



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Special Issue 2, December 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Enhancing Block Chain Based Security using Deep Learning on Big data for IoT Applications

Dr.K.Nachimuthu¹, A.Mathumathi²

Guest Lecturer, Department of Computer Science, Government Arts & Science College, Karur, Tamilnadu, India

ABSTRACT: The importance of big data for IoT in machine learning can't be overemphasized in recent times. Big data for IoT describes the very fact that it's currently attainable to gather, store and way more far more knowledge from a wider array of sources than ever before. The big quantities of data for IoT applications can't be keep on personal computers with restricted storage capability however needed the use of high storage capability servers for effective storage. Big data for IoT has been created attainable by the increase of distributed or cloud computing, enabling connected servers to share storage capability and process power. In big data for IoT applications, these are the information coming from each where: messages that user tend to send, videos that the user tend to publish, climate data, GPS signals, transactional on line searching records and plenty of additional. With big data for IoT application comes huge responsibilities, one in all the foremost mentioned problems is that the security of information or knowledge and protection of privacy within the big data and IoT platforms. This lack of security is that the reason behind the comparatively slow adoption of big data for IoT by enterprises to store and analyze their data. Authentication and access control technologies are the most components to deal with the safety and privacy problems in big data for IoT. Because of the recent explosion of interest around the block chains, that is capable of building a light-weight weight and strong access control framework within the big data for IoT applications sectors. The block chains change us to have a distributed peer – to – peer network within which non-trusting members will move with one another whilenot or trustworthy intermediar, during a cryptographically verifiable manner. Block chain has received all-embracing attention recently because of its provision of secure data sharing services with traceability, immutability and non-repudiation. In spite of the virtues of blockchain, the development of blockchain technologies has undergone variety of challenges as well as poor scalability, difficulties in operational maintenance, detecting vulnerable codes in smart indentures and classifying malicious behaviours in blockchain historical data. The recent advances in artificial intelligence (AI) have greatly propelled the evolution of numerous business applications. The integration of AI with blockchain has the potentials to overcome the restrictions of blockchain. The looks of diverse blockchain systems have generated the large volumes of blockchain data, which are publically offered to everyone. Thus, the integration of Deep Learning Algorithms and blockchain technologies will potentially overcome the aforementioned challenges of blockchain systems, thereby forming intelligent blockchain systems.

KEYWORDS: Blockchain, machine learning, smart grid, data security and privacy, data analytics, smart applications.

I. INTRODUCTION

Information has turned into a fundamental wellspring of knowledge and conveys new freedoms to the genuine issues like remote interchanges, bioinformatics , farming , and money through brilliant applications. These applications are information driven and join noteworthy bits of knowledge into client experience, which empowers people to do the ideal job all the more proficiently. It operationalizes bits of knowledge, customizes the client experience, advances client associations, works on functional productivity, and empower new plan of action. There are different keen applications like SG, UAV, Smart Cities, which makes the existence of an individual simpler. These applications produce an immense measure of information, and capacity of this consistently developing information in data sets is an issue, and its correspondence likewise raises security concerns. To deal with these issues, BT can be utilized, which has a disseminated information base organization. It was begat by Satoshi Nakamoto in the year 2008 and contained a period stepped series of sealed records, which are overseen by a bunch of appropriated PCs. It includes a chain of squares that are associated utilizing cryptographic natives. The three backbones of BT are unchanging nature,

decentralization, and straightforwardness. These three attributes opened its entryway for a wide assortment of utilizations, for instance, computerized cash presence (money with no actual presence) and investigation on the reasonableness of it in shrewd applications. Despite the fact that BT guarantees security and protection issues, a few weaknesses additionally began showing up after its execution. For example, the idea of assaults started to be progressively refined, for example, larger part assaults (51% assault) that control casting a ballot, Sybil assaults for counterfeit character age to control the agreement [5]. To deal with the previously mentioned issue, a hearty Intrusion Detection System (IDS) is needed set up on the grounds that the conventional techniques utilize a mark based way to deal with identify explicit examples. However, to recognize interruptions and assault designs, one of the arising innovation known as ML can be utilized to investigate the information traffic. Subsequently, planning proficient and compelling calculations to break down this huge measure of information is in desperate need of taking care of the blockchain-based savvy applications. Thus, ML is exceptionally pervasive today and utilizations twelve times each day without acknowledging it. ML envelops PCs to study, think, and act without mediation of people. It is viewed as one of the uses of Artificial Intelligence (AI). ML gives PCs the capability to learn without being modified it unequivocally. Its essential thought is to construct a proficient calculation that can acknowledge input information and, with the assistance of measurable examination, make a forecast, and update the yields. A significant measure of information can be dissected by ML to make information driven choices.

