



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 9, Issue 9, September 2020

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Online Voting Using Blockchain Technology

Dr.S.Srinivasan¹, R.Lavanya², C.Lakshmi³, S.Malini⁴

Associate Professor, Department of Computer Science Engineering, RMD Engineering College, Kavaraipettai, Chennai, India¹

B.E.Student, Department of Computer Science Engineering, RMD Engineering College, Kavaraipettai, Chennai, India^{2,3,4}

ABSTRACT: The electronic voting has emerged over time as a replacement to the paper-based voting to reduce the redundancies and inconsistencies. The historical perspective presented in the last two decades suggests that it has not been so successful due to the security and privacy observed over time. This paper suggests a framework by using effective hashing techniques to ensure the security of the data. The concept of block creation and block sealing is introduced in this paper. The introduction of a block sealing concept helps in making the block chain adjustable to meet the need of the polling process. The use of consortium block chain is suggested, which ensures that the blockchain is owned by a governing body (e.g., election commission), and no unauthorized access can be made from outside. The framework proposed in this paper discusses the effectiveness of the polling process, hashing algorithms' utility, block creation and sealing, data accumulation, and result declaration by using the adjustable block chain method. This paper claims to apprehend the security and data management challenges in block chain and provides an improved manifestation of the electronic voting process.

KEYWORDS: Electronic Voting, Blockchain Voting, e-voting, blockchain, future Voting

I. INTRODUCTION

Voting schemes have evolved from counting hands in early days to systems that include paper, punch card, mechanical lever and optical-scan machines. An electronic voting system which is used nowadays provide some characteristic different from the traditional voting technique, and also it provides improved features of voting system over traditional voting system such as accuracy, convenience, flexibility, privacy, verifiability and mobility. But Electronic voting systems suffers from various drawbacks such as time consuming, consumes large volume of paper work, no direct role for the higher officials, damage of machines due to lack of attention, mass update doesn't allows users to update and edit many item simultaneously etc. Therefore by implementing a decentralized Blockchain based server environment we can prevent data loss.

II. RELATED WORK

The proposed system is the Biometric online voting system with biometric fingerprint using aadhaar card. It determines the particular voter by his/her fingerprint whether he/she is a valid voter or not. It allows particular voter to cast the vote online. The polling process continues until the voting time ends and update the database in the server. Biometric online voting system uses aadhaar card to retrieve the complete details about the voter. And the votes are stored in a blockchain server and viewed to the public this ensure a trustworthy environment.

III. METHODOLOGY

I. Module

- Admin Login page with default user name and password.
- Admin can accept or reject an voter request by verifying the user detail and also admin can register another admin.
- User has to scan his aadhar card for verification process.
- After scanning he should enter his detail and send an request to the admin if the account get rejected due to some reason he will be intimated to register again by admin.

II. Module

- Admin can create an election with election type and election constituency.

- All the election gets triggered at the given date and time.
- Verified user has to login and scan his aadhar card if election and user constituency matches user can view Election details.

III. Module

- User has to scan his registered finger during his registration process.
- In voting page voter has to scan his finger if the user finger print matches with registered finger print, voter can cast his or her vote to the right candidate.
- Source ASIF an algorithm for recognition of human fingerprints is used to compare two finger print.

IV. Module

When user completes his or her voting process votes are stored in Block chain.

So the voter can trust his votes stored in block chain cannot be changed.

User can view his or her vote in a pie chart retrieved from block chain.

SHA256 algorithm has been used to hash the data.

Admin Can publish the result of each constituency after the election process is fully completed.

IV.EXPERIMENTAL RESULTS

Voter can cast their votes from anywhere in the country without visiting to voting booths, in highly secured way.

This will increase the voting percentage in India and reduces the cost of voting process.

By using biometric fingerprint it provides enough security which reduces the false votes

The collection of the results is done from the stored data on the blocks through the significant organization of the nodes in the blockchain.

