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Monetarized Electronic Voting Machine (M.EVM) by using Python

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Abstract: *Every individual born in India, or whose parents were born in India, automatically becomes an Indian citizen as per the provisions of the Indian constitution. As Indian citizens, they are entitled to fundamental rights and have certain fundamental duties. Among these rights, the most significant one is the "Right to Vote." Voting plays a crucial role in all elections held to select leaders at the state and national levels. Each state has districts, and the state itself is governed by a chief minister. Elections are conducted within each state to determine the political party that will lead the state government. Similarly, nationwide Lok Sabha elections are held to choose a particular party to govern the entire country. Thus, during elections in India, every citizen aged 18 and above has the right to vote.*

The voting system in India is a topic of widespread debate and discussion. People across the nation engage in conversations about it, and there is significant hype surrounding both state and central elections. Unfortunately, during elections, instances of corruption and the use of money to influence voters are often reported. News outlets and television channels frequently cover cases where large sums of cash are seized by the election commission, which remains vigilant to detect any instances of money laundering during the election period.

It is important to address the issue of corruption in the voting process and find ways to ensure fair and transparent elections. Efforts should be made to promote voter education and awareness, emphasizing the significance of making informed choices based on the policies and track records of candidates rather than succumbing to inducements. Additionally, stricter enforcement of election laws and increased penalties for those engaging in corrupt practices can help deter such activities. Ultimately, a robust and accountable electoral system is crucial for upholding the democratic principles of the nation and ensuring the voice of every citizen is heard.

Keywords: Monetarized Electronic Voting Machine

I. INTRODUCTION

Elections play a vital role in allowing the populace to select their representatives and express their preferences for the governance of their nation. The integrity of the election process is, therefore, paramount to upholding the integrity of democracy itself. To ensure this integrity, the election systemmust possess sufficient robustness to withstand a variety of fraudulent behaviours. Moreover, it should be transparent and comprehensible to the extent that both voters and candidates can accept the resultsof an election with confidence. SYSTEM is one of the voting techniques in which people who are majors with Indian citizenship can cast their vote. These days the voting machine has become an effective toll compared with traditional paper-based voting techniques. Thus, we decided to design a machine to overcome the already existing voting system. The main scheme of this project is to have more secure, no duplication of votes and declare the results as early as possible [1].

This paper aims to provide a comprehensive survey of the current state of Electronic Voting, which encompasses various approaches such as Internet Voting and electronic poll-site voting. Electronic voting involves the use of computers or computerized voting equipment to facilitate the casting of ballots in an election. In some instances, the term "electronic voting" specifically refers to voting conducted over the Internet. Electronic systems can be employed for various purposes, including voterregistration, ballot tallying, and vote recording.

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The advent of electronic voting has brought forth a range of debates and discussions surrounding its use. One aspect worth exploring is the extensive research conducted on Internet Voting, along with thearguments presented both in Favor of and against its adoption. The potential benefits of Internet Votinginclude increased convenience for voters, especially those who are unable to physically visit polling stations. However, concerns regarding the security and privacy of online voting have raised valid arguments against its widespread implementation

Additionally, electronic poll-site voting has gained attention as a means of modernizing the traditional voting process. This approach involves utilizing electronic voting machines or systems at designated polling locations. It offers advantages such as faster ballot counting and the potential for enhanced accessibility for individuals with disabilities. However, it also requires careful consideration of system reliability, accuracy, and the preservation of voter anonymity. Electronic voting refers to the use of computers or computerized voting equipment to cast ballots in an election. Sometimes, this term is used more specifically to refer to voting that takes place over the Internet. Electronic systems can be used to register voters, tally ballots, and record votes [2].

As technology continues to advance, it is crucial to address the challenges and opportunities associated with electronic voting. Electronic voting refers to the use of computers or computerized voting equipment to cast ballots in an election. Sometimes, this term is used more specifically to refer to voting that takes place over the Internet. Electronic systems can be used to register voters, tally ballots, and record votes [11]. This includes evaluating the security measures implemented to safeguard against cyber threats, ensuring voter authentication and verification mechanisms are robust, and providing comprehensive voter education on the proper use of electronic voting systems. By actively considering these factors and continually refining the technology and processes involved, the goal of maintaining a trustworthy and reliable electronic voting system can be achieved.

