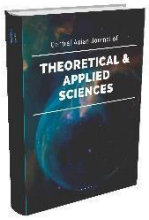

CENTRAL ASIAN JOURNAL OF THEORETICAL AND APPLIED SCIENCES

Volume: 03 Issue: 05 | May 2022 ISSN: 2660-5317

Privacy-Protected Photo Sharing in Social Media Platform

R. Regin[1], B. Sneha[2], S. Sreeja[3], D. Vincy Jasline[4], Mudher Mohammed Baqer Khudur[5], Huda Ghassan Hameed Abdulmajeed[6]

[1]Assistant Professor, Dept. of IT, Adhiyamaan College of Engineering, Tamil Nadu, India.
[2,3,4]UG Scholars, Dept. of IT, Adhiyamaan College of Engineering, Hosur, Tamil Nadu, India.
[5]Al-Bayan University, College of Dentistry, Iraq.
[6]Al-Bayan University, College of Pharmacy, Iraq.
[1]regin12006@yahoo.co.in, [2]sneha.b469@gmail.com, [3]sreesrinivasan2000@gmail.com, [4]vincyjasline@gmail.com, [5]Mudher.m@albayan.edu.iq, [6]Huda.g@albayan.edu.iq

Received 14th Feb 2022, Accepted 18th Mar 2022, Online 7th May 2022

Abstract: *The advancement of the social communication platform, sharing snapshots, videos, and much more information has become a prominent way of retaining connections with multiple users. Despite the sensitive data the photo holds, it will be an effortless way for the evil-minded user to steal the data of those who appear in the picture. Dealing with the privacy exposure provoked by sharing snapshots that contain the faces of various end-users attracted the minds of many social media users. Sharing a picture that contains multiple clients, the person who uploads the images should consider the interconnected client's privacy. This paper proposes a privacy-protected mechanism based on the level of assurance the interconnected client gives to the person who uploads the picture. The thought process of this mechanism is while uploading an image of a co-owned photo, and a request is sent to the related user based on the reply the related user gives; the photo is displayed to the followers of the uploader. With the help of this privacy, the related user will not be compromising.*

Keywords: *social communication platform, privacy exposure, privacy-protected mechanism, unnamed picture, threshold.*

I. INTRODUCTION

Social communication platforms that allow people to connect by devising and sharing data have become part and parcel of life. The users of these hypermedia generate a vast amount of data in images, text, and videos. However, the client-generated detail contains sensitive information, which eventually means sharing these sensitive data may compromise the concealment of the user. Popular social networking platforms such as Google+, Instagram, and much more are mainly created for sharing images and videos. These images and videos can provide more precise than textual information, compromising user confidentiality [4]. On the other hand, the sensitive data can be hidden with the help of image processing techniques in these images and videos than that of editing [11]-[15]. This paper looks into the privacy issues faced while sharing the snapshots in hypermedia [16]-[23].

While signing up an application, the service provider confirms the permission of the user to collect their data [1] and provides some privacy setting through which the user can decide to whom the image can be shared and accessed. However, the image shared by a user may relate to multiple users [24]. If this is the case, then a single user will control the photo shared, which may compromise the other user's privacy. This can be precise via the following example [25]-[31]. Let us take person A, click a selfie with person B, and share the images with person C. The person A shares their selfie image with person C without knowing person B and person B doesn't know person C, then the privacy of person B will be a compromising one [32]-[35].

To protect the privacy of the interrelated user, a privacy-protected mechanism is proposed [36]-[42]. With this mechanism's help, the uploader and the interconnected user can decide whether to publish an image. The uploader does not ask for confirmation to upload an image [43]-[45]. A permission request is automatically sent to the interconnected user in this proposed work and asks for their confirmation in sharing or uploading an image [46]-[51]. If the interrelated user accepts the permission request, the image will be displayed [52]. Else the image of the particular user will not be displayed and will be hidden [5],[7], [10].

II. LITERATURE SURVEY

This section shows the related works carried out formally the methodology of privacy from sharing the images online [53-55].

A.S.Anakath et al. [1] proposed a various factor authentication mechanism using a trust-based management system. This kind of authentication is mainly used while logging in to an application to identify the correctness of the user [56]-[59]. These types of authentication are decided based on the type of device the client uses. Biometric authentication is carried out if the client device has signed in as mutual [60]-[63]. So, based on the type of the device, the authentication process is provided [64].

Erfan Aghasian et al. [2] proposed a theorem with which the sharing of sensitive content across the network can be controlled. The process starts with Bernstein's theorem, which helps calculate the sensitivity value of each user. This followed by creating a model for anonymizing the data. In his work, the author has stated that examining and evaluating the sensitivity produces a friendly outcome rather than anonymizing [65]-[66].

Khalid Alemerien [3] presented a new mechanism called Visual privacy management policy which helps in simplifying the privacy configuration settings when the clients upload their snapshots or selfies with inter-connected users. It shows the drawbacks with cover-up settings of image-sharing in online social communication platforms [67]-[75]. In addition to that, it handles the sharing of contents in graphs and circles such that we can analyze with whom, how, and where the client will share their picture [76]. With the help of this, the client will get an efficient and graspable way to determine their cover-up settings [77]-[81].

In their work, Kambiz Ghazinour et al. [4] have discussed the seriousness of having control over sharing pictures on social media networks. And also the consequences of sharing sensitive images over the network [82]-[94]. This work brought out a mechanism that contains a GUI component that helps resolve security breaches in the social communication platform [95-116].

Lei Xu et al. [5] proposed how to deal with the privacy disclosure problem incurred by photo sharing in online social media. They proposed a trust-based privacy-conserving mechanism for sharing multiple

hypermedia users' photos. The basic idea is to create an unnamed picture. Based on the trust value each person gives about the publisher, the service provider either hide or blur the face of that particular user. The greedy mechanism is used to make this feasible.

Weiwei Sun et al. [6] proposed a solution to deal with privacy loss while sharing snapshots on an online social communication platform. They first started this work by analyzing the various privacy issues faced while sharing the images on Facebook and the manipulation that Facebook provides to the user. The solution they provided to solve this is image encryption and decryption framework via which the privacy loss while photo sharing can be minimized.

Matt Tierney et al. [7] proposed a Cryptogram system designed to uplift the confidentiality of images shared in online communication platforms. This system helps the user convert pictures to encoded images, which the publisher shares on the hyper network. Cryptogram grants a photo encryption mechanism that ensures that the client with the right authorization can redeem the original snapshot.

Ashwini Tonge et al. [8] came up with a booming privacy setting. Two concerns are tied together: information awareness and the hope the user has for the publisher. It is focusing that they have endorsed a close-grained seclusion setting for photo sharing. A deep learning mechanism is used to identify the delicate information hidden inside the picture. Social communication platforms are assembled based on the respective social community to find the trust factor.

Kaihe Xu et al. [9] introduced a facial recognition system that identifies and recognizes each user in the image. It also intimates the user before posting an image and decides whether to post an image. Once the image is posted, they train it individually and store it in a personalized face recognition system.

Lin Yuan et al. [10] proposed privacy-preserved images on social networks based on an image encryption scheme and a public key. By providing a key for encryption, the images are encrypted. They can be viewed on any other device until the related user has the secret key to view the image. They have also demonstrated a prototype application specifically built for the IOS platform.

III. RESEARCH METHODOLOGY

The main objective of this research is to preserve the privacy loss that is occurred while sharing an image [117-145]. Privacy loss, in a sense, sharing a picture without the knowledge of the stakeholder. To carry out this impediment, this paper brings out an adaptive concealment policy indicator mechanism stated in [3] that provides a policy to the client while sharing the picture with multiple clients. This policy helps the client decide whether to share an image based on their trust in the recipient [2]. If the related user trusts the publisher's followers, as shown in Figure.1, the client can accept permission from the publisher and upload the image; if the co-owned user doesn't have enough trust in the publisher, they can reject the request [146-167].