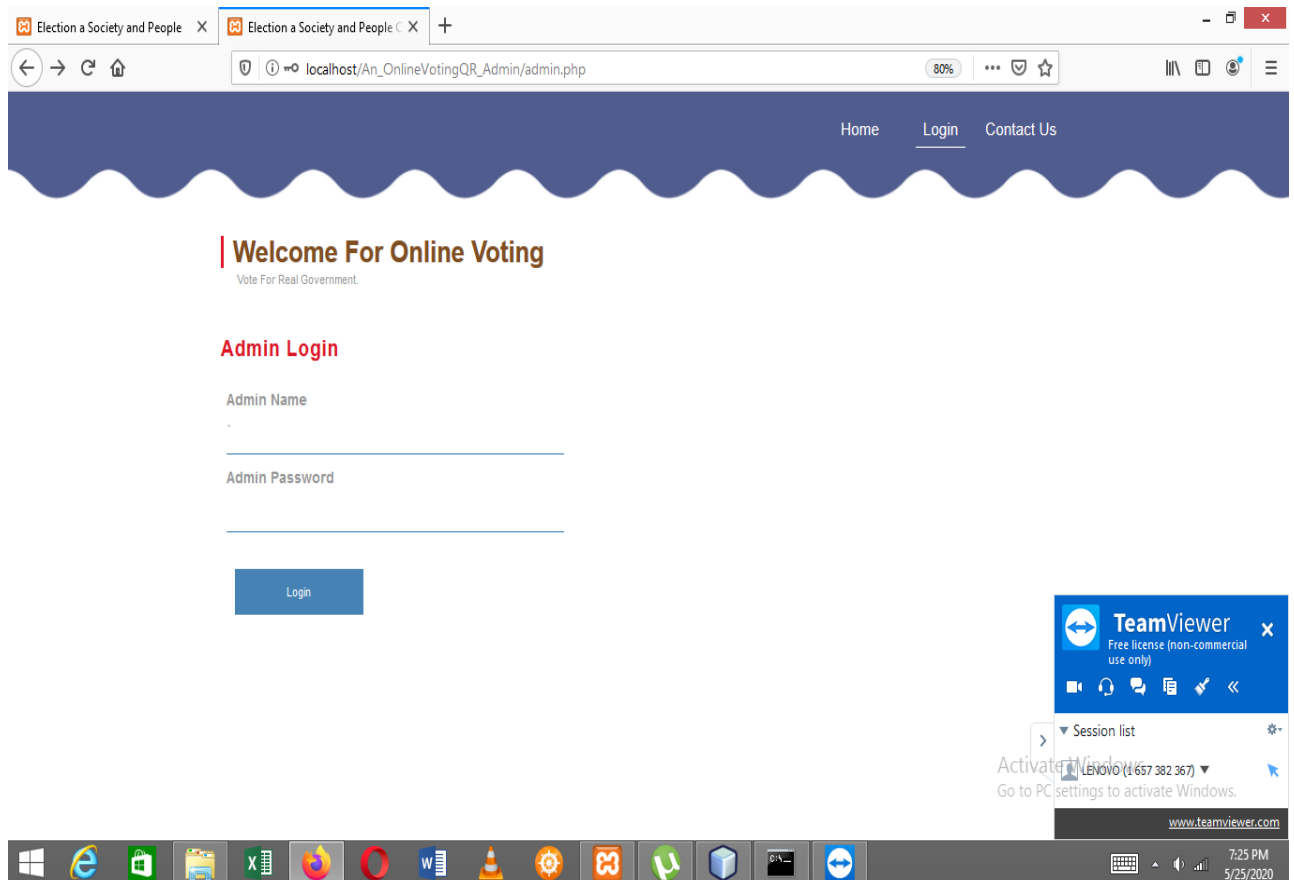


Fig.1 Admin login

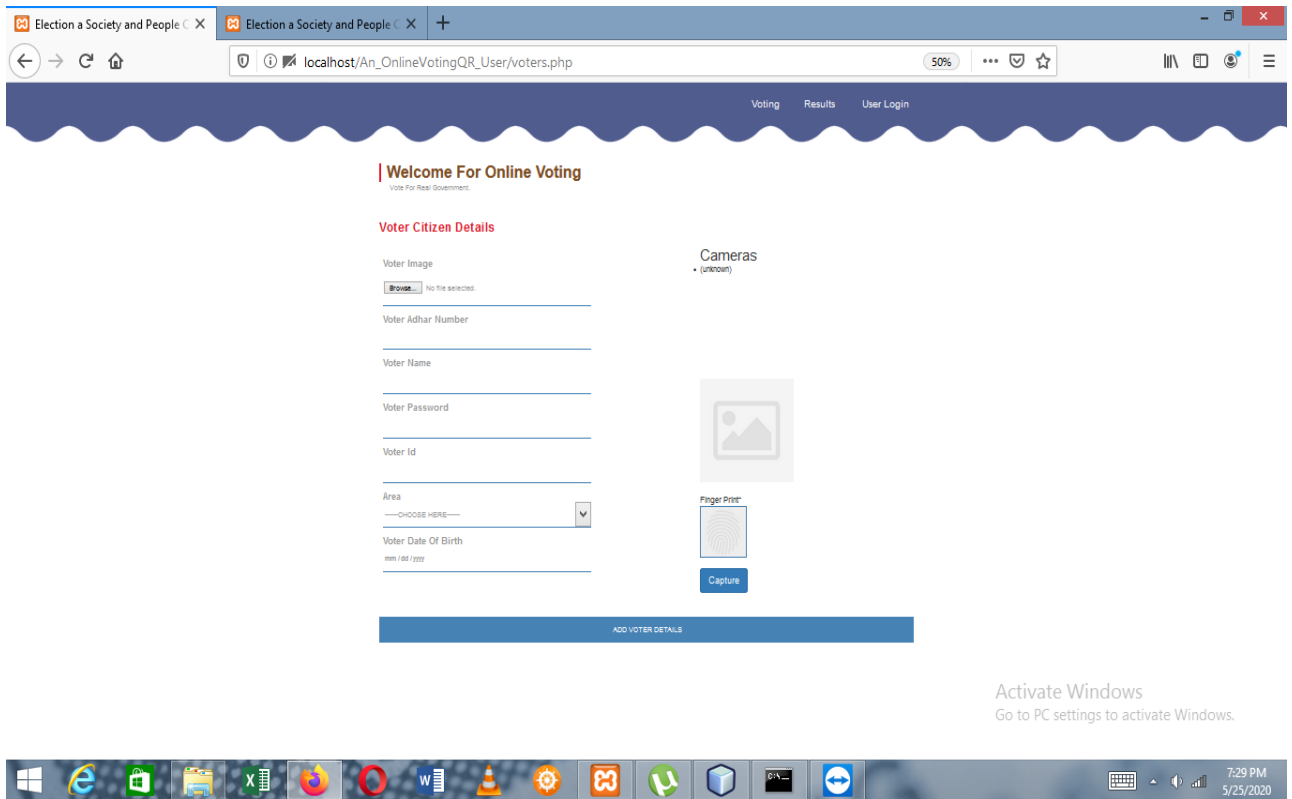


Fig.2 Add Voter Citizen

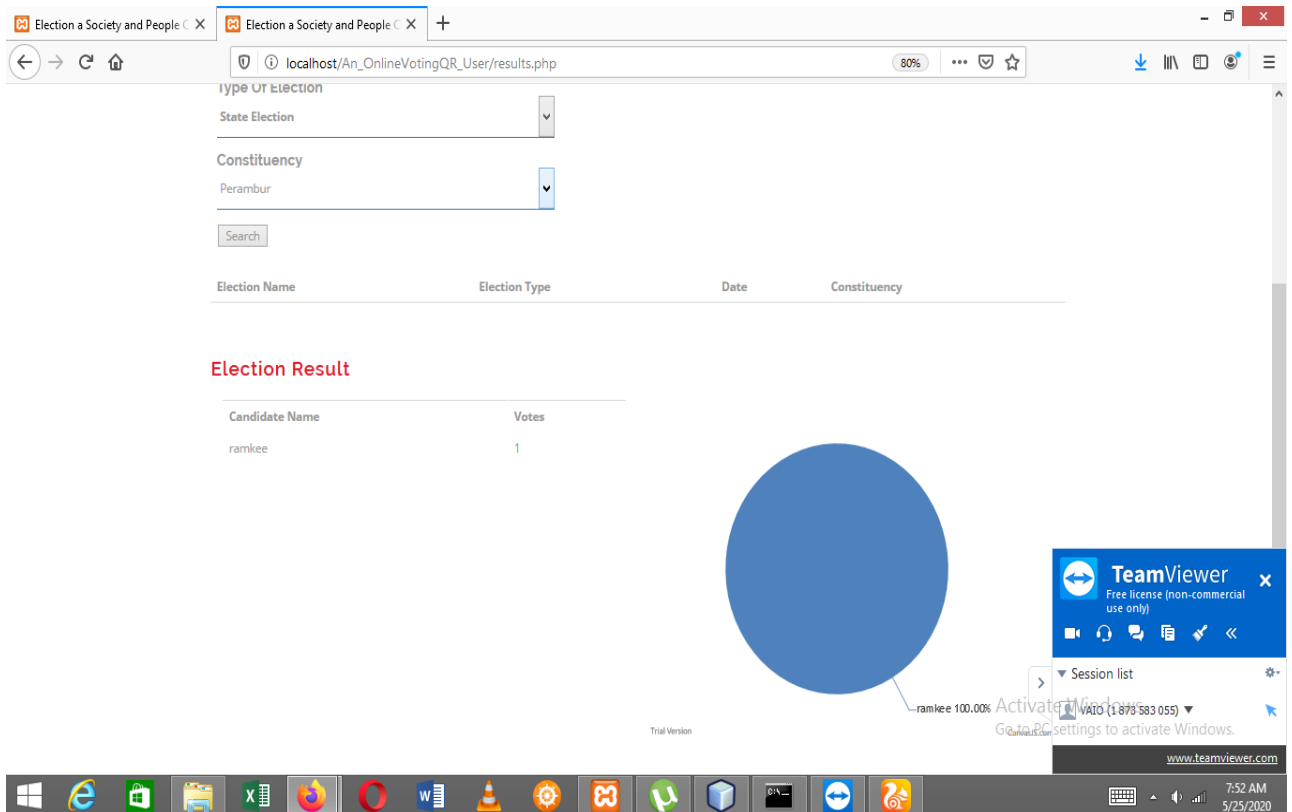


Fig.3 Election Result

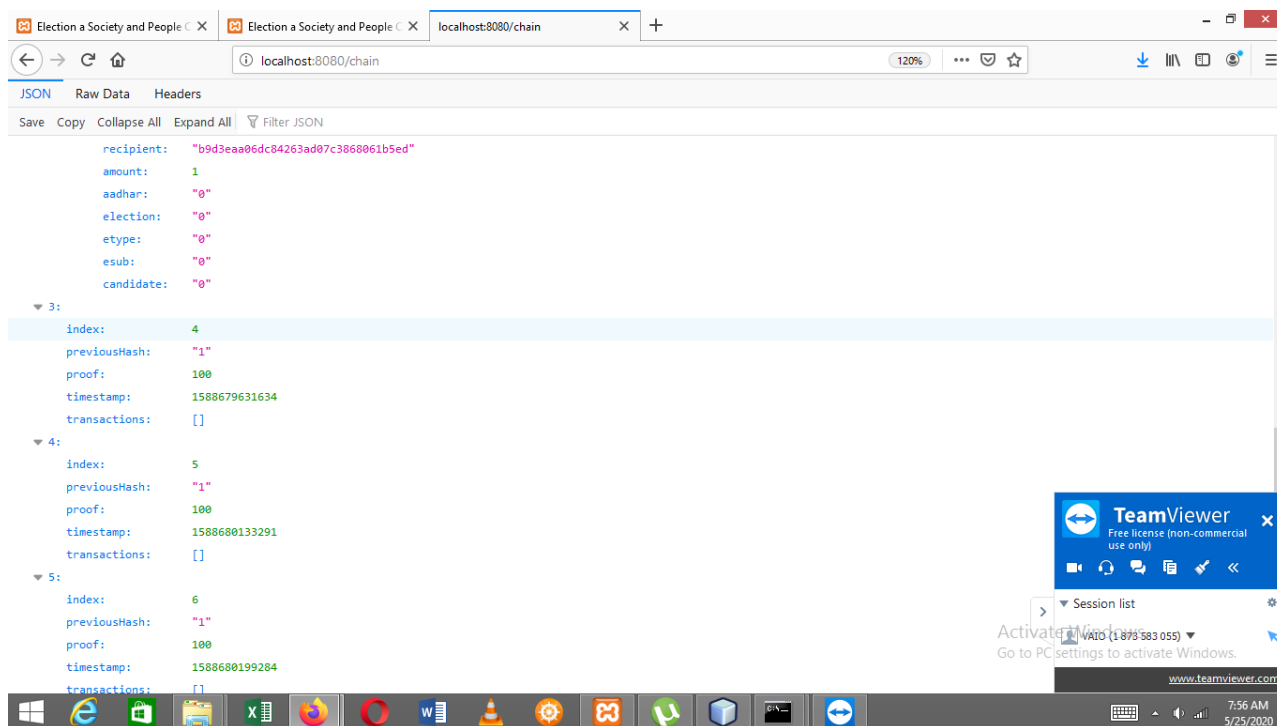


Fig.4 Blockchain

V.CONCLUSION

Our proposal enables a voter to cast his/her vote through internet without going to voting booth and additionally registering himself/herself for voting in advance, proxy vote or double voting is not possible, fast to access, highly secure, easy to maintain all information of voting, highly efficient and flexible. Hence, by this voting percentage will increase drastically. The using of