II. LITERATURE REVIEW

Numerous studies have examined the use of computer technologies to enhance the electoral process, particularly focusing on electronic voting systems. However, these studies have issued cautionary warnings regarding the potential risks associated with hasty adoption of electronic voting machines. Software engineering challenges, insider threats, network vulnerabilities, and the difficulties of conducting thorough audits are among the concerns raised. There have been several studies on using computer technologies to improve elections [3, 5, 9 and 6].

An electronic voting machine (EVM) is a user-friendly and straightforward device that can be easily operated by both polling personnel and voters. As a standalone machine without any network connectivity, it minimizes the risk of external interference and manipulation of results. To address the issue of unreliable power supply in many areas of the country, EVMs are designed to run on batteries. The machine consists of two primary units: the Control Unit and the Ballot Unit. The Control Unit serves as the central repository of all data and governs the overall functioning of the EVM. The program controlling the Control Unit is burned into a microchip on a "one-time programmable basis," making it impossible to read, copy, or alter. Additionally, EVMs utilize dynamic coding to enhance the security of data transmission from the Ballot Unit to the Control Unit during subsequent uses, which ensures resilience against variations in facial positions or orientations. Moreover, discussions have emerged regarding pattern classification methods that treat each pixel in a picture as a coordinate in a high-dimensional space. Specifically, if the face captured in the image is a Lambertian surface without shadows, it is perceived that photographs of the same face, under varying light conditions but unchanging positions, lie in a 3D linear subspace within the image space. However, due to various factors, images may deviate from this linear subspace. Prasad, Halderman, Proposed in the International Journal for Research "Security Analysis of India's Electronic voting machines". The author said security is the heart of the E-voting system, he developed this for a security reason to overcome the duplications with a wide variety of security measures [1].

While there has been cryptographic research on electronic voting, and new approaches are being explored, the most viable solution currently considered for securing electronic voting machines is the introduction of a "voter-verifiable audit trail." It is important to note that a verifiable audit trail, although significant, does not solely address concerns related to voter privacy, ballot stuffing, or other potential attacks on the election process. Some vendors have resorted to claiming "security through obscurity" as a defence, despite the widely held belief within the security community that obscurity alone is inadequate for providing meaningful protection.

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In order to build trust in electronic voting systems, continuous research and development efforts are essential. Emphasis should be placed on ensuring robust software engineering practices, addressing potential insider threats and network vulnerabilities, conducting thorough audits, and implementing privacy-preserving mechanisms. By addressing these challenges, electronic voting systems can be enhanced to provide a secure and reliable platform for democratic elections.

III. PROPOSED SYSTEM

In a country with a billion people, conducting elections poses significant time-consuming and logistical challenges for the government. The sheer scale of the population requires substantial funding and resources to ensure the smooth execution of the election procedure. From setting up voting booths to organizing registration kiosks and managing the personnel responsible for election duties, every aspect of the process demands time and financial investment.

Moreover, after the voting phase concludes, the counting process begins, which can be an arduous task, sometimes stretching throughout the entire day. This further emphasizes the need for efficiency in the electoral process.

To address these challenges, we propose the implementation of an efficient, simple, and user-friendly electronic voting system. Properly implemented electronic voting solutions have the potential to eliminate common avenues of fraud, expedite result processing, enhance accessibility for citizens, and make the voting process more convenient. Furthermore, if employed consistently over multiple electoral events, such systems may even lead to long-term cost reductions in conducting elections or referendums. Researchers in the electronic voting field have already reached a consensus pack of following core properties that an electronic voting system should have:

Accuracy:(1) It is not possible for a vote to be altered, (2) it is not possible for a validated vote to be eliminated from the final tally, and (3) it is not possible for an invalid vote to be counted in the final tally. Democracy: (1) it permits only eligible voters to vote and, (2) it ensures that eligible voters vote only once. Privacy: (1) neither authorities nor anyone else can link any ballot to the voter who cast it and (2) no voter can prove that he voted in a particular way. Verifiability: anyone can independently verify that all votes have been counted correctly. Collusion Resistance: no electoral entity (any server participating in the election) or group of entities, running the election can work in a conspiracy to introduce votes or to prevent voters from voting. If all entities conspire this property isn't achieved. So, this characteristic should be measured in terms of the total number of entities that must conspire to guarantee a successful interference in the election [6].