Once the permission request has been rejected, the face of the particular user is hidden from others [168-175]. A Face Identification and Protection Algorithm [8,9] works at the back end, which identifies the user's face and undergoes several layers of filter and provides well-trained output in which the particular person's face is hidden from the view [6] of other users.

The uploaded image first passes through the convolutional layer for the first filtration. The output of the first layer passes through the pooling layer for the second layer of filtration [176-181]. This process continues until the image attains the stage of smooth blurring [182-191]. Once the filtration layers are completed, the final output shows the blurred face of the particular person [5].

This method of filtering the image and blurring will reduce the loss of privacy, and also the chance of misusing the picture will also be reduced. In addition to that, the trust between the two users grew and also the trust remained the same between the two users (figure 1).

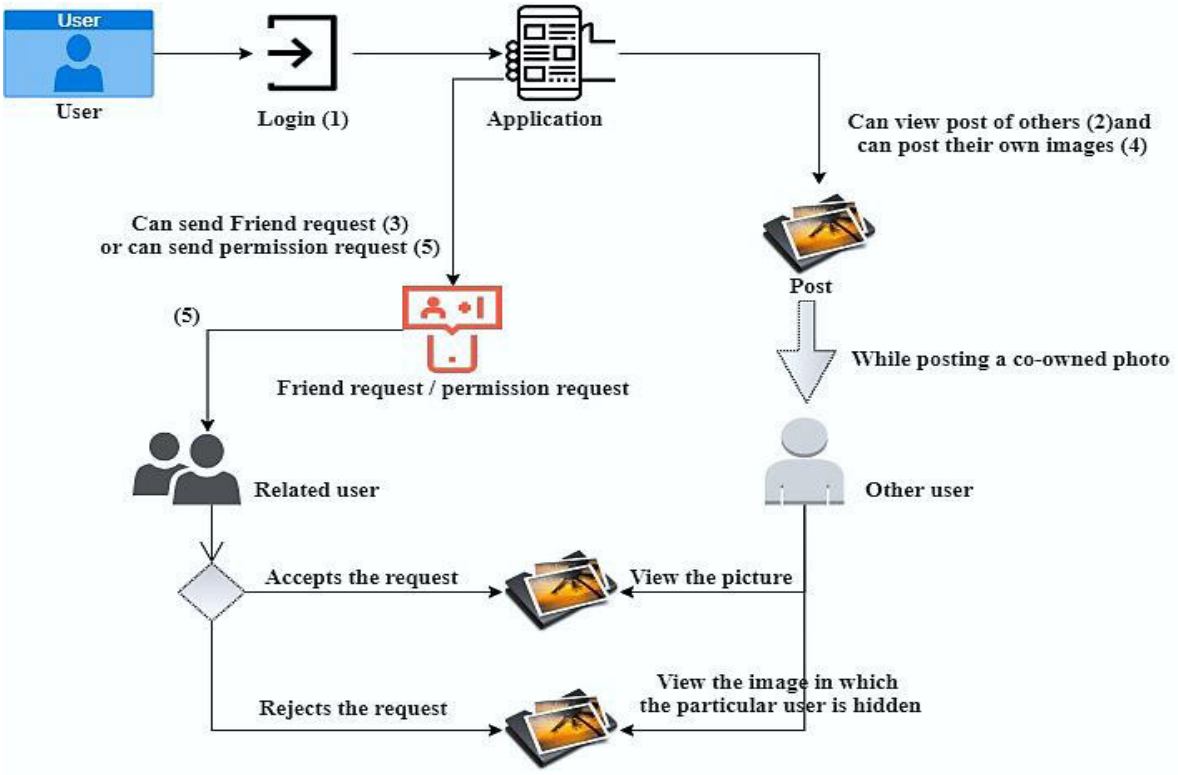

Figure 1. Privacy Protected Photo Sharing Mechanism

Associating the value of dependency with a security breach**.** Suppose client a_a likes to share a picture p that contains sensitive information with client c_c, the user first uploads the image to the provider of service [192-198]. The clients are identified either by a face recognition methodology or via tagging. This way, the admin identifies the relative use of the picture. Once the relative users are identified, the service provider looks for the relative user's trust value on the publisher. If the client c_c can identify b_b in the image sent from the admin, then the recipient b_b may undergo privacy loss. Loss is denoted by $ls_{c_b}^{(p)}$. Privacy loss to the user b_i is reduced when the trust values between the client b_i and c_i are high. Hence $ls_{c_b}^{(p)}$ is defined as

$$ls_{c_b}^{(p)} = fu_{loss}\left(tr_{b_c}, \delta_b^{(p)}\right) \quad (1)$$

The above equation (1), tr_{b_c} indicates the trust value between b_b and c_c, and $\delta_b^{(p)}$ Denotes the sensitivity of p. The function fu_{loss} will be a decrementing function of tr_{b_c} and an incrementing function of $\delta_b^{(p)}$. Therefore, fu_{loss} can be denoted as:

$$\mathrm{fu}_{\mathrm{loss}}\left(\mathrm{tr}_{\mathrm{b_c}}, \delta_{\mathrm{b}}^{(\mathrm{p})}\right) = \left(1 - \mathrm{tr}_{\mathrm{b_c}}\right)\delta_{\mathrm{b}}^{(\mathrm{p})} \quad (2)$$

Let us assume that the trust values between the clients are known only to the admin. However, in equation (2), the sensitiveness of an image $\delta_{\mathrm{b}}^{(\mathrm{p})}$ is known only to the recipient $\mathrm{b_{b.}}$. Henceforth, the admin can only assume the privacy drop. The assumed privacy drop $\mathrm{ls}_{\mathrm{c^b}}^{(\mathrm{p})}$ can be defined as

$$\mathrm{ls}_{\mathrm{c^b}}^{(\mathrm{p})} = \mathrm{fu}_{\mathrm{loss}}\left(\mathrm{tr}_{\mathrm{b_c}}, \delta\right) \quad (3)$$

In equation (3), δ is a constant specified by the admin. Privacy drop to each related user determines the duplication of the image. Privacy Protected Photo Sharing Mechanism Result.

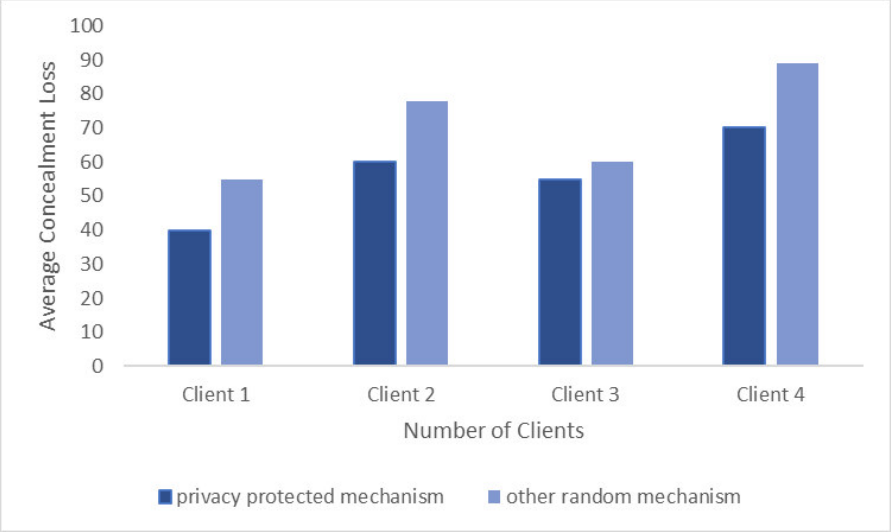

Fig. 2. Comparing the loss of privacy with privacy protected mechanism and another random mechanism

Figure 2 compares the client's loss of privacy in the proposed privacy-protected mechanism and other random mechanisms. The concealment loss falls in the range of 40 and 80 for the proposed privacy-protected mechanism, and for another mechanism, it falls between 50 and 90.

