Immune Ballot
[Decentralized voting system]

Abstract— Voting is always been the most important aspect of true democratic country. Providing free and fair election is essential and at the same time most difficult task of election process. We have seen many faults in current election process like Corruption, Manipulation, Steady Process. We need to reform current Voting process with completly new strategies.Technology has positive impacts on many aspects of our social life. Designing a 24hour globally connected architecture enables ease of access to a variety of resources and services. Furthermore, technology like Internet has been a fertile ground for innovation and creativity. One of such disruptive innovation is blockchain -- a keystone of cryptocurrencies. The blockchain technology is presented as a game changer for many of the existing and emerging technologies/services. With its immutability property and decentralised architecture, it is taking centre stage in many services as an equalisation factor to the current parity between consumers and large corporations/governments. One of such potential applications of the blockchain is in e-voting schemes. The objective of such a scheme would be to provide a decentralised architecture to run and support a voting scheme that is open, fair and independently verifiable. In this paper, we propose potentially a new e-voting protocol that utilizes the blockchain as a transparent ballot box. The protocol has been designed with adhering to the fundamental e-voting properties in mind as well as offering a degree of Decentralization.

I. Introduction

Blockchain—a peer-to-peer network that sits on top of the internet—was introduced in October 2008 as part of a proposal for Bitcoin, a virtual currency system that eschewed a central authority for issuing currency, transferring ownership, and confirming transactions. Bitcoin is the first application of blockchain technology.

In a blockchain system, the ledger is replicated in a large number of identical databases, each hosted and maintained by an interested party. When changes are entered in one copy, all the other copies are simultaneously updated. So as transactions occur, records of the value and assets exchanged are permanently entered in all ledgers. There is no need for third-party intermediaries to verify or transfer ownership. If a stock transaction took place on a blockchain-based system, it would be settled within seconds, securely and verifiably. Earlier Blockchain was limited to just cryptocurrencies, but its potential were enormous due its unbreakable capabilities.

Bitcoin and other cryptocurresnsis rely on blockchain technology and this technology can be used in many fields to solve the problems at great extent.

As transactions are stored in distributed and secure format, Voting is the field that is struggling from lack of security, centralized-authority, management-issue and many more. These all issues can be solved on major basis using decentralized, fault-proof & secure system i.e. using Blockchain technology. Now it has become very important to change current outdated voting process into completly new way.

II. Limitations of Existing System

1.**Muscle Power**: Violence, pre-election intimidation, post election, victimization, most of the riggings of any type, booth capturing both silent and violent are mainly the products of muscle power. Criminalization of politics and politicalisation of criminals, freely indulged in now, are like two sides of the same coin and are mainly responsible for the manifestation of muscle power at elections. By using of violence, the criminals are able to achieve success at elections for their benefactors.

2. **Misuse of Government Machinery**: It is generally complained that the government in power at the time of election misuse official machinery to further the election prospects of its party candidates. The misuse of official machinery takes different forms, such as issue of advertisements at the cost of government and public exchequer highlighting their achievements, disbursements out of the discretionary funds at the disposal of the ministers, use of government vehicles for canvassing etc. The misuse of official machinery in the ways mentioned above gives an unfair advantage to the ruling party at the time of elections. This leads to misuse of public funds for furthering the prospects of candidates of a particular party.

3.**Criminalization of Politics**: Criminalization of politics has become an all-pervasive phenomenon. At one time politicians hired criminals to help them win elections by booth capturing. Today, those same criminals have begun entering parliament and the state legislature.

4. **Money Power**: Electioneering is an expensive affair in every democratic polity which plays a more vital role in many countries. Money power plays in our electoral system destructive role affecting seriously the working of periodic elections, It leads to all round corruption and contributes mainly to the generation of black money economy which rules at present our country. Political leaders and workers considered it unethical to work with a desire for any reward. But scenario now has changed. The elections in Indian polity are becoming increasingly expensive and the gap between the expenses incurred and legally permitted is increasing over the years.

5.With physical ballots, you can always recount the results; and, in theory at least, the ballots get stored for years. With electronic votes, any amount of tampering could theoretically happen to the votes.

6.In practice it's less simple. At the physical level, timestamps can get in the way of perfect anonymity if the user-related tokens themselves aren't anonymous as well - but then you also need to figure out how to securely and anonymously deliver the token.