II. SCOPE OF THIS SURVEY

A few review work has been distributed till date by the various analysts on the different parts of the reception of ML in blockchain-based shrewd applications. According as far as anyone is concerned, the majority of the reviews have zeroed in on explicit regions, fields, or applications where it requires both ML and blockchain. The proposed overview covers every one of the major parts of ML to be applied BT based applications, for example, interruption recognition, depicts how blockchain help to meet interruption discovery. The creators moderate trust issues by building up a community IDS utilizing shrewd agreements, studied on security and protection issues of bitcoin. They talk about different classes of assaults, for example, twofold spending assaults, customer side security dangers, and mining pool assaults. To deal with the previously mentioned issue, talk about explicit ML-based arrangements and examine the treatment of explicit social issues, for example, illegal exploitation and medication deals through cryptographic money. Then, at that point investigated malware examination utilizing ML methods. Elements of malware were completely talked about, and an itemized scientific classification has been proposed and Casino led a survey on blockchain-based applications. To explain the primary distinction between other reviews paper and this overview paper. It incorporates goals, benefits, and negative marks of friend reviews concerning various boundaries like design, applications, open issues, scientific categorization, and benefits, faults of the current methodologies. An expert scientific classification of ML for BT is summed up in figure.

Research contributions

However a few research works exist to address the ML utilizations for the blockchain-based applications, yet not been taken advantage of to its maximum capacity. In this paper, explored the ML utilizations for blockchain based shrewd applications. Following are the examination commitment of this paper.

- A concise conversation on how ML and blockchain can be utilized together in savvy applications with a proposed design.
- To foster scientific classification covering ML methods needed for BT based climate. In each piece of the scientific categorization, existing work has been talked about in itemized to deal with a few issues, for example, forestalling and anticipating assaults on the blockchain network.
- A contextual investigation is introduced to show the use of ML procedures in blockchain-based shrewd applications, like SG, UAV, and so on

Background

A) Machine learning

ML is the field of study that spotlights on building applications that learn through experience. It is the capacity to show a PC without programming it unequivocally. ML envelops its work from a different arrangement of disciplines, including reasoning, data hypothesis, likelihood and insights, control hypothesis, brain science and neurobiology, computational intricacy, and man-made consciousness. ML calculations are utilized in numerous application and helped it as recorded underneath:

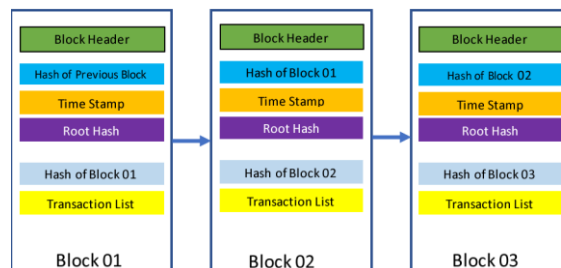


- In Data mining, enormous data sets contain various examples that can be found consequently by utilizing ML strategies to dissect results, for example, clinical medicines of a patient from wellbeing record information bases or to recognize the reliability of an individual from monetary data sets.
 - ML applies in regions where a deterministic calculation isn't promising, like human face acknowledgment from pictures.
 - Application spaces where the versatile writing computer programs is needed, for example, controlling assembling measures according to the interest of the client and adjusting to the shifting perusing interests of perusers. ML calculation eare application explicit and relies upon the yield needed by the framework. There are a few ML calculations, like Supervised ML, Semi-Supervised ML, and Unsupervised ML.
- (i) Supervised ML utilizes factual models to anticipate yield in mathematical information and group the right name . Here, the most ordinarily realized calculations incorporate the relapse approach and choice trees.
- (ii) Unsupervised ML doesn't have mark information. Here, information tests are assembled into groups relying upon their comparability or difference utilizing an alternate methodology. For instance, K means bunching and affiliation rules calculations.
- (iii) Semi-Supervised ML is additionally a classification of interest. It includes a combination of managed and unaided ML strategies. Solo learning might be applied to find the construction of information factors, following which it is utilized to make most realistic estimation expectations for the unlabeled information. It takes care of that anticipated information back into the managed ML calculation as preparing information and utilize the model to make forecasts on concealed information.