Table 1. Comparison of privacy protected mechanism with another random mechanism

Clients	Privacy Protected Mechanism	Other Random Mechanism
Client 1	40	55
Client 2	60	78
Client 3	55	60
Client 4	70	89

In Table.1, four different clients are considered, and each client uploads a picture to find out the average privacy fall. In privacy protected mechanism, with the permission of the related user, the publisher uploads the image. This increases the trust factor between the clients; with the help of this value, the optimum value that provides a fair payoff is identified.

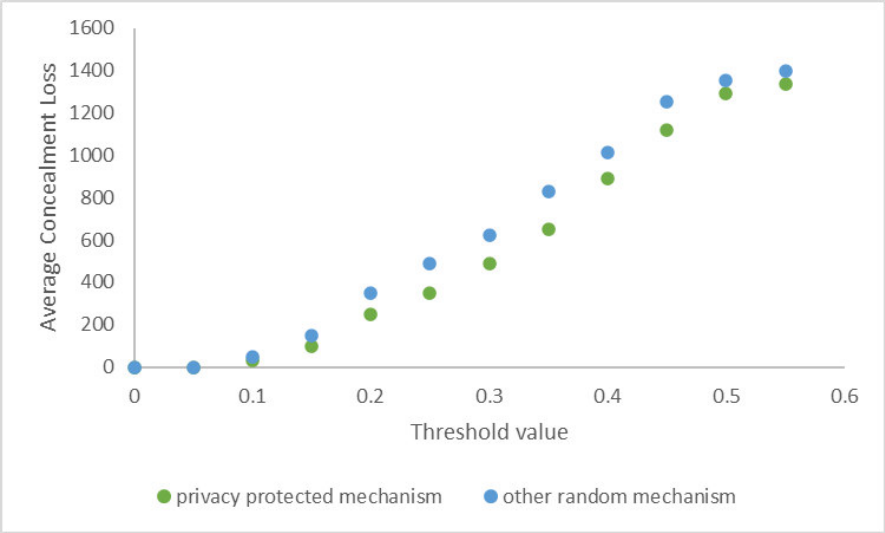

Fig. 3. The Average Concealment Loss in the range of 200 and 1400 has the maximum threshold value of 0.55

Table 2. Differentiation of privacy protected mechanism with another random mechanism

Threshold Value	Privacy Protected Mechanism	Other Random Mechanism
0.00	0	0
0.05	0.05	0.05
0.10	33	59
0.15	102	157
0.20	251	349
0.25	353	495
0.30	492	628
0.35	657	829
0.40	890	1010
0.45	1120	1250
0.50	1291	1355
0.55	1345	1409

The above Figure.3 shows the result obtained under the pre-defined data set where threshold value=0.55. The more the related user think about their privacy less is their privacy loss. Table.2 shows the compared value between privacy-protected mechanisms and all other random mechanisms. Here, the threshold value starts from 0, and the threshold that provides the fair payoff is 0.55.

Fig. 4. Result of privacy protected mechanism and another mechanism where the trust factor is chosen between {0,1}

Three clients are selected at random, defining the initial trust factor in the range of 0 and 1. The above Figure.4 shows the result of the average loss obtained between privacy protected mechanism and another mechanism. The proposed mechanism proves lower concealment loss when comparing the values, as shown in Table 3

Table 3. Results of privacy-protected mechanisms and another random mechanism with a fixed range of trust factors

Clients	Privacy Protected Mechanism	Other Random Mechanism
Client 1	0.035	0.056
Client 2	0.059	0.071
Client 3	0.08	0.1

IV. CONCLUSION

Sharing sensitive information such as images and videos may help connect with others. On the other side, those data may be misused and threaten the lives of others. The privacy-protected photo sharing mechanism helps users bother about their privacy the most to connect with others and safeguard sensitive information. They are sharing a co-owned picture with the permission of the related user results in lower privacy loss. The publisher first asks for permission from the related user to upload the co-owned photo. The publisher uploads the image if the request is accepted without any compromise. If rejected with the help of the Face Identification and Protection algorithm, the image undergoes different layers of filters and sensors on the face of the particular person. Finally, it displays a hidden image where the particular person's face is blurred. This proposed mechanism proves to be an effective method in controlling the loss of privacy.

Conflicts of Interest: The authors declare that they have no conflicts of interest to report regarding the present study.

REFERENCES

1. Anakath, A., Rajakumar, S. & Ambika, S. Privacy preserving multi factor authentication using trust management. Cluster Comput 22, 10817–10823 (2019). https://doi.org/10.1007/s10586-017-1181-0
2. Aghasian, E., Garg, S., & Montgomery, J. (2018, August). A Privacy-Enhanced Friending Approach for Users on Multiple Online Social Networks, Vol 7(Iss 3).
3. Alemerien, K. (2020, September). User-Friendly Privacy-Preserving Photo Sharing on Online Social Networks. Journal of Mobile Multimedia, Vol 16(Issue 3).
4. Ghazinour, K., & Ponchak, J. (2017). Hidden Privacy Risks in Sharing Pictures on Social Media. Procedia Computer Science, 113, 267-272.
5. Lei, X., Ting, B., Leihuang, Z., & Yan, Z. (2019). Trust-Based Privacy-Preserving Photo Sharing in Online Social Networks. IEEE Transactions on Multimedia, Vol 21(Issue 3), 591-602.
6. Sun, W., Zhou, J., Zhu, S., & Tang, Y. Y. (2018, January). Robust Privacy-Preserving Image Sharing over Online Social Networks (OSNs). ACM Transactions on Multimedia Computing, Communications, and Applications, Vol 14(Issue 1).
7. Tierney, M., Sprio, I., Bregler, C., & Subramanian, L. (2013). Cryptagram: photo privacy for online social media. COSN '13: Proceedings of the first ACM conference on Online social networks, (pp. 75-88).
8. Tonge, A., & Caragea, C. (2020, April). Image Privacy Prediction Using Deep Neural Networks. ACM Transactions on the Web, Vol-14(Iss 2), 1-32. doi:10.1145/3386082
9. Xu, K., Guo, Y., & Guo, L. (2015, June). My Privacy My Decision: Control of Photo Sharing on Online Social Networks, Vol 14(Iss 99).
10. Yuan, L., Kupcu, A., Ebrahimi, T., & Nally, D. M. (2015). Privacy-Preserving Photo Sharing based on a Public Key Infrastructure. SPIE Optical Engineering + Applications, Conference on Applications of Digital Image Processing XXXVIII, San Diego, California, USA, August 10-13, 2015, 9599, p. 95991I.
11. Nora Omran Alkaam, Ahmed J. Obaid, Mohammed Q. Mohammed, 2018. A Hybrid Technique for Object Detection and Recognition Using Local Features Algorithms, Journal of Advanced Research in Dynamical and Control Systems, Vol. 10, No. 2: 2330-2344.
12. K. Balachander, S. Ramesh, Ahmed J. Obaid, 2018. Simulation Of 1KW Multi-Level Switch Mode Power Amplifier, International Journal of Innovations in Scientific and Engineering Research (IJISER), Vol. 5, No. 9: 85-92.
13. Saba Alyasiri, Ahmed J. Obaid, 2018. A New Approach for Object Detection, Recognition and Retrieving in Painting Images, Journal of Advanced Research in Dynamical and Control Systems, Vol. 10, No. 2: 2345-2359.
14. Hassan, M. M. (2020). A Fully Bayesian Logistic Regression Model for Classification of ZADA Diabetes Dataset. Science Journal of University of Zakho, 8(3), 105–111. https://doi.org/10.25271/sjuoz.2020.8.3.707
15. Mohammed, A. J., Hassan, M. M., & Kadir, D. H. (2020). Improving Classification Performance for a Novel Imbalanced Medical Dataset Using SMOTE Method. International Journal of Advanced Trends

in Computer Science and Engineering, 9(3), 3161–3172.