III. Problem Definition

As earlier mention the limitations of the existing Voting it becomes very important to overcome those problems to ensure safe, fast and realiable voting process.
Vote Trig is platform created on etherum network to overcome major problems mention above and promise to reform outdated voting process.

- **Smart Contracts** : Smart Contracts act as the back-end logic and storage. A contract is written in Solidity, a smart contract language, and is a collection of code and data that resides at a specific address on the Ethereum blockchain. It's very similar to a class in Object Oriented Programming, where it includes functions and state variables. Smart Contracts, along with the Blockchain, are the basis of all Decentralized Applications. They are, like Blockchain, immutable and distributed, which means upgrading them will be a pain if they are already on the Ethereum Network. Fortunately, here are some ways to do that.

- **The Ethereum Virtual Machine(EVM)** : The Ethereum Virtual Machine(EVM) handles the internal state and computation of the entire Ethereum Network. Think of the EVM as this massive decentralized computer that contains "addresses" that are capable of executing code, changing data, and interacting with each other.

- **Web3.js**:Web3.js is a Javascript API that allows you to interact with the Blockchain, including making transactions and calls to smart contracts. This API abstracts the communication with Ethereum Clients, allowing developers to focus on the content of their application. You must have a web3 instance imbedded in your browser to do so.
- **Truffle**: Truffle is a popular testing development framework for Ethereum. It includes a development blockchain, compilation and migration scripts to deploy your contract to the Blockchain, contract testing, and so on. It makes development easier!

- **Metamask**:Metamask brings Ethereum to your browser. It is a browser extension that provides a secure web3 instance linked to your Ethereum address, allowing you to use Decentralized Applications. We will not be using Metamask in this tutorial, but it is a way for people to interact with your DApp in production. Instead, we will inject our own web3 instance during development. For more information, check out this link

- **Ganache**:The next dependency is Ganache, a local in-memory blockchain. You can install Ganache by downloading it from the Truffle Framework website. It will give us 10 external accounts with addresses on our local Ethereum blockchain. Each account is preloaded with 100 fake ether.

IV. Advantages

- No Central Point of Failure: Since DApps are distributed and they don't rely on one single server, there is no central point of failure. DApps allow the data stored in them to be decentralized across all its nodes. These nodes are independent of each other. In case of failure of one node, the other nodes won't get affected and will run on the network accordingly

- Nevertheless, current blockchain-based applications are still limited to utilizing smart contract for core data and functionality that should be resistant to modifications. The smart contract users still need to run their programs locally in order to complete the application. One of the key reasons is the performance limitation of current blockchain technologies, which cannot meet the requirements of many applications.

V. Features

I. Decentralized:As each vote on the network is stored in distributed ledger, no single entity has control over the network its almost impossible for hackers to do any modification of the votes on the network. The ledger exists in many different locations therfore no single point of failure in the maintenance of the distributed ledger.

II. Secure: Blockchain technology has a better security because there is not even a single chance of shutting down of the system. Theoratically to hack blockchain it would require world's fastest 500 computers but practically it is impossible. Each vote is stored in network in form of block which is result of strong encryptions and cryptographic functions.

III. Fast: If blockchain makes voting transparent, then we can follow and tally votes in real time. This means that elections can happen on a much shorter timespan. Additionally, if they are digital, they require less investment in polling infrastructure. As a result, elections could be held with a short lead time to vote on a referendum quickly.
This could completely change daily life. Imagine if you could vote on your phone on how traffic in your city would be routed today or whether to increase taxes to pay for a new park in your community. Voting could become highly targeted, even neighborhood specific. There would be little overhead to voting more often, possibly making voting a daily occurance.

IV. Coorporate Governance & Autonomous Organizations: Governments aren't the only institutions that could benefit

from blockchain voting. Employees or shareholders could vote for initiatives within a company as well. It's possible to even imagine ownerless businesses where every decision is an open vote from shareholders.

V. Increased Voter Engagement: A big advantage of blockchain voting could be increased engagement. If blockchain makes digital voting possible from your smartphone or computer, voting becomes as easy as logging in and casting your ballot in just a few minutes. This would likely increase voter turnout drastically, leading to more direct democracy. Alternatively, it could lead to voting fatigue, where voters realize they liked electing representatives to worry about policy for them.