By introducing a robust electronic voting system, we aim to streamline the entire voting process, minimize logistical complexities, and provide citizens with an accessible and convenient method of casting their votes. However, it is crucial to ensure that the proposed system is properly implemented, taking into consideration security measures, data privacy, and transparent auditability to maintain the integrity and trustworthiness of the electoral process. One of the largest issues related to DRE voting systems is accessibility [7]

IV. IMPLEMENTATION

4.1 Introduction

The project is being carried out using Python, a versatile programming language that supports both object-oriented and procedural paradigms. Object-oriented programming enables the modularization of programs by creating partitions containing data and functions, which can be used as templates for creating new instances of those modules when needed.

Python, known for its garbage collection and dynamic typing, provides flexibility and adaptability for various programming paradigms. It also supports functional programming, allowing the creation of pure functions that are easily testable and reusable. The dynamic typing feature eliminates the need for explicit declaration of variable types, reducing code complexity and increasing productivity.

Python's extensive standard library, often referred to as the "batteries included" library, adds to its advantages for this project. The library offers a wide range of pre-built modules and packages covering different functionalities such as file handling, networking, web development, and data manipulation. Leveraging these libraries can expedite development time and simplify the implementation process.

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Machine learning techniques are playing a significant role in this project. Python has emerged as a popular choice for machine learning due to its robust and efficient libraries like TensorFlow, scikitlearn, and PyTorch. These libraries provide various algorithms and tools for tasks such as data preprocessing, feature extraction, model training, and evaluation. Python's readability and ease of use make it well-suited for implementing and experimenting with machine learning algorithms.

The implementation steps for this project involve utilizing Python's extensive ecosystem of libraries and frameworks to build and deploy the monitored EVM system. These steps include data preprocessing to ensure the accuracy and integrity of voting data, feature extraction to identify relevant patterns and characteristics, model training to create a robust vote recognition system, and evaluation to validate the performance and effectiveness of the solution. Python's flexibility, comprehensive library support, and machine learning capabilities synergize to enable the successful development of an efficient monitored EVM system

4.2 System Architecture

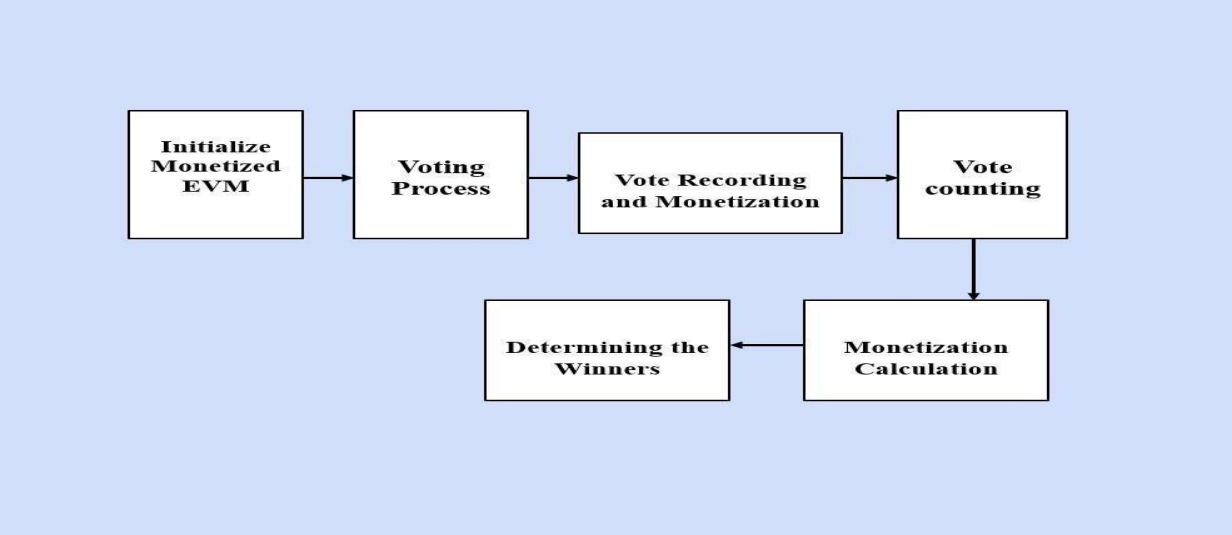

Figure 4.5

Initialize the Monetized EVM:

- Set up the EVM hardware and software.
- Ensure the EVM is securely programmed to record and store votes accurately.