16. Hassan, M. M. (2018). Bayesian Sensitivity Analysis to Quantifying Uncertainty in a Dendroclimatology Model. ICOASE 2018 -International Conference on Advanced Science and Engineering, 363–368.
17. Hassan, M. M., Hussein, H. I., Eesa, A. S., & Mstafa, R. J. (2021). Face Recognition Based on Gabor Feature Extraction Followed by FastICA and LDA. Computers, Materials and Continua, 68(2), 1637–1659.
18. Hassan, M. M., Eesa, A. S., Mohammed, A. J., & Arabo, W. K. (2021). Oversampling Method Based on Gaussian Distribution and K-Means Clustering. Computers, Materials and Continua, 69(1), 451–469.
19. Mulla, G. A. A., Demir, Y., & Hassan, M. M. (2021). Combination of PCA with SMOTE Oversampling for Classification of High-Dimensional Imbalanced Data. In BEU Journal of Science (Vol. 10, Issue 3).
20. Ghayvat, H., Pandya, S., Bhattacharya, P., Zuhair, M. et al., CP-BDHCA: Blockchain-based Confidentiality-Privacy preserving Big Data scheme for healthcare clouds and applications, IEEE Journal of Biomedical and Health Informatics(J-BHI),
21. Pandya Sharnil, Sur, A, Solke, N, Covidsaviour: A Novel Sensor-Fusion and Deep Learning-Based Framework for Virus Outbreaks, Frontiers in Public Health, 2021.
22. Pandya, S. and Ghayvat, H., Ambient acoustic event assistive framework for identification, detection, and recognition of unknown acoustic events of a residence. Advanced Engineering Informatics, 47, p.1012, 2021.
23. Mehta P, Pandya S. 2020. A review on sentiment analysis methodologies, practices and applications. International Journal of Scientific & Technology Research 9(2):601–609.
24. Ghayvat, H., Awais, M., Gope, P., Pandya, S. and Majumdar, S., 2021. ReCognizing SUspect and PredictiNg ThE SpRead of Contagion Based on Mobile Phone LoCation DaTa: A System of identifying COVID-19 infectious and hazardous sites, detecting disease outbreaks based on the internet of things, edge computing, and artificial intelligence. Sustainable Cities and Society, p.102798.
25. Abolfazl Mehbodniya, L. Arokia Jesu Prabhu, Julian L. Webber, Dilip Kumar Sharma, Pandya, Sharnil, Fetal Health Classification from Cardiotocographic Data Using Machine Learning, Expert Systems, Wiley, 2021.
26. Mishra, N. and Pandya, S., Internet of Things Applications, Security Challenges, Attacks, Intrusion Detection, and Future Visions: A Systematic Review, IEEE Access, April 2021.
27. Mehta P, Pandya S, Kotecha K. 2021. Harvesting social media sentiment analysis to enhance stock market prediction using deep learning. PeerJ Computer Science 7:e476 https://doi.org/10.7717/peerj-cs.476
28. Ghayvat, H.; Awais, M.; Pandya, S.; Ren, H.; Akbarzadeh, S.; Chandra Mukhopadhyay, S.; Chen, C.; Gope, P.; Chouhan, A.; Chen, W. Smart Aging System: Uncovering the Hidden Wellness Parameter for Well-Being Monitoring and Anomaly Detection. Sensors, 19, 766.
29. Ghayvat, H.; Pandya, S.; Bhattacharya, P.; Mohammad, Z.; Mamoon, R.; Saqib, H.; Kapal, D. CP-

BDHCA: Blockchain-based Confidentiality-Privacy preserving Big Data scheme for healthcare clouds and applications. IEEE J. Biomed. Health Inform. 2021, 25, 1–22.

30. Awais, M., Ghayvat, H., Krishnan Pandarathodiyil, A., Nabillah Ghani, W.M., Ramanathan, A., Pandya, S., Walter, N., Saad, M.N., Zain, R.B., Faye, I. Healthcare Professional in the Loop (HPIL): Classification of Standard and Oral Cancer-Causing Anomalous Regions of Oral Cavity Using Textural Analysis Technique in Autofluorescence Imaging. Sensors, 2020, 20, 5780.
31. Patel, C.I., Labana, D., Pandya, S., Modi, K., Ghayvat, H. and Awais, M., 2020. Histogram of Oriented Gradient-Based Fusion of Features for Human Action Recognition in Action Video Sequences. Sensors, 20(24), p.7299.
32. Barot, V., Kapadia, V., & Pandya, S., QoS Enabled IoT Based Low Cost Air Quality Monitoring System with Power Consumption Optimization, Cybernetics and Information Technologies, 2020, 20(2), 122-140, Bulgarian Academy of Science.
33. Pandya, S., Wakchaure MA, Shankar R, Annam JR. Analysis of NOMA-OFDM 5G wireless system using deep neural network. The Journal of Defense Modeling and Simulation.
34. Sur, A., Sah, R., Pandya, S., Milk storage system for remote areas using solar thermal energy and adsorption cooling, Materials Today, Volume 28, Part 3, 2020.
35. H. Ghayvat, Pandya, S., and A. Patel, “Deep Learning Model for Acoustics Signal Based Preventive Healthcare Monitoring and Activity of Daily Living,” 2nd International Conference on Data, Engineering and Applications (IDEA), Bhopal, India, 2020, pp. 1-7,
36. S. Pandya, J. Shah, N. Joshi, H. Ghayvat, S. C. Mukhopadhyay and M. H. Yap, "A novel hybrid based recommendation system based on clustering and association mining," 2016 10th International Conference on Sensing Technology (ICST), 2016, pp. 1-6, doi: 10.1109/ICSensT.2016.7796287.
37. Karn, A.L., Pandya, S., Mehbodniya, A. et al. An integrated approach for sustainable development of wastewater treatment and management system using IoT in smart cities. Soft Computing, 2021.
38. Pandya, S.; Thakur, A.; Saxena, S.; Jassal, N.; Patel, C.; Modi, K.; Shah, P.; Joshi, R.; Gonge, S.; Kadam, K.; Kadam, P. A Study of the Recent Trends of Immunology: Key Challenges, Domains, Applications, Datasets, and Future Directions. Sensors 2021, 21, 7786.
39. Pandya, S., W. Patel, H. Ghayvat, “NXTGeUH: Ubiquitous Healthcare System for Vital Signs Monitoring & Falls Detection”, IEEE International Conference, Symbiosis International University, December 2018.
40. Ghayvat, H., Pandya, S., “Wellness Sensor Network for modeling Activity of Daily Livings – Proposal and Off-Line Preliminary Analysis” IEEE International Conference, Galgotias University, New Delhi, December 2018.
41. Pandya, S., W. Patel, An Adaptive Approach towards designing a Smart Health-care Real-Time Monitoring System based on IoT and Data Mining, 3rd IEEE International Conference on Sensing technology and Machine Intelligence (ICST- 2016), Dubai, November 2016.
42. Pandya, S., H. Dandvate-New Approach for frequent item set generation based on Mirabit Hashing Algorithm‖, IEEE International Conference on Inventive Computation technologies (ICICT), 26 August, India, 2016.
43. Pandya, S., Patel, W., Mistry, V., i-MsRTRM: Developing an IoT based iNTELLIGENT Medicare

System for Real-time Remote Health Monitoring, 8th IEEE International Conference on Computational Intelligence and Communications Networks (CICN-2016), Tehari, India, 23-25th December 2016.