b) Blockchain

Blockchains are an unchanging arrangement of records that are cryptographically connected together for review. It is like a bookkeeping record. Here, past records in bookkeeping record can't be changed, and new records should be checked by a confided in party. The solitary distinction between these two is that new squares (set of standards) checked by a decentralized design of hubs that have a duplicate of the record. There is no unified party to check the records. Blockchain is framed by connecting substantial squares together; the current square contains the hash of the past block, etc. This makes blockchain recognizable and impervious to change . More established squares can't be adjusted, on the off chance that they are changed in any capacity; their hash would change. This accentuation to connect hash in all resulting squares to make the blockchain network substantial once more.

A duplicate of the blockchain is accessible with each person inside the organization; from this time forward, any progressions can be cross checked by different clients. These duplicates of the blockchain are refreshed with the expansion of another square. Then, at that point, everybody can see the square, contingent upon the authorizations doled out by the manager. BT utilizes a cryptographic secure hash calculation (SHA, for example, SHA-256 and SHA-512 to keep up with the information honesty inside the square. Each square has a one of a kind hash esteem. For example, Ethereum utilizes Keccak-256 and Keccak-512, while Bitcoin utilizes twofold SHA-256. This SHA is an impact safe calculation, where no two distinctive information could deliver a similar yield (hash esteem). Henceforward SHA can be utilized to check if the information is something very similar or not. There are different SHA calculations



(Blockchain structure)

Integration of machine learning in block chain based applications

The learning capacities of ML can be applied to blockchains based applications to make them more brilliant. By utilizing ML security of the circulated record might be improved. ML may likewise be utilized to improve the time taken to arrive at agreement by building better information sharing courses. Further, it sets out a freedom to construct better models by exploiting the decentralized design of BT. We proposed design for ML reception in BT-based shrewd application, as the keen application gathers information from various information sources like sensors, brilliant gadgets, and Internet of Things (IoT) gadgets. Information gathered from these gadgets get handled as a feature of shrewd

applications. The blockchain fill in as a vital piece of these shrewd applications. Then, at that point, ML can be applied to these application's information for investigation (Data examination and constant examination) and expectation. The informational collections utilized by ML models could be put away on a blockchain network. This diminishes mistakes in the information like duplication, missing information worth, blunders, and clamor. Blockchains are engaged. Proposed engineering for Machine Learning reception in Blockchain-based Smart applications. on the information, and subsequently information related issues in ML models might be disposed of. ML-models can be founded on explicit sections of the chain as opposed to the whole informational collection. This could give custom models for various applications, like misrepresentation discovery and data fraud location. Not many of the advantage are recorded underneath when ML is applied:

- User validation as a real client for mentioning or playing out any exchange in the blockchain network.
- BT gives a significant degree of safety and trust.
- Blockchain coordinates public ML models into savvy agreements to guarantee that the conditions and terms which were recently concurred are maintained.
- BT helps in the dependable execution of an incentivebased framework; along these lines, it energizes clients/clients to contribute information. This enormous information will assist with further developing ML model execution.
- ML models can be refreshed on-chain climate of BT with a little charge and off-chain, locally on a singular's gadget with no expenses
- Good information commitments can occur from clients/clients, these information reliably figured, and rewards can be given to the clients.
- Tamper-verification shrewd agreements can be assessed by various machines (having distinctive equipment design), ML models won't separate from their latent capacity and produce results precisely as it should do.
- Payments handled continuously with trust on a blockchain climate.
- Blockchains apparatuses, for example, Ethereum, manage a great many decentralized machines from one side of the planet to the other. This ensured clients that it is rarely totally inaccessible or disconnected. created by the NSA and NIST and has a place with the SHA-2 family . SHA was at first imagined as a section of the Digital Signature Standard (DSS) to deliver the mark. Further, agreement calculations are utilized to decide block legitimacy. The choice of calculations relies upon the sort of blockchain, like public, private, and consortium blockchain. The chose calculation ought to guarantee the agreement among hubs . It should have the option to utilize assets effectively and endure a level of wellbeing during the occasion of assaults. Further, a savvy contract is a program (set of codes) that sudden spikes in demand for the blockchain and adds blocks at whatever point certain conditions are met. It is characterized by making an interpretation of genuine legitimate agreements into projects to implement the lawful agreement onto the blockchain . It is like put away systems in social information bases. It is put away as contents in the blockchain and executed by the information took care of to them to deliver yields that are normal from the first agreement . It oversees exchanges either executed completely or somewhat dependent on the current info. The main role of a keen agreement is to give prevalent security a decrease in cost and postponements related with conventional agreements.