online voting has the capability to reduce or remove unwanted human errors. In addition to its reliability, online voting can handle multiple modalities, and provide better scalability for large elections. Online voting is also an excellent mechanism that does not require geographical proximity of the voters. For example, soldiers abroad can participate in elections by voting online.

REFERENCES

[1] EIU Democracy Index 2017. Accessed: Aug. 3, 2018. [Online]. Available: <https://infographics.economist.com/2018/DemocracyIndex/>

[2] ScienceDirect. *Democracy Online: An Assessment of New Zealand Government Web Sites*. Accessed: Aug. 1, 2018. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0740624X00000332>

[3] M. Volkamer, O. Spycher, and E. Dubuis, "Measures to establish trust in Internet voting," in *Proc. 5th Int. Conf. Theory Pract. Electron. Governance*, 2011, pp. 1_6.

[4] É. Bélanger and R. Nadeau, "Political trust and the vote in multiparty elections: The Canadian case," *Eur. J. Political Res.*, vol. 44, no. 1, pp. 121_146, 2005.

[5] T. Kunioka and G. M. Woller, "In (a) democracy we trust: Social and economic determinants of support for democratic procedures in Central and Eastern Europe," *J. Socio-Econ.*, vol. 28, no. 5, pp. 577_596, 1999.

[6] T. van der Meer, "In what we trust? A multi-level study into trust in parliament as an evaluation of state characteristics," *Int. Rev. Administ. Sci.*, vol. 76, no. 3, pp. 517_536, 2010.

[7] D. Basin, H. Gersbach, A. Mamageishvili, L. Schmid, and O. Tejada, "Election security and economics: It's all about eve," in *Proc. Int. Joint Conf. Electron. Voting*, 2017, pp. 1_28.

[8] P. Bevelander and R. Pendakur, "Electoral participation as a measure of social inclusion for natives, immigrants and descendants in Sweden," *Tech. Rep.*, 2008, p. 33.

[9] S. Wolchok et al., "Security analysis of India's electronic voting machines," in *Proc. 17th ACM Conf. Comput. Commun. Secur.*, 2010, pp. 1_14.