44. Muftah, Magdi G., Mohamed Salem, Khlid Ben Hamad, and Mohamad Kamarol. "Open-loop control of a grid-tied multilevel inverter interfacing a fuel cell stack." In 2021 IEEE International Conference on Environment and Electrical Engineering and 2021 IEEE Industrial and Commercial Power Systems Europe (EEEIC/I&CPS Europe), pp. 1-6. IEEE, 2021.
45. Pandya, S., Vyas, D. and Bhatt, D., A Survey on Various Machine Learning Techniques‖, International Conference on Emerging trends in Scientific Research (ICETSR-2015), ISBN no: 978-81-92346-0-5, 2015.
46. Pandya, S., Wandra, K., Shah, J., A Hybrid Based Recommendation System to overcome the problem of sparcity, International Conference on emerging trends in scientific research, December, 2015.
47. Patil S and Pandya S (2021) Forecasting Dengue Hotspots Associated With Variation in Meteorological Parameters Using Regression and Time Series Models. Front. Public Health 9:798034.
48. Renuka J Bathi, Sameena Parveen, Krishna Burde, The Role of Gutka Chewing in Oral Submucous Fibrosis: A Case-Control Study, Quintessence International, Jun2009, Volume 40, Issue 6, pages e19-e25. 7p. 5 Charts.
49. Sameena Parveen, Neeraj Taneja, Renuka J Bathi, AC Deka, Evaluation Of Circulating Immune Complexes And Serum Immunoglobulins In Oral Cancer Patients - A Follow Up Study, Indian Journal of Dental Research, 2010, Volume 21, Issue 1, Pages 14-19.
50. Renuka J Bathi, Sameena Parveen, Sunil Mutalik, Reema Rao, Rabson-Mendenhall Syndrome: Two Case Reports and A Brief Review of The Literature, Odontology, 2010, Volume 98, Issue 1, Pages 89-96.
51. Renuka J Bathi, Neeraj Taneja, Sameena Parveen, Rheumatoid Arthritis of TMJ – A Diagnostic Dilemma? , Dental update, 2004, Volume 31, Issue 3, Pages 167-174.
52. Renuka J Bathi, Sameena Parveen, Neeraj Taneja, Oral Tuberculous Ulcer - A Report of Two Cases, Journal of Indian Academy of Oral Medicine and Radiology, 2003, Volume 15, Issue 2, Pages 62-65.
53. Sameena Parveen, Impact of Calorie Restriction and Intermittent Fasting on Periodontal Health, Periodontology 2000, August 2021, Volume 87, Issue 1, Pages 315-324.
54. T. Radhika K Mohideen, C Krithika, N Jeddy, S Parveen, A Meta-Analysis in Assessing Oxidative Stress Using Malondialdehyde in Oral Submucous Fibrosis, European Journal of Dentistry, 2021.
55. Parveen S Taneja N, R Bathi, Serum Glycoproteins as Prognosticator in Head and Neck Cancer Patients - A Follow Up Study, Oral Oncology Head and Neck Oncology, 2011, Volume 47.
56. J. Kubiczek and B. Hadasik, “Challenges in Reporting the COVID-19 Spread and its Presentation to the Society,” J. Data and Information Quality, vol. 13, no. 4, pp. 1–7, Dec. 2021.
57. M. Bieleń and J. Kubiczek, “Response of the labor market to the needs and expectations of Generation Z,” e-mentor, vol. 86, no. 4, pp. 87–94, 2020.
58. Parveen S. Bathi R, Taneja N, Dermoid Cyst in The Floor of The Mouth-A Case Report, Karnataka State Dental Journal, 2006, Volume 25, Issue 2, pages 52-54.

59. Rupapara, V., Narra, M., Gonda, N. K., & Thipparthy, K. (2020). Relevant Data Node Extraction: A Web Data Extraction Method for Non Contagious Data. 2020 5th International Conference on Communication and Electronics Systems (ICCES), 500–505.

60. Ishaq, A., Sadiq, S., Umer, M., Ullah, S., Mirjalili, S., Rupapara, V., & Nappi, M. (2021). Improving the Prediction of Heart Failure Patients' Survival Using SMOTE and Effective Data Mining Techniques. IEEE Access, 9, 39707–39716.

61. Rustam, F., Khalid, M., Aslam, W., Rupapara, V., Mehmood, A., & Choi, G. S. (2021). A performance comparison of supervised machine learning models for Covid-19 tweets sentiment analysis. PLOS ONE, 16(2), e0245909.

62. Yousaf, A., Umer, M., Sadiq, S., Ullah, S., Mirjalili, S., Rupapara, V., & Nappi, M. (2021b). Emotion Recognition by Textual Tweets Classification Using Voting Classifier (LR-SGD). IEEE Access, 9, 6286–6295.

63. Sadiq, S., Umer, M., Ullah, S., Mirjalili, S., Rupapara, V., & NAPPI, M. (2021). Discrepancy detection between actual user reviews and numeric ratings of Google App store using deep learning. Expert Systems with Applications, 115111.

64. G. S. Sajja, K. P. Rane, K. Phasinam, T. Kassanuk, E. Okoronkwo, and P. Prabhu, "Towards applicability of blockchain in agriculture sector," Materials Today: Proceedings, 2021.

65. Tawfiq A. Al- asadi and Ahmed J. Obaid, 2016. Object-Based Image Retrieval Using Enhanced SURF. Asian Journal of Information Technology, 15: 2756-2762. 10.36478/ajit.2016.2756.2762.

66. Tawfiq A. Al- asadi and Ahmed J. Obaid, 2016. Discovering similar user navigation behavior in Web log data. International Journal of Applied Engineering Research, Vol. 11, No. 16: 8797-8805.

67. Tawfiq A. Al- asadi and Ahmed J. Obaid, 2016. Object Detection and Recognition by Using Enhanced Speeded Up Robust Feature, International Journal of Computer Science and Network Security (IJCSNS), Vol. 16, No. 4: 66-71.

68. H. Pallathadka, M. Mustafa, D. T. Sanchez, G. Sekhar Sajja, S. Gour, and M. Naved, "Impact of machine learning on management, healthcare and agriculture," Materials Today: Proceedings, 2021.

69. Guna Sekhar Sajja, Malik Mustafa, Dr. R. Ponnusamy, Shokhjakhon Abdufattokhov, Murugesan G., Dr. P. Prabhu, "Machine Learning Algorithms in Intrusion Detection and Classification", Annals of RSCB, vol. 25, no. 6, pp. 12211–12219, Jun. 2021.

70. Nikhil Marriwala, Himanshu Punj, Sunita Panda, Inderjeet Kaur, Deepak Rathore, "An Authentication Based Approach for Prevention of Spectrum Sensing Data Falsification Attacks in Cognitive Radio Network" in Wireless Personnel Communications. Published online: https://doi.org/10.1007/s11277-021-09329-8,

71. Vishwa Kiran, Inderjeet Kaur, K.Thangaraj, Saveetha.V,R Kingsy Grace, Arul Kumar N, "Machine Learning with Data Science Enabled Lung Cancer Diagnosis and Classification using Computed Tomography Images" in Special Issue: Advances in Deep Learning Algorithms for Brain Imaging, International Journal of Image and Graphics, ISSN: 0219-4678. Published online: https://doi.org/10.1142/S0219467822400022

72. Inderjeet Kaur, E. Laxmi Lydia, Vinay Kumar Nassa, Bhanu Shrestha, Jamel Nebhen, Sharaf Malebary, Gyanendra Prasad Joshi, "Generative Adversarial Networks with Quantum Optimization

Model for Mobile Edge Computing in IoT Big Data" in Wireless Personnel Communications. Published online: https://doi.org/10.1007/s11277-021-08706-7.