Voting Process:

- Present the eligible voters with the list of candidates.
- Voters select their preferred candidate by inputting the candidate's corresponding number or name.

Vote Recording and Monetization:

- The EVM records the vote securely and anonymously.
- Assign a monetary value to each vote cast. This value can be predetermined or based on factors such as constituency importance or funding allocation.

Vote Counting:

- As soon as the voting process is completed, counting begins.
- The EVM tabulates the total number of votes for each candidate.

Monetization Calculation:

- Calculate the total monetary value generated from the votes received by each candidate

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Determining the Winners:

- Announce the official results, including the winning candidate.
- Distribute the monetary value generated from the votes to the winning candidate's campaign or to adesignated fund for public welfare or government use.

V. RESULTS AND DISCUSSION

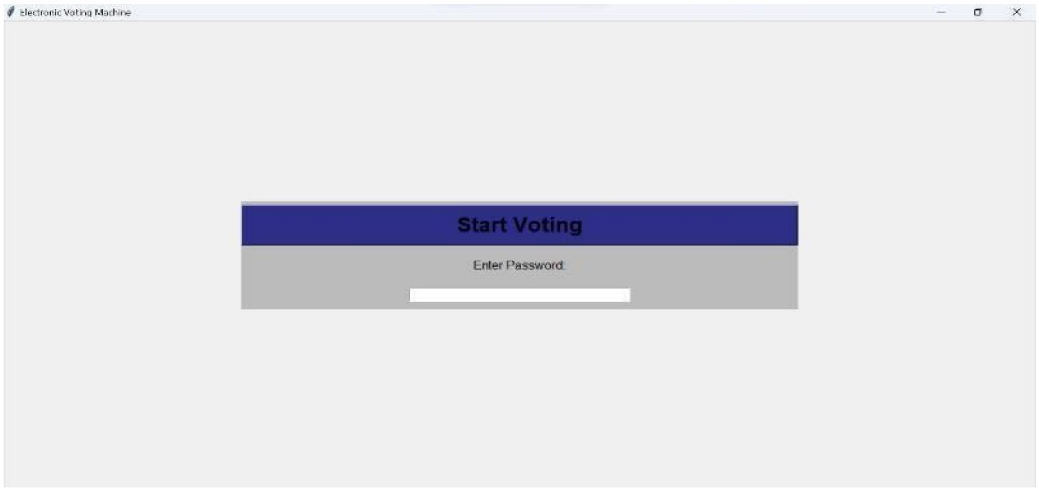

Fig 5.1: login page

In order to ensure transparency and accuracy in the voting process, the implementation of a monitored Electronic Voting Machine (EVM) is crucial. The installation of a monitored EVM enabled a secure and efficient voting system. Once the EVM is set up, the voting process can commence. As shown in fig5.1.

Fig 5.2: Voting page

Voters cast their votes using the EVM, which provides a user-friendly interface. As shown in fig5.2.