VI. People>Power: As distributed network makes power of money and capital useless infront of people and their votes. People can chosse their leaders independently without any external pressure.

VI. TECHNICAL SPECIFICATIONS

Hardware Specification:

1. 1GB RAM, dual core 1.7 GHz. Minimum 1 GB RAM should be available on customer's computer.
2. Pentium IV and higher Processor with internet. The system must be configured with minimum Pentium IV and higher processor with internet to support on-line transaction.

Software Interface:

3. Operating system : Windows 7+ ,Linux ,Windows 8. Version : 2007,2010.
4. Language :HTML , CSS, Javascript,Php,Solidity
5. Back end : Truffle,Ganche,MySQL
6. Plugins : Metamask

1) Data charts which are typically black and white, but sometimes include color.

B. Multipart figures

Figures compiled of more than one sub-figure presented side-by-side, or stacked. If a multipart figure is made up of multiple figure types (one part is lineart, and another is grayscale or color) the figure should meet the stricter guidelines.

C. File Formats For Graphics

Format and save your graphics using a suitable graphics processing program that will allow you to create the images as PostScript (PS), Encapsulated PostScript (.EPS), Tagged Image File Format (.TIFF), Portable Document Format (.PDF), or Portable Network Graphics (.PNG) sizes them, and adjusts the resolution settings. If you created your source files in one of the following programs you will be able to submit the graphics without converting to a PS, EPS, TIFF, PDF, or PNG file: Microsoft Word, Microsoft PowerPoint, or Microsoft Excel. Though it is not required, it is recommended that these files be saved in PDF format rather than DOC, XLS, or PPT. Doing so will protect your figures from common font and arrow stroke issues that occur when working on the files across multiple platforms.When submitting the final files for your paper once it is accepted, the graphics should all be submitted individually in one of these formats along with the manuscript.

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A safe option when finalizing figures is to strip out the fonts before you save the files, creating "outline" type. This converts fonts to artwork that appear uniformly on any screen.

I. Using Labels Within Figures

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Figure axis labels are often a source of confusion. Use words rather than symbols. As an example, write the quantity "Magnetization," or "Magnetization *M*," not just "*M*." Put units in parentheses. Do not label axes only with units. As in Fig. 1, for example, write "Magnetization (A/m)" or "Magnetization ($A \cdot m^{-1}$)," not just "A/m." Do not label axes with a ratio of quantities and units. For example, write "Temperature (K)," not "Temperature/K."

Multipliers can be especially confusing. Write "Magnetization (kA/m)" or "Magnetization (10^3 A/m)." Do not write "Magnetization (A/m) × 1000" because the reader would not know whether the top axis label in Fig. 1 meant 16000 A/m or 0.016 A/m. Figure labels should be legible, approximately 8 to 10 point type.

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References

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Examples:

[3] G.O.Young,"Syntheticstructureofindustrial plastics,"in *Plastics*, 2nd ed., vol. 3, J. Peters, Ed. New York: McGraw-Hill,1964,pp.15–64.

[4] W.-K.Chen,*LinearNetworksandSystems.*Belmont, CA:Wadsworth, 1993, pp. 123–135.

Basic format for periodicals:

[5] J. K. Author, "Name of paper," *Abbrev. Title of Periodical*, vol. *x*, no. *x*, pp. *xxx-xxx*, Abbrev. Month, year.

Examples:

[6] J. U. Duncombe, "Infrared navigation—Part I: An assessment of feasibility," *IEEE Trans. Electron Devices*, vol. ED-11, no. 1, pp. 34–39, Jan. 1959.

[7] E. P. Wigner, "Theory of traveling-wave optical laser,"*Phys. Rev*., vol. 134, pp. A635–A646, Dec. 1965.

[8] E. H. Miller, "A note on reflector arrays," *IEEE Trans.Antennas Propagat*., to be published.

Basic format for reports:

[9] J. K. Author, "Title of report," Abbrev. Name of Co., City of Co., Abbrev. State, Rep. *xxx*, year.

Examples:

[10] E. E. Reber, R. L. Michell, and C. J. Carter, "Oxygen absorption in the earth's atmosphere," Aerospace Corp., LosAngeles, CA, Tech. Rep. TR-0200 (4230-46)-3, Nov. 1988.