73. Ruby Tomar, Inderjeet Kaur, "A Review of Community Detection Algorithms in Signed Social Networks" in International Journal of Computer Science and Information Security (IJCSIS) April 2017, Vol 15, No.4, pp 234-242.
74. Madhavi, Inderjeet Kaur, "A Review of Fault Tolerance and Checkpointing Schemes in Mobile Ad-hoc Networks" in International Journal of Computer Science and Information Security (IJCSIS) January 2017, Vol 15, No.1, , pp 234-242.
75. Akansha Gangwar, Inderjeet Kaur, "ESEECH: Enhanced Scalable Energy Efficient Clustering Hierarchical Routing Protocol for WSN" International Journal of Computer Science and Information Security (IJCSIS) September 2016 issue (Vol. 14 No. 9), pp. 338-344.
76. Priyanka Sharma, Inderjeet Kaur, "A Comparative Study on Energy Efficient Routing Protocols in Wireless Sensor Networks" published in International Journal of Computer Science Issues (IJCSI) Volume 12, Issue 4, July 2015.
77. Inderjeet Kaur, M Kulkarni, Daya Gupta, Kamal Thakur, Janki Arora, "The Minimum PAPR Code for OFDM Systems" published in Journal World Academy of Science, Engineering and Technology, Volume 46, October 2008, pp 285-291.
78. Charu Agarwal, Inderjeet Kaur, Sunita Yadav, "Hybrid CNN-SVM Model for Face Mask Detector to Protect from COVID-19" presented in International Symposium on Computer Vision and Machine Intelligence in Medical Image Analysis (ISCMM-2021), organized by Sikkim Manipal Institute of Technology, Jaipur, 11-12 Nov 2021.
79. Pragya Pandey, Inderjeet Kaur, "Improved MODLEACH with Effective Energy Utilization Technique for WSN" published in 8th IEEE International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO-2020), 4-5,June 2020,.
80. C. Blázquez, P. Álvarez, N. Bronfman and J. Espinosa, "Factores que influencian la motivación de escolares por las áreas tecnológicas e ingeniería.", Calidad en la Educación, no. 31, p. 46, 2009.
81. Espinosa-Cristia, J. Feregrino and P. Isla, "Emerging, and old, dilemmas for food security in Latin America", Journal of Public Affairs, vol. 19, no. 3, p. e1999, 2019.
82. A. Vega-Muñoz, P. Gónzalez-Gómez-del-Miño and J. Espinosa-Cristia, "Recognizing New Trends in Brain Drain Studies in the Framework of Global Sustainability", Sustainability, vol. 13, no. 6, p. 3195, 2021.
83. J J. Espinosa-Cristia, "Gestionando la innovación desde la óptica de los estudios de ciencia, tecnología y sociedad: por una perspectiva constructivista y crítica de la gestión de la innovación", Cadernos EBAPE.BR, vol. 17, no. 1, pp. 68-83, 2019.
84. N. Contreras-Barraza, J. Espinosa-Cristia, G. Salazar-Sepulveda and A. Vega-Muñoz, "Entrepreneurial Intention: A Gender Study in Business and Economics Students from Chile", Sustainability, vol. 13, no. 9, p. 4693, 2021.
85. Geno Peter, Anli Sherine, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, Histogram Shifting based Quick Response Steganography method for Secure Communication" Wireless Communications and Mobile Computing. vol. 2022, 10 pages, 2022.

86. Geno Peter, Anli Sherine, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, Design of Automated Deep Learning-based Fusion Model for Copy-Move Image Forgery Detection" Computational Intelligence and Neuroscience. vol. 2022, 9 pages, 2022.
87. Hariprasath Manoharan, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, K Venkatachalam, Acclimatization Of Nano Robots In Medical Applications Using Artificial Intelligence System With Data Transfer Approach" Wireless Communications And Mobile Computing. vol. 2022, 9 pages, 2022.
88. Ashok Kumar L, Ramya Kuppusamy, Yuvaraja Teekaraman, Indragandhi V, Arun Radhakrishnan, Design and Implementation of Automatic Water Spraying System for Solar Photovoltaic Module" Mathematical Problems In Engineering. vol. 2022, 9 pages, 2022.
89. K Veena, K Meena, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, Cybercrime Detection using C SVM and KNN Techniques" Wireless Communications and Mobile Computing. vol. 2022, 8 pages, 2022.
90. Yuvaraja Teekaraman, KA Ramesh Kumar, Ramya Kuppusamy, Amruth Ramesh Thelkar, SSNN Based Energy Management Strategy in Grid-Connected System for Load Scheduling and Load Sharing" Mathematical Problems In Engineering. vol. 2022, Article ID 2447299, 9 pages, 2022.
91. M. Bharathidasan, V. Indragandhi, Ramya Kuppusamy, Yuvaraja Teekaraman, Shabana Urooj4,*, Norah Alwadi, 'Intelligent Fuzzy Based High Gain Non-Isolated Converter for DC Micro-Grids" CMC-Computers, Materials & Continua. Vol 71, No.2, 2022.
92. Hariprasath Manoharan, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, A Novel Optimal Robotized Parking System Using Advanced Wireless Sensor Network" Journal of Sensors. Volume 2021, Page 1-8, 2021.
93. Kamaleshwar T, Lakshminarayanan R, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, A Self-Adaptive framework for Rectification and Detection of Blackhole and Wormhole attacks in 6LoWPAN" Wireless Communications And Mobile Computing. Volume 2021, 2021. Page 1-8.
94. Pavan Babu Bandla, Indragandhi Vairavasundaram, Yuvaraja Teekaraman, Srete Nikolovski, "Real Time Sustainable Power Quality Analysis of Non-Linear Load under Symmetrical Conditions" Energies 2022, 15(01).
95. Hariprasath Manoharan, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, A Prognostic Three-Axis Coordination Model for Supply Chain Regulation Using Machine Learning Algorithm" Scientific Programming. Volume 2021, 2021. Page 1-9.
96. Hariprasath Manoharan, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, An Intellectual Energy Device for Household Appliances Using Artificial Neural Network" Mathematical Problems In Engineering. Volume 2021, 2021. Page 1-9.
97. Nagarajan Manikandan, Rajappa Muthaiah, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, A Novel Random Error Approximate Adder-Based Lightweight Image Encryption Scheme for Secure Remote Monitoring of Reliable Data" Security and Communication Networks. Vol 2021, 2021. Page 1-14.
98. Senthilselvan Natarajan, Subramaniyaswamy Vairavasundaram, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan, Schema-Based Mapping Approach for Data Transformation

toEnrich Semantic Web" Wireless Communications and Mobile Computing. Vol 2021, 2021. Page 1-15.