Smart applications

The last measurement covers the reception of ML methods to BT-based savvy applications, for example, information exchanging, UAV, item assembling, Medical, and Healthcare , Smart Cities, robotized Customer Service, and Device Personalization . ML and BT are upsetting upto-date advances by changing client encounters, practices, and plans of action . Both are making progress in the significant shrewd application:

A) Customer service: With the upsurge of the client, the Customer administration must be more effective and computerized to meet rising client needs. One of the most amazing ways is to robotize the interaction to build an organization's abilities proposed an AutoML system for the blockchain-based application. It comprises six layers:

(i) Organization Layer

A rundown of shrewd applications. like shops, shopping centers, online stores),

(ii) Customer Layer,

(iii) Application Layer (applications offer types of assistance to the customers),

(iv) Data change layer(Data concealing and exposing),

(v) AutoML layer (Consists different ML models like Linear relapse, SVM and strategic relapse for expectations)

(vi) Blockchain Layer (Secure capacity of information and guarantees the protected information trade) This structure assists associations with guarding their information, robotize their cycles and offer information with different associations in a commonly helpful and safe manner.



15th & 16th September 2021

Organized by

Department of Computer Science, Parvathy's Arts and Science College, Dindigul, Tamilnadu, India

B) Device personalization

Gadget Personalization (DP) is a part that utilizes expectations across savvy gadgets to works on the nature of administration (QoS) like activities in the launcher, shrewd text determination during composing on text cushion. DP Services utilizes framework authorizations to give shrewd forecasts. In a savvy home climate, and ML model-based single DP structure has been executed . Here, savvy gadgets associated with a shrewd center. Each time a client utilizes a gadget, a log is produced with client information, gadget information, and different boundaries for that gadget. For instance, employments of forced air system at home. This log information help to change the activity of the gadget.

C) Product manufacturing

As a component of the assembling system, associations have begun trusting blockchain-based methodology to enable creation, security, straightforwardness, and consistence checks. Rather than following fixed timetables of machine support, ML calculations are being utilized to make adaptable arrangements at explicit periods. Item testing and quality control have additionally robotized progressively, with flexible calculations. It effectively distinguishes defective and great items, especially in significantly fragile circumstances. For instance, Porsche (a vehicle fabricating organization) is one of those early adopters of ML and BT advancements; to further develop car security and increment capacities. The association uses blockchain development to move information all the more securely and quickly, offering its customers true serenity, paying little heed to leaving, charging, and outsider admittance to their vehicle.

D) Data trading

DataTrading is a creative stage that makes progressed exchanging workable for retail merchants from everywhere the world. An Ethereum based information exchanging system has introduced that prevailed with regards to forestalling single-point disappointment and saving security simultaneously. The structure comprises of three substances, information supplier, an information customer, and a market director. When the organization is set up, the information purchaser and information supplier enrolled themselves with the market administrator. The information supplier expected to store a sum with the administrator more prominent than the sum to be paid by the purchaser. A rundown showing subjects of information accessible with the supplier is distributed. The customer alluded it and demands some encoded information blocks for content approval utilizing a distance metric learning procedure. After fruitful approval, the customer reacted, and the supplier sent a mark, and the customer distributed a shrewd agreement to the organization. The supplier then, at that point sent another mark, and these two marks, the customer, unscrambled the information. There are various conventions like arrangement convention, register convention, installment and affirmation convention, and inquiry convention that work with the correspondence between supplier, shopper, and the supervisor.

E) Automated aerial vehicle

A UAV or robot is an airplane that runs without a pilot (human) aboard,has proposed blockchain-based UAVNet model incorporates various gadgets like an organization of satellites, cell base stations, and ground control stations. Here, BT filled numerous needs, for example, protecting the respectability of the information and for dispersed charts calculation. The correspondence among satellites and base stations is inclined to electromagnetic sticking, consequently a blockchain-based framework empowers UAVs to store important facilitate's information and work independently inside the sticking zone. This arrangement utilized a proof-of-diagram agreement calculation with an improved on memory limited calculation of any current briefest way to approving another exchange.