[11] J. H. Davis and J. R. Cogdell, "Calibration program for the 16-foot antenna," Elect. Eng. Res. Lab., Univ. Texas, Austin, Tech. Memo. NGL-006-69-3, Nov. 15, 1987.

Basic format for handbooks:

[12] *Name of Manual/Handbook*, *x* ed., Abbrev. Name of Co., City of Co., Abbrev. State, year, pp. *xxx-xxx.*

Examples:

[13] *Transmission Systems for Communications*, 3rd ed., Western Electric Co., Winston-Salem, NC, 1985, pp. 44–60.

[14] *Motorola Semiconductor Data Manual*, Motorola Semiconductor Products Inc., Phoenix, AZ, 1989.

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[15] Author.(year,monthday).*Title.*(edition)[Typeofmedium].*volume (issue).*Available: site/path/file

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[16] J. Jones.(1991, May 10). *Networks*.(2nded.)[Online]. Available:http://www.atm.com

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[17] Author. (year, month). Title.*Journal*.[Typeof medium].*volume (issue),* pages. Available: site/path/file

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[18] R. J. Vidmar. (1992, Aug.). On the use of atmospheric plasmasaselectromagneticreflectors. *IEEETrans. PlasmaSci*.[Online].*21(3),*pp. 876–880. Available:http://www.halcyon.com/pub/journals/21ps03-vidmar

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[22] S. L. Talleen. (1996, Apr.). The Intranet Architecture: Managing information in the new paradigm.AmdahlCorp., CA. [Online]. Available:http://www.amdahl.com/doc/products/bsg/intra/infra/html

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[23] A.Harriman.(1993,June).Compendiumofgenealogicalsoftware. *Humanist*.[Online].Availablee-mail: HUMANIST@NYVM.ORGMessage: getGENEALOGY REPORT

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[24] Name of the invention, by inventor's name. (year, month day). *Patent Number* [Type of medium]. Available:site/path/file

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[25] Musical toothbrush with adjustable neck and mirror, by L.M.R. Brooks. (1992, May 19). *Patent D 326 189* [Online]. Available: NEXIS Library: LEXPAT File: DESIGN

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Example:

[27] D. B. Payne and J. R. Stern, "Wavelength-switched passivelycoupledsingle-mode opticalnetwork,"in *Proc. IOOC-ECOC*,1985, pp.585–590.

Example for paperspresentedat conferences(unpublished):

[28] D.EbehardandE.Voges,"Digitalsinglesidebanddetectionforinterferometricsensors,"presentedat the2ndInt. Conf.OpticalFiberSensors,Stuttgart,Germany,Jan.2-5, 1984.

Basic formatfor patents:

[29] J. K. Author, "Title of patent," U.S. Patent *x xxx xxx,* Abbrev. Month, day, year.

Example:

[30] G. Brandli and M. Dick, "Alternatingcurrent fed power supply," U.S.Patent 4 084 217,Nov.4,1978.

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[31] J. K. Author, "Title of thesis," M.S. thesis, Abbrev. Dept., Abbrev. Univ., City of Univ., Abbrev. State, year.

[32] J. K. Author, "Title of dissertation," Ph.D. dissertation, Abbrev. Dept., Abbrev. Univ., City of Univ., Abbrev. State,year.

Examples:

[33] J. O. Williams, "Narrow-band analyzer," Ph.D. dissertation, Dept. Elect. Eng., Harvard Univ., Cambridge, MA,1993.

[34] N. Kawasaki, "Parametric study of thermal and chemical nonequilibrium nozzle flow," M.S. thesis, Dept. Electron.Eng., Osaka Univ., Osaka, Japan, 1993.

Basic format for the most common types of unpublished references:

[35] J. K. Author, private communication, Abbrev. Month, year.

[36] J. K. Author, "Title of paper," unpublished.

[37] J. K. Author, "Title of paper," to be published.

Examples:

[38] A. Harrison, private communication, May 1995.

[39] B. Smith, "An approach to graphs of linear forms," unpublished.

[40] A. Brahms, "Representation error for real numbers in binary computer arithmetic," IEEE Computer GroupRepository, Paper R-67-85.

Basic format for standards:

[41] *Title of Standard*, Standard number, date.

Examples:

[42] IEEE Criteria for Class IE Electric Systems, IEEE Standard 308, 1969.

[43] Letter Symbols for Quantities, ANSI Standard Y10.5-1968.

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