threats. The paper suggests that secure login systems, voter verification techniques, and encrypted data storage are necessary to ensure safe and reliable elections.

In 3 Online Voting System Using Web Technologies:
This research explains the implementation of a web-based voting system using technologies such as HTML, CSS, JavaScript, PHP, and MySQL. The system allows users to register, log in, cast votes, and view results online. It uses a centralized database to store voter and candidate information. The study highlights that automated vote counting reduces human errors and provides instant results. It also discusses the importance of user-friendly interfaces to encourage voter participation.

In 4 Secure Authentication Techniques in Online Systems:
This study focuses on authentication methods used in web applications. OTP (One-Time Password) authentication is discussed as a secure method for verifying user identity. The paper explains that OTP ensures that only genuine users can access the system. It also reduces the risk of unauthorized access and duplicate voting. The research shows that OTP-based authentication improves the overall security of online platforms.

In 5 Web-Based Application Development Using XAMPP and PHP:
This research explains the use of XAMPP as a development environment for web-based systems. It describes how Apache server, MySQL database, and PHP scripting language work together to develop secure and dynamic web applications. The paper highlights that PHP can handle server-side validation, database connectivity, session management, and encryption. This makes it suitable for developing an online voting system.

III. PROPOSED WORK

This project aims to develop a secure and user-friendly Online Voting System as an alternative to the traditional voting system.
The main objective is to allow users to vote from any remote location using an internet connection. The system is designed using HTML, CSS, and JavaScript for the front-end interface and PHP with MySQL for backend processing and database management. The proposed system allows a new user to register by entering personal details such as name, Aadhaar number, phone number, email ID, and password. After successful registration, the user can log in to the system. For security purposes, OTP authentication is implemented. A randomly generated OTP is sent to the user's registered email. Only after successful OTP verification, the user can access the voting page.
The system ensures that each user can vote only once during the election period. All votes are stored securely in a centralized database. The counting process is automated, which eliminates human errors and provides instant results. The system also allows users to view election results at any time.
The project follows the Iterative and Incremental development model. In this model, the system is developed in small parts and improved step by step. Each iteration includes requirement analysis, design, implementation, and testing. This approach helps in

identifying errors early and improving system performance gradually.

The proposed system offers the following advantages:

- Voting from anywhere at any time
- Reduced physical infrastructure
- Increased voter participation
- Secure authentication using OTP
- Instant result generation
- Reduced election cost

IV. OUTPUT

Fig.4.1 Login module

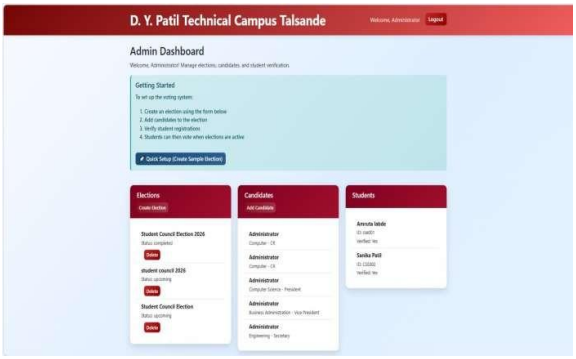

Fig.4.2 Admin panel

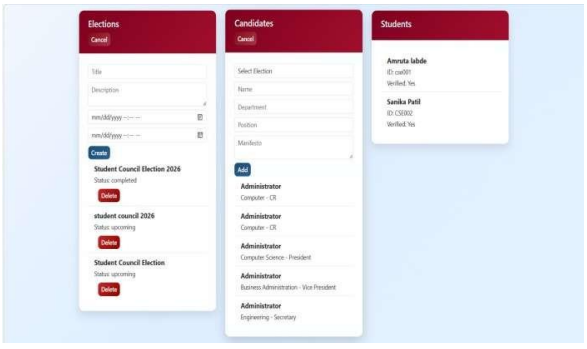

Fig.4.3 add candidates and create elections

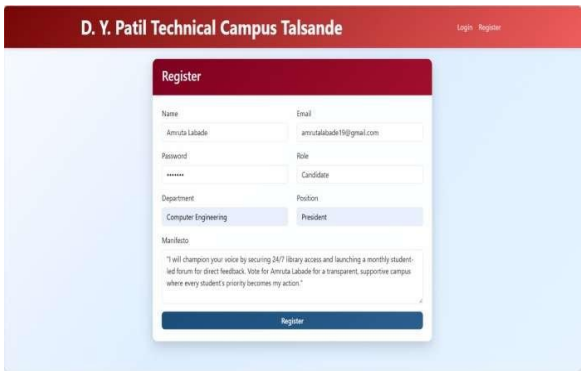

Fig.4.4 Register Module for Candidate.