F) Smart cities

Smart urban communities work on the living encounters of people. ML and blockchain new advances assume a significant part in the development of keen urban communities to offer basic types of assistance and framework parts like medical services , city organization, shrewd homes, training, transportation, land, and utilities .

(i) Smart Homes: Smart homes can be observed, and DP can assist with working on the nature of business.

(ii) Smart Parking System: Here, appearance and takeoff of vehicles can be followed for various parking areas accessible in a decentralized way inside the savvy city. Thusly, keen parking garages ought to be planned by seeing the quantity of vehicles in every locale. Moreover, new parking areas should be perceived immediately to benefits in sellers and vehicle proprietor's day to day existence.

(iii) Smart Weather and Water Systems: Here, the framework can utilize a few sensors to produce proper information like temperature, wind speed, downpour, and pressing factor. The examination of these information through ML methods can add to working on the thickness of savvy urban communities.

- (iv) Smart Vehicular Traffic: Vehicular traffic information with a reasonable investigation will help the public authority and residents generally. Everybody can choose the appearance time to an objective by utilizing these information.
- (v) Surveillance Systems: Physical security is a most extreme significant worry for residents anywhere they live. To resolve this issue, brilliant innovation, for example, ML and BT can be arranged for it. Subsequently, gathering and investigating information and recognizing violations is one of the difficult undertakings.
- (vi) Smart Healthcare: It incorporates the availability of the parental figures and specialists, distinguishing proof of closest clinical stores, and center. Subsequently, ML and BT assume a crucial part while information is getting created.
- (vii) Smart Governance and Smart Education: Smart administration can keep a city shrewdly. A keen city incorporates an alternate method of training. It catches the information of the understudies and representatives in instructive and government organizations. Forecasts and examination needed to keep the stuff up to norms.

G) Energy and utilities

In the Energy business, BT is helping to improve on energy trades. For instance, IOT A empowers brilliant change across the whole energy industry by carrying out BT. It utilizes the idea of shared (P2P) energy creation and utilization. Keen energy microgrids are dynamically creating distinction as a procedure of making environmental energy assets. LO3 Energy (a Newyork-based association) is additionally utilizing a blockchain-based improvement to foster energy age, transmission, preservation, and trading inside area organizations. The innovation utilizes microgrid and shrewd meters, along with brilliant agreements, to oversee and follow energy exchanges. GE Digital, along with Evolution Energie (a startup), has made an application that empowers the following of environmentally friendly power in SG and utilizations blockchain to give energy sources endorsement. The thought is permitting associations and people to exchange environmentally friendly power sources without the inclusion of outsider. Around the world, the vast majority of the ventures are hounded by outsider, who increment the business cost. BT has effectively interfered with that model by working with the P2P model for clients. The insurgency works stunningly better when joined with the ML and BT together. We have been seen the monetary insurgency by utilizing the cryptographic money world; comparably, will notice more development disturbances because of joining ML and BT.

II. CONCLUSION

The new headways in Blockchain and ML have made them way breaking advancements. The circulated record has the likelihood to fill in as the foundation of different savvy applications like keen urban areas, UAV, SG, information exchanging. In this paper, we have introduced definite data on BT and ML, alongside their uses in savvy applications and proposed a ML-BT based design. This engineering can be utilized to plan and convey a ML-BT based information examination framework. A conversation and examination of different existing overviews are introduced. A similar examination of accessible philosophies and approaches is introduced in each measurement. Then, at that point, we have recorded a few examination challenges being looked during ML reception in BT-based frameworks, which require arrangements. We likewise underscored various exploration prospects like framework accessibility, quantum strength, and protection gives that can fill in as future examination headings in this field

III. FUTURE ENHANCEMENT

Analysts are anticipating these advances across the globe, yet, different obstructions oppose the reconciliation of BT and ML. Their coordination is as yet in its earliest stages.

A) Suitability

Blockchain is a practical arrangement if the wellspring of information can't be trusted, and a few substances are high in the disseminated climate. Assuming execution is required, a straightforward information base is a superior alternative. Thusly, the design of blockchain should be perceived before its utilization in any application

B) Infrastructure

Blockchain explicit equipment and organization foundation work on the exhibition of numerous blockchain-based applications. These could incorporate organization, mining equipment, decentralized capacity, and correspondence conventions. In any case, items custom fitted to use in blockchain are as yet being scrutinized (including significant tech organizations and monetary foundations).