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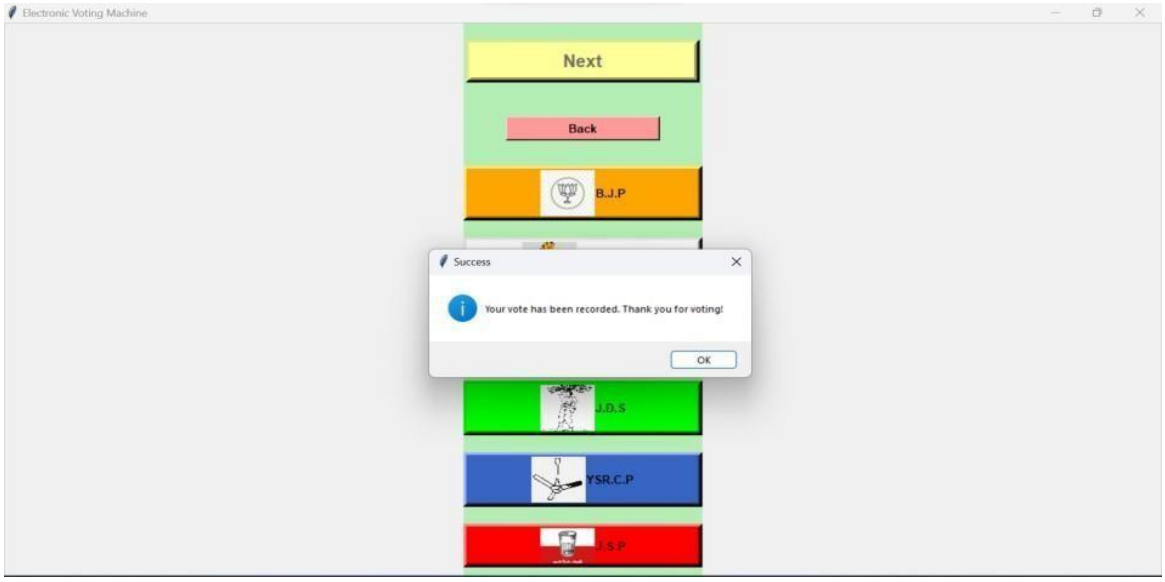

Fig 5.3: Selection of vote page

The EVM is equipped with recognition and monitoring capabilities, ensuring that each vote is recorded correctly and preventing any fraudulent activities in fig5.3. The monitoring system continuously tracks the voting process, ensuring that it adheres to the established protocols andguidelines

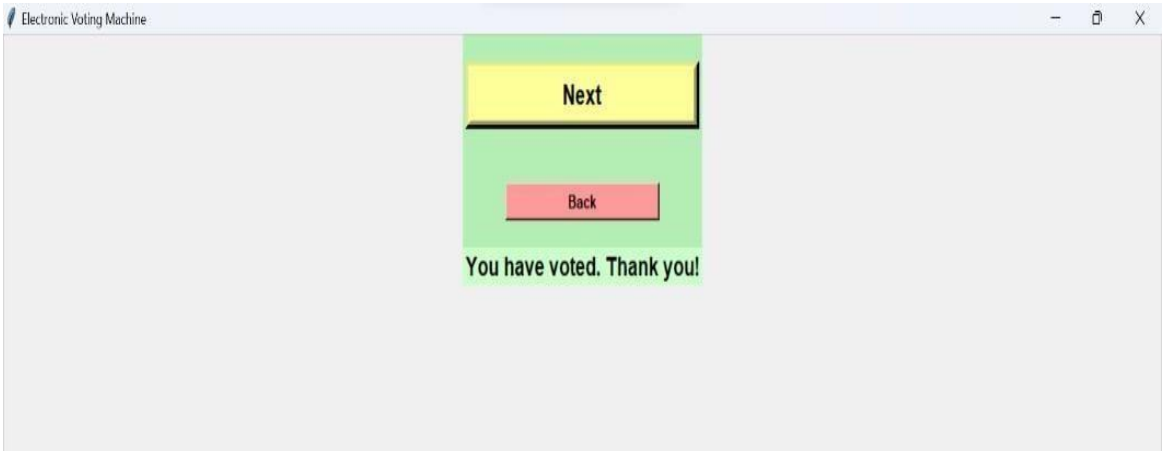

Fig 5.4: next voting page

After the voting phase is completed, the EVM proceeds to count the votes automatically, eliminating the need for manual vote counting. This not only saves time but also reduces the chances of errors in the tabulation process. As shown in fig 5.4.

Fig 5.5: Results page

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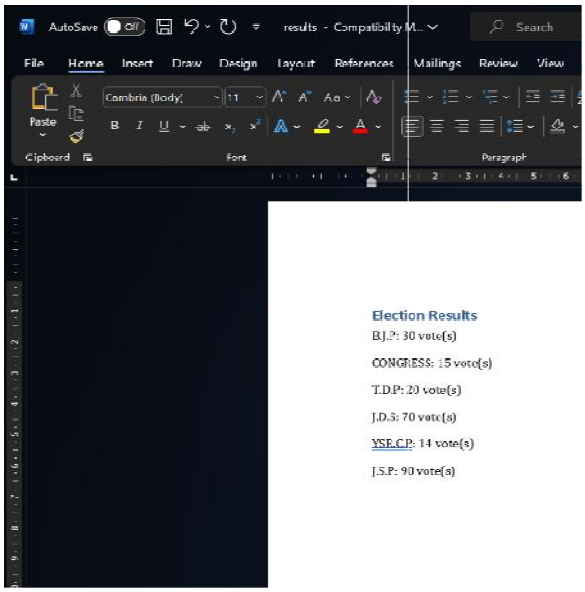