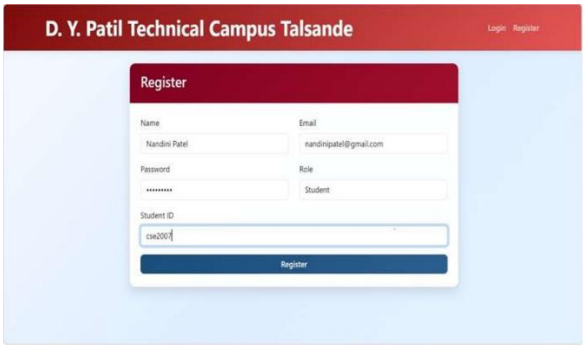

Fig.4.5 Register Module for Student

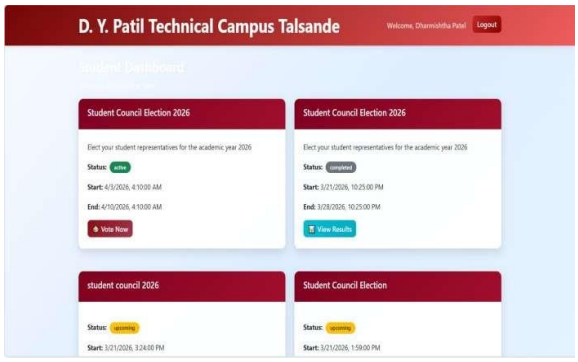

Fig.4.6 Student Module

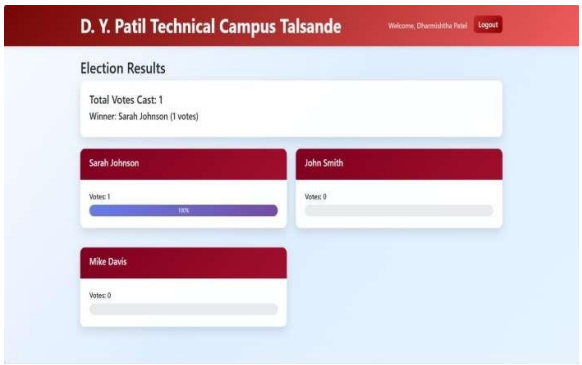

Fig.4.7 Voting Page

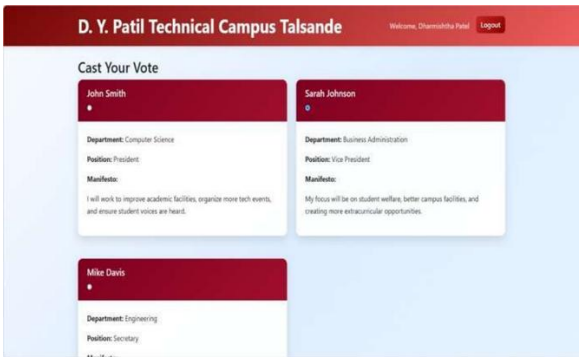

Fig.4.8 Result module

V. CONCLUSION

In conclusion, the Online Voting System provides a secure and efficient alternative to the traditional paper based voting system. In today's digital world, people prefer online services because they save time and effort. This system reduces the need for physical polling stations and avoids large gatherings, which is especially important during pandemic situations.

The use of OTP authentication ensures that only genuine users can vote and prevents multiple voting. Automated vote counting eliminates human errors and provides instant and accurate results. The system improves accessibility for people living in remote areas and increases overall voter turnout. Although the proposed system provides good security, further improvements such as biometric authentication (fingerprint and cornea detection) can enhance system reliability. Overall, the Online Voting System is a cost-effective, secure, and time-saving solution for conducting elections in a digital manner.

REFERENCE

[1] L. Cranor, "Electronic voting hot list," [Online]. Available: https://lorrie.cranor.org/voting/hotlist.html
[2] D. Dill, "E-voting misconceptions," [Online]. Available: https://verifiedvoting.org
[3] "Research papers and articles on online voting systems," [Online].
[4] PHP Documentation, "PHP: Hypertext Preprocessor," [Online]. Available: https://www.php.net/
[5] MySQL Documentation, Oracle Corporation, [Online]. Available: https://www.mysql.com/
[6] XAMPP Documentation, Apache Friends, [Online]. Available: https://www.apachefriends.org/
[7] P. G. Neumann, "Security criteria for electronic voting," SRI International, 1993.
[8] R. L. Rivest, "Electronic voting," Massachusetts Institute of Technology (MIT), 2001.
[9] A. D. Rubin, "Security considerations for remote electronic voting," Johns Hopkins University, 2002.
[10] D. Chaum, "Secret-ballot receipts: True voter-verifiable elections," IEEE Security & Privacy, vol. 2, no. 1, pp. 38–47, 2004.
[11] B. Schneier, Applied Cryptography, 2nd ed. New York, NY, USA: John Wiley & Sons, 2004.
[12] PHP, "Official website," [Online]. Available: https://www.php.net/
[13] MySQL, "Official website," [Online]. Available: https://www.mysql.com/
[14] Apache Friends, "XAMPP," [Online]. Available: https://www.apachefriends.org/
[15] W3Schools, "Web development tutorials," [Online]. Available: https://www.w3schools.com/
[16] Mozilla Developer Network (MDN), "Web documentation," [Online]. Available: https://developer.mozilla.org/