99. Yuvaraja Teekaraman, Hariprasath Manoharan, Ramya Kuppusamy, Fadwa Alrowais, Shabana Urooj, Energy Efficient Multi-Hop Routing Protocol for Smart Vehicle Monitoring Using Intelligent Sensor Networks" International Journal Of Distributed Sensor Networks. Vol 17, Issue 12. 2021. Page 1-11.
100. Yuvaraja Teekaraman, Ramya Kuppusamy, V. Indragandhi, 'Modeling and Analysis of PV System with Fuzzy Logic MPPT Technique for a DC Microgrid under Variable Atmospheric Conditions" Electronics. (20) 2541, 2021.
101. Yuvaraja Teekaraman, Ramya Kuppusamy, V. Indragandhi, 'Investigations on the effect of micro-grid using improved NFIS-PID with hybrid algorithms" Computing. Springer 2021. DOI: 10.1007/s00607-021-01006-9.
102. Yuvaraja Teekaraman, Jasmin Pamela, V. Indragandhi, R. Saranya, Shabana Urooj, V. Subramaniyaswamy, Norah Alwadi ''2D Finite Element Analysis of Asynchronous Machine Influenced under Power Quality Perturbations" CMC-Computers, Materials & Continua. Volume 70. Number 03, pp. 5745-5763, 2021.
103. Ratnam Kamala Sarojini, Palanisamy Kaliannan, Yuvaraja Teekaraman, Srete Nikolovski, Hamid Reza Baghaee, "An Enhanced Emulated Inertia Control for Grid-Connected PV Systems with HESS in a Weak Grid"" Energies 2021, 14(06), 1455 (1-21);
104. Subramanian Vasantharaj, Indragandhi Vairavasundaram, Subramaniyaswamy Vairavasundaram, Yuvaraja Teekaraman, Ramya Kuppusamy, Nikolovski Srete, Efficient Control of DC Microgrid with Hybrid PV—Fuel Cell and Energy Storage Systems" Energies 2021, 14(06), 3234 (1-18);
105. Yuvaraja Teekaraman, Hariprasath Manoharan, "Implementation of Cognitive Radio Model for Agricultural Applications using Hybrid Algorithms". Wireless Personal Communications, Accepted. 2021.
106. Rahul Gopi, Soundarya S, Kavitha P, Yuvaraja Teekaraman, Ramya Kuppusamy, Shabana Urooj "Enhanced Model Reference Adaptive Control Scheme for Tracking Control of Magnetic Levitation System" Energies 2021, 14(05), 1455 (1-13).
107. Shabana Urooj, Fadwa Alrowais, Yuvaraja Teekaraman, Hariprasath Manoharan, Ramya Kuppusamy, "IoT Based Electric Vehicle Application Using Boosting Algorithm for Smart Cities" Energies 2021, 14(04), 1072 (1-15).
108. Shabana Urooj, Fadwa Alrowais, Ramya Kuppusamy, Yuvaraja Teekaraman, Hariprasath Manoharan, "New Gen Controlling Variable using Dragonfly Algorithm in PV Panel" Energies 2021, 14(04), 790 (1-14).
109. Hariprasath Manoharan, Yuvaraja Teekaraman, Pravin R Kshirsagar, Shanmugam Sundaramurthy, Abirami Manoharan, Examining the effect of Aquaculture using Sensor based Technology with Machine Learning Algorithm. Aquaculture Research, 13(15), pp.1-16. 2020.
110. Hariprasath Manoharan, Yuvaraja Teekaraman, Irina Kirpichnikova, Ramya Kuppusamy, Srete Nikolovski, Hamid Reza Baghaee., Smart Grid Monitoring by Wireless Sensors Using Binary Logistic Regression. Energies, 13(15), pp.1-16. 2020.
111. Yuvaraja Teekaraman, Hariprasath Manoharan., Adam Raja Basha, Abirami Manoharan., Hybrid

Optimization Algorithms for Resource Allocation in Heterogeneous Cognitive Radio Networks. Neural Processing Letters. http://link.springer.com/article/10.1007/s11063-020- 10255-2. 2020.

112. Yuvaraja.T, KA Ramesh Kumar, "Enhanced Frequency Shift Carrier Modulation for H Bridge Multilevel Converter to Conquer the Impact of Instability in Deputize Condenser Voltage" International Journal Of Electrical Engineering Education, Volume 57 Issue 2, April 2020.
113. Yuvaraja Teekaraman, K Ramya, Srete Nikolovski, "Current Compensation in Grid Connected VSCs using Advanced Fuzzy Logic Based Fluffy Built SVPWM Switching" Energies 2020, 13(05), 1259.
114. Yuvaraja Teekaraman, Pranesh Sthapit, Miheung Choe, Kiseon Kim, "Energy Analysis on Localization Free Routing Protocols in UWSNs" International Journal of Computational Intelligence System, Atlantis Press, Vol.12, Issue 2, pp. 1526-1536, 2019.
115. Yuvaraja.T, KA Ramesh Kumar, "Fuzzy Control in H-Bridge MLI for Solar PV System to Enhance Load Sharing" International Journal of Electrical Engineering Education, Sage Publication, Volume: 57, Issue: 1, pp. 64-72. 2020.
116. K Ramya, Yuvaraja.Teekaraman, K A Ramesh Kumar, "Fuzzy- Based Energy Management System with Decision Tree Algorithm for Power Security System" International Journal Of Computational Intelligence System, Atlantis Press. Vol.12, Issue 2, pp. 1173-1178, 2019.
117. Yuvaraja.T, K Ramya, "Hierarchical Distributed Model Scheme Implementation in Dc- Microgrid for Numerous Ground Faults Condition" International Journal Of Electrical Engineering Education, Sage Publication, Vol. 56(4), pp. 348-363, 2019.
118. Yuvaraja.T, K Ramya, "Statistical Data Analysis for Sung Reduction in 3Ø Fragmented Source Using Novel Fuzzy Digital Logic Switching Techniques" in Circuit World, Vol. 45, Issue No. 3, pp. 148-155. 2019. Emerald Publishing. DOI information: 10.1108/CW-12-2018-0107.
119. Yuvaraja.T, K Ramya, Hariprasath Manoharan, Abirami, "State Approximation in Power System by using Quasi Derived Originating Procedure" in Measurement, 146 (2019) 924-929. Elsevier.
120. Yuvaraja Teekaraman, K Ramya, Srete Nikolovski, "Solution for Voltage and Frequency Regulation in Stand Alone Micro Grid using Hybrid Multi Objective Symbiotic Organism Search Algorithm" Energies 2019, 12(14), 2812; MDPI, https://doi.org/10.3390/en12142812.
121. M V Tejeswini, I Jacob Raglend, T Yuvaraja, B N Radha, "An Advanced Protection coordination technique for Solar in Feed Distribution Systems" AIN Shams Engineering Journal, Elsevier 10 (2019) 379-388.
122. Yuvaraja.T, Ramya.K, "Discretionary Controller for Hybrid Energy Storage System Based on Orderly Control Considering Commercial Value in Decentralized Microgrid Operation" Compel: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering. ISSN: 0332-1649 Volume 37, Issue 6, 2018. Page No. 1969- 1980.
123. Yuvaraja.T, Ramya.K, "Analysis of Wind Turbine Modeling using TSMC Techniques" Compel: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering. Volume 37, Issue 6, 2018. Page No. 1981- 1992.
124. Yuvaraja.T, K.Ramya, "Vector Control of PMSM Take Over by Photovoltaic Source" Aces Journal, VOL. 33, NO. 2, FEB 2018. ISSN: 1054-4887.

125. Yuvaraja.T, Gopinath Mani, "New Gen Algorithm for Detecting Sag and Swell Voltages in Single Phase Inverter System for Micro grid". Automatika, Online, DOI: 10.7305. Vol 57, No.3 (2016). DOI 10.7305/automatika.2017.02.992.

126. Gayathri Devi S, Subramaniyaswamy Vairavasundaram, Yuvaraja Teekaraman, Ramya Kuppusamy, Arun Radhakrishnan. A Deep Learning Approach for Recognizing the Cursive Tamil Characters in Palm Leaf Manuscripts. Computational Intelligence And Neuroscience, Volume 2022 |Article ID 3432330 | https://doi.org/10.1155/2022/3432330. HINDAWI.

127. Yuvaraja Teekaraman, Hariprasath Manoharan, Abirami Manoharan, Diagnoses of reformed responses in curative applications using wireless sensors with dynamic control, Sustainable Computing: Informatics and Systems, Volume 35, 2022, 100677, ISSN 2210-5379, https://doi.org/10.1016/j.suscom.2022.100677.

128. K. S. Archana, B. Sivakumar, Ramya Kuppusamy, Yuvaraja Teekaraman, and Arun Radhakrishnan, Automated Cardioailment Identification and Prevention by Hybrid Machine Learning Models" Computational And Mathematical Methods In Medicine. Article ID 9797844, vol. 2022, 08 pages, 2022. HINDAWI.