Fig 5.6: Election Results

Additionally, the EVM provides a comprehensive monetization calculation, enabling a quick and accurate determination of the financial costs associated with the voting process in fig5.5. Finally, the winner of the election is determined based on the vote count, which is generated by the EVM. With the implementation of a monitored EVM, the voting process becomes streamlined, secure, and efficient, ensuring a fair and trustworthy outcome in fig5.6.

VI. CONCLUSION

We can make a compelling argument that our proposed technique is not only more useful but also safer compared to the current democratic framework. The existing system has several flaws, including lengthy processes that consume a significant amount of time, lack of adequate security measures, questionable democratic principles, and limited security beyond the present mechanismsin place.

In contrast, our suggested structure incorporates three levels of security, making it highly robust. Oneof these security measures includes a facial validation process that effectively identifies and prevents the involvement of phoney electors. This crucial aspect enhances the credibility and integrity of the voting process by minimizing fraudulent activities during political contest commissions.

Moreover, our smart voting system offers the convenience of web-based access, allowing voters to cast their ballots from anywhere. By providing a secure online platform for voting, we eliminate the geographical limitations and physical presence requirements of traditional polling stations. This not only enhances accessibility for voters but also simplifies the voting process, reducing the logistical challenges associated with physical polling locations.

Additionally, our proposed technique ensures a higher level of security by leveraging advanced encryption and data protection measures. The use of encryption algorithms ensures the confidentiality and integrity of voter information, mitigating the risks of unauthorized access or manipulation of sensitive data. This added layer of security installs trust and confidence in the electoral process.

Overall, our innovative approach addresses the limitations of the current democratic framework and introduces a more efficient, secure, and inclusive voting system. By embracing technological advancements and incorporating robust security measures, we can revolutionize the democratic process, making it more transparent, accessible, and resilient against fraudulent activities.

REFERENCES

[1]. Madhuri Namballa , Tejasree Kaka , Mendu Vaishnavi , Duvvuri Sai Suma, K. Sriram,'Real Time Based Voting System", International Journal of Engineering Research & Technology (IJERT) http://www.ijert.org ISSN: 2278-0181

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[2]. Lorrie Faith Cranor., "Electronic Voting," Encyclopedia of Computers and Computer History, Fitzroy Dearborn, 2001.

[3]. California Internet Voting Task Force. "A Report on the Feasibility of Internet Voting", Jan.2000.

[4]. P.Vidyasree, S.Raju, G. Madhavi, "Desisting the Fraud in India's Voting Process through Multi Modal biometrics", computer science, IEEE 6th published 2016.

[5] "Voting: What Is; What Could Be"., Caltech/MIT Voting Technology Project., July 2001.

[6]. Ashok Kumar D., Ummal Sariba Begum T., "A Novel design of Electronic Voting System

[7] Using Fingerprint", International Journal of Innovative Technology & Creative Engineering (ISSN:20458711),Vol.1,No.1. pp: 12-19, January 2011.

[8] Benjamin B., Bederson, Bongshin Lee., Robert M. Sherman., Paul S., Herrnson, Richard G. Niemi., "Electronic Voting System Usability Issues", In Proceedings of the SIGCHI conference on Human factors in computing systems, 2003.

[9] M. Patil, V. Pimplodkar, A. R. Zade, V. Vibhute and R. Ghadge, "A Survey on Voting System Techniques", International Journal of Advanced Research in Computer Science and Software Engineering, vol. 3, no. 1, (2013).

[10]. A. J. Feldman, J. A. Halderman and E. W. Felten, "Security Analysis of the Diebold AccuVote-TS Voting Machine", USENIX/ACCURATE Electronic Voting Technology Workshop (EVT'07), (2007) August; Boston, US