- [10] R. L. Rivest, "The threeballot voting system," Tech. Rep., 2006, p. 15.
- [11] J. Stern. *Votem_Voting for a Mobile World*. Accessed: Jul. 31, 2018. [Online]. Available: <https://votem.com/>
- [12] M. Pilkington, "11 Blockchain technology: Principles and applications," in *Research Handbook on Digital Transformations*. 2016, p. 225.
- [13] G. Gabison, "Policy considerations for the blockchain technology public and private applications," *SMU Sci. Tech. Rev.*, vol. 19, p. 327, Sep. 2016.
- [14] M. Feldhofer, S. Dominikus, and J. Wolkerstorfer, "Strong authentication for RFID systems using the AES algorithm," in *Cryptographic Hardware and Embedded Systems*. 2004, pp. 357_370.
- [15] Y. Stein and H. Primo, "Programmable data encryption engine for advanced encryption standard algorithm," U.S. Patent 7 508 937 B2, 2009. Accessed: Aug. 1, 2018. [Online]. Available: <https://patents.google.com/patent/US7508937B2/en>
- [16] B. Shehzad, K. M. Awan, M. I.-U. Lali, and W. Aslam, "Identi_cation of patterns in failure of software projects," *J. Inf. Sci. Eng.*, vol. 33, no. 6, pp. 1465_1480, 2017.
- [17] A. M. Abdullatif, B. Shahzad, and A. Hussain, "Evolution of social media in scienti_c research: A case of technology and healthcare professionals in Saudi Universities," *J. Med. Imag. Health Inform.*, vol. 7, no. 6, pp. 1461_1468, 2017.
- [18] B. Shahzad, "Identi_cation of risk factors in large scale software projects: A quantitative study," *Int. J. Knowl. Soc. Res.*, vol. 5, no. 1, pp. 1_11, 2014. [19] A. B. Shahzad and A. Said, "Application of quantitative research methods in identifying software project factors," *Int. J. Inf. Technol. Elect. Eng.*, vol. 1, no. 1, pp. 30_33, 2012.
- [20] K. Saleem, A. Derhab, J. Al-Muhtadi, and B. Shahzad, "Humanoriented design of secure machine-to-machine communication system for e-healthcare society," *Comput. Hum. Behav.*, vol. 51, pp. 977_985, Oct. 2015.
- [21] K. Saleem, A. Derhab, J. Al-Muhtadi, B. Shahzad, and M. A. Orgun, "Secure transfer of environmental data to enhance human decision accuracy," *Comput. Hum. Behav.*, vol. 51, pp. 632_639, Oct. 2015.
- [22] J. Al-Muhtadi, B. Shahzad, K. Saleem, W. Jameel, and M. A. Orgun, "Cybersecurity and privacy issues for socially integrated mobile healthcare applications operating in a multi-cloud environment," *Health Informat. J.*, Apr. 2017
- [23] M. I. U. Lali, R. U. Mustafa, K. Saleem, M. S. Nawaz, T. Zia, and B. Shahzad, "Finding healthcare issues with search engine queries and social network data," *Int. J. Semantic Web Inf. Syst.*, vol. 13, no. 1, pp. 48_62, 2017.
- [24] B. Shahzad, E. Alwagait, S. Alim, and I. Resaercher, "Investigating the relationship between social media usage and students grades in Saudi Arabia: A mixed method approach," in *Proc. Recent Adv. Elect. Eng. Educ. Technol.*, 2015, pp. 211_214.
- [25] R. A. Abbasi *et al.*, "Saving lives using social media: Analysis of the role of Twitter for personal blood donation requests and dissemination," *Telematics Inform.*, vol. 35, no. 4, pp. 892_912, 2018.
- [26] E. Alwagait, B. Shahzad, and S. Alim, "Impact of social media usage on students academic performance in Saudi Arabia," *Comput. Hum. Behav.*, vol. 51, pp. 1092_1097, Oct. 2015.
- [27] B. Shahzad and E. Alwagait, "Does a change in weekend days have an impact on social networking activity?" *J. UCS*, vol. 20, no. 15, pp. 2068_2079, 2014.
- [28] Z. Zheng, S. Xie, H.-N. Dai, X. Chen, and H. Wang, "Blockchain challenges and opportunities: A survey," *Int. J. Web Grid Services*, vol. 14, no. 4, pp. 352_375, 2018.
- [29] D. Johnson, A. Menezes, and S. Vanstone, "The elliptic curve digital signature algorithm (ECDSA)," *Int. J. Inf. Secur.*, vol. 1, no. 1, pp. 36_63, Aug. 2001.
- [30] J. Barcelo, "User privacy in the public bitcoin blockchain," *J. Latex Class Files*, vol. 6, no. 1, p. 4, 2007.
- [31] A. Biryukov, D. Khovratovich, and I. Pustogarov, "Deanonymisation of clients in bitcoin P2P network," in *Proc. ACM SIGSAC Conf. Comput. Commun. Secur.*, New York, NY, USA, 2014, pp. 15_29.
- [32] A. Rasul and S. D. McDowell, "Consolidation in the name of regulation: The Pakistan Electronic Media Regulatory Authority (PEMRA) and the concentration of media ownership in Pakistan," *Global Media J.*, vol. 11, no. 21, pp. 110_121, 2012.
- [33] S. K. Mohmand, "Patrons, brothers and landlords: Competing for the vote in Rural Pakistan," Ph.D. dissertation, Univ. Sussex, Brighton, U.K., 2011. [34] S. Baig, U. Ishtiaq, A. Kanwal, U. Ishtiaq, and M. H. Javed, "Electronic voting system using _ngerprint matching with Gabor _lter," in *Proc. Int. Bhurban Conf. Appl. Sci. Echnol. Islamabad, Pakistan*, 2011, pp. 130_135.
- [35] N. Yaser, N. Mahsud, and I. A. Chaudhry, "Effects of exposure to electronic media political content on voters' voting behavior," *Berkeley J. Soc. Sci.*, vol. 1, no. 4, pp. 1_22, 2011.
- [36] Z. Zheng, S. Xie, H. Dai, X. Chen, and H. Wang, "An overview of blockchain technology: Architecture, consensus, and future trends," in *Proc. IEEE Int. Congr. Big Data (BigData Congr.)*, Jun. 2017, pp. 557_564.
- [37] ScienceDirect. *Datestamping the Bitcoin and Ethereum Bubbles*. Accessed: Aug. 2, 2018. [Online]. Available: <https://www.sciencedirect.com/science/article/abs/pii/S1544612317307419>