C) Privacy

Information produced by gadgets to be put away on the blockchain is accessible to the whole blockchain hubs. This prompts a potential security worry for information that should be kept either hidden or classified. Such issues could be settled by the utilization of private blockchains, controlled admittance, and encryption. Nonetheless, the ML models reception on these restricted information forced obstructions for forecasts and investigation.

D) Memory

The size of blockchain continues to develop as new squares are added to it. Thus, the whole chain should be put away by all hubs, which makes a critical memory limitation on these gadgets. The presentation is likewise influenced by an expansion in chain size. Other than that, the capacity of insignificant information likewise squanders computational assets. Blockchains are changeless, and thus stockpiling the board is a significant issue in many executions.

E) Implementation

An enormous scope blockchain organization will require an equally huge number of exchanges. Execution of this size of blockchain welcomes possible issues; for example, popularity for web transfer speed, which difficult to lessen, exchanges will be a weight on the organization. Subsequently, the expansion of squares and exchanges should be diminished to satisfy the unavoidable need.

F) Security

Blockchains are decentralized, and they are inclined to security issues. The most well-known concern is that because of assaults, the agreement convention might be compromised, to such an extent that the mining force of a couple of homesteads will control which squares are added to the organization. This specific concern is available in open blockchains. Private adaptations are unaffected by this assault as they have every hub recognized, and a proper agreement convention is set up.

G) Quantum resilience

A blockchain is dominantly in danger from this since it utilizes single direction capacities for encryption (just assurance in advanced mark). This would cause every one of the provisions that make blockchains a practical stockpiling structure (old). Fortunately, quantum registering offers freedoms to help the exhibition and security of blockchains. Quantum cryptography can build up the security of the blockchain network as quantum correspondence is confirmed innately (clients can't mirror another client). It can scramble whole P2P interchanges and supplant traditional advanced marks in the blockchain network. Exploration is in progress to plan blockchain with quantum processing

REFERENCES

- [1] S. Kaneriy, J. Vora, S. Tanwar, and S. Tyagi, "Standardising the use of duplex channels in 5G-WiFi networking for ambient assisted living," in Proc. IEEE Int. Conf. Commun. Workshops (ICC Workshops), May 2019, pp. 1–6.
- [2] S. Tyagi, M. S. Obaidat, S. Tanwar, N. Kumar, and M. Lal, "Sensor cloud based measurement to management system for precise irrigation," in Proc. IEEE Global Commun. Conf. (GLOBECOM), Dec. 2017, pp. 1–6.
- [3] U. Bodkhe, P. Bhattacharya, S. Tanwar, S. Tyagi, N. Kumar, and M. S. Obaidat, "Blohost: Blockchain enabled smart tourism and hospitality management," in Proc. Int. Conf. Comput., Inf. Telecommun. Syst. (CITS), Aug. 2019, pp. 1–5.
- [4] S. Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, 2009. [Online]. Available: <https://bitcoin.org/en/bitcoin-paper>
- [5] M. Rahouti, K. Xiong, and N. Ghani, "Bitcoin concepts, threats, and machine-learning security solutions," IEEE Access, vol. 6, pp. 67189–67205, 2018.
- [6] A. P. Namanya, A. Cullen, I. U. Awan, and J. P. Disso, "The world of malware: An overview," in Proc. IEEE 6th Int. Conf. Future Internet Things Cloud (FiCloud), Aug. 2018, pp. 420–427.
- [7] S. Krit and E. Haimoud, "Overview of firewalls: Types and policies: Managing windows embedded firewall programmatically," in Proc. Int. Conf. Eng. MIS (ICEMIS), May 2017, pp. 1–7.
- [8] G. Betarte, E. Gimenez, R. Martinez, and A. Pardo, "Improving Web application firewalls through anomaly detection," in Proc. 17th IEEE Int. Conf. Mach. Learn. Appl. (ICMLA), Dec. 2018, pp. 779–784.
- [9] A. Kuzmin and E. Znak, "Blockchain-base structures for a secure and operate network of semi-autonomous unmanned aerial vehicles," in Proc. IEEE Int. Conf. Service Oper. Logistics, Informat. (SOLI), Jul. 2018, pp. 32–37.
- [10] Y. Zhao, Y. Yu, Y. Li, G. Han, and X. Du, "Machine learning based privacy-preserving fair data trading in big data market," Inf. Sci., vol. 478, pp. 449–460, Apr. 2019.



Impact Factor:
7.569



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