- [38] Z. Li, J. Kang, R. Yu, D. Ye, Q. Deng, and Y. Zhang, "Consortium blockchain for secure energy trading in industrial Internet of Things," *IEEE Trans. Ind. Informat.*, vol. 14, no. 8, pp. 3690_3700, Aug. 2018.
- [39] D. Bradbury, "In blocks [security bitcoin]," *Eng. Technol.*, vol. 10, no. 2, pp. 68_71, Mar. 2015.
- [40] SpringerLink. *Security Analysis of SHA-256 and Sisters*. Accessed: Aug. 2, 2018. [Online]. Available: https://link.springer.com/chapter/10.1007/978-3-540-24654-1_13
- [41] R. Silhavy, P. Silhavy, and Z. Prokopová, "Architecture of COOPTO remote voting solution," in *Advanced Techniques in Computing Sciences and Software Engineering*. Dordrecht, The Netherlands: Springer, 2010, pp. 477_479.
- [42] F. P. Hjalmarsson, G. K. Hreiðarsson, M. Hamdaqa, and G. Hjalmtýsson, "Blockchain-based e-voting system," in *Proc. IEEE 11th Int. Conf. Cloud Comput. (CLOUD)*, San Francisco, CA, USA, Jul. 2018, pp. 983_986.
- [43] L. P. Alonso, M. Gasco, D. Y. M. del Blanco, J. A. H. Alonso, J. Barrat, and H. A. Moreton, "E-voting system evaluation based on the council of Europe recommendations: Helios voting," *IEEE Trans. Emerg. Topics Comput.*, Nov. 2018. doi: [10.1109/TETC.2018.2881891](https://doi.org/10.1109/TETC.2018.2881891).
- [44] N. Kshetri and J. Voas, "Blockchain-enabled e-voting," *IEEE Softw.*, vol. 35, no. 4, pp. 95_99, Jul./Aug. 2018.



INNO SPACE
SJIF Scientific Journal Impact Factor

**Impact Factor:
7.512**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details