129. G. Uganya, D. Rajalakshmi, Yuvaraja Teekaraman, Ramya Kuppusamy, and Arun Radhakrishnan, A Novel Strategy for Waste Prediction Using Machine Learning Algorithm with IoT Based Intelligent Waste Management System" Wireless Communications And Mobile Computing. Article ID 2063372, vol. 2022, 10 pages, 2022. HINDAWI.

130. Hariprasath Manoharan, Yuvaraja Teekaraman, Ramya Kuppusamy, Naveenkumar Kaliyan, Amruth Ramesh Thelkar, Examining the Effect of Cyber Twin and Blockchain Technologies for Industrial Applications Using AI. Mathematical Problems In Engineering Volume 2022 |Article ID 3048038 | https://doi.org/10.1155/2022/3048038. HINDAWI.

131. Manikandan Nagarajan, Muthaiah Rajappa, Yuvaraja Teekaraman, Ramya Kuppusamy, Amruth Ramesh Thelkar. Renovated XTEA Encoder Architecture-Based Lightweight Mutual Authentication Protocol for RFID and Green Wireless Sensor Network Applications. Wireless Communications And Mobile Computing. Volume 2022 |Article ID 8876096 | https://doi.org/10.1155/2022/8876096. HINDAWI.

132. Pavan Babu Bandla, Indragandhi Vairavasundaram, Yuvaraja Teekaraman, Srete Nikolovski, "Real-Time Sustainable Power Quality Analysis of Non-Linear Load under Symmetrical Conditions" Energies 2022, 15(01), 57, MDPI, https://doi.org/10.3390/en15010057.

133. Rjoub, H., Iloka, C. B., & Venugopal, V. (2022). Changes in the Marketing Orientation Within the Business Model of an International Retailer: IKEA in Malaysia for Over 20 Years. In Handbook of Research on Current Trends in Asian Economics, Business, and Administration (pp. 170-190). IGI Global.

134. Li, M., Hamawandy, N. M., Wahid, F., Rjoub, H., & Bao, Z. (2021). Renewable energy resources investment and green finance: Evidence from China. Resources Policy, 74, 102402.

135. S. Sudhakar and S.Chenthur Pandian "Secure Packet Encryption and Key Exchange System in Mobile Ad hoc Nerwork", Journal of Computer Science, Vol.8, No. 6, pp : 908-912, 2012, DOI:10.3844/jcssp.2012.908.912.

136. S. Sudhakar and S. Chenthur Pandian, "Hybrid Cluster-based Geographical Routing Protocol to

Mitigate Malicious Nodes in Mobile Ad Hoc Network", International Journal of Ad Hoc and Ubiquitous Computing, 2016 Vol.21 No.4, pp.224-236. DOI: 10.1504/IJAHUC.2016.076358, 2016.

137. N. Keerthana, Viji Vinod and S. Sudhakar, "A Novel Method for Multi-Dimensional Cluster to Identify the Malicious Users on Online Social Networks", Journal of Engineering Science and Technology Vol. 15, No. 6, pp: 4107-4122, 2020.
138. A. U. Priyadarshni and S. Sudhakar, "Cluster Based Certificate Revocation by Cluster Head in Mobile Ad-Hoc Network", International Journal of Applied Engineering Research, Vol. 10, No. 20, pp. 16014-16018, 2015.
139. S. Sudhakar and S. Chenthur Pandian, "Investigation of Attribute Aided Data Aggregation Over Dynamic Routing in Wireless Sensor," Journal of Engineering Science and Technology Vol.10, No.11, pp:1465–1476, 2015.
140. S. Sudhakar and S. Chenthur Pandian, "Trustworthy Position Based Routing to Mitigate against the Malicious Attacks to Signifies Secured Data Packet using Geographic Routing Protocol in MANET", WSEAS Transactions on Communications, Vol. 12, No. 11, pp:584- 603, 2013,
141. S. Sudhakar and S. Chenthur Pandian, "A Trust and Co-Operative Nodes with Affects of Malicious Attacks and Measure the Performance Degradation on Geographic Aided Routing in Mobile Ad Hoc Network", Life Science Journal, Vol. 10, No. (4s), pp:158-163, 2013.
142. S. Sudhakar and S. Chenthur Pandian, "An Efficient Agent-Based Intrusion Detection System for Detecting Malicious Nodes in MANET Routing", International Review on Computers and Software, Vol.7, No.6, pp.3037-304,2012.
143. S. Sudhakar and S. Chenthur Pandian, "Authorized Node Detection and Accuracy in Position-Based Information for MANET", European Journal of Scientific Research, Vol.70, No.2, pp.253-265,2012.
144. K. Ganesh Kumar and S. Sudhakar, Improved Network Traffic by Attacking Denial of Service to Protect Resource Using Z-Test Based 4-Tier Geomark Traceback (Z4TGT),Wireless Personal Communications, Vol.114, No. 4, pp:3541–3575, 2020, DOI:10.1007/s11277-020-07546-1
145. Aakanksha Singhal and D.K. Sharma, "Seven Divergence Measures by CDF of fitting in Exponential and Normal Distributions of COVID-19 Data", Turkish Journal of Physiotherapy and Rehabilitation, Vol.32(3), pp. 1212 - 1222, 2021.
146. D.K. Sharma and Haldhar Sharma, "A Study of Trend Growth Rate of Confirmed cases, Death cases and Recovery cases in view of Covid-19 of Top Five States of India", Solid State Technology, Vol.64(2), pp. 4526-4541, 2021.
147. D.K. Sharma, "Information Measure Computation and its Impact in MI COCO Dataset", IEEE Conference Proceedings, 7th International Conference on Advanced Computing and Communication Systems (ICACCS), Vol.1, pp. 2011-2014, 2021.
148. Aakanksha Singhal and D.K. Sharma, "Keyword extraction using Renyi entropy: a statistical and domain independent method", IEEE Conference Proceedings, 7th International Conference on Advanced Computing and Communication Systems (ICACCS), Vol.1, pp. 1970-1975, 2021.
149. Aakanksha Singhal and D.K. Sharma, "Generalization of F-Divergence Measures for Probability Distributions with Associated Utilities", Solid State Technology, Vol.64(2), pp. 5525-5531, 2021.
150. Aakanksha Singhal and D.K. Sharma, "A Study of before and after Lockdown Situation of 10

Countries through Visualization of Data along With Entropy Analysis of Top Three Countries", International Journal of Future Generation Communication and Networking, Vol.14(1), pp. 496-525, 2021.

151. Aakanksha Singhal and D.K. Sharma, "Generalized 'Useful' Rényi & Tsallis Information Measures, Some Discussions with Application to Rainfall Data", International Journal of Grid and Distributed Computing, Vol. 13(2), pp. 681-688, 2020.
152. Reetu Kumari and D. K. Sharma, "Generalized `Useful non-symmetric divergence measures and Inequalities", Journal of Mathematical Inequalities, Vol. 13(2), pp. 451-466, 2019.
153. D.S. Hooda and D.K. Sharma, "On Characterization of Joint and Conditional Exponential Survival Entropies", International Journal of Statistics and Reliability Engineering, Vol. 6(1), pp. 29-36, 2019.
154. Reetu Kumari and D. K. Sharma, "Generalized `Useful' AG and `Useful' JS-Divergence Measures and their Bounds", International Journal of Engineering, Science and Mathematics, Vol. 7 (1), pp. 441-450, 2018.
155. D.S. Hooda, Reetu Kumari and D. K. Sharma, "Intuitionistic Fuzzy Soft Set Theory and Its Application in Medical Diagnosis", International Journal of Statistics in Medical Research, Vol. 7, pp. 70-76, 2018.
156. D.K. Sharma and Sonali Saxena, "Generalized Coding Theorem with Different Source Coding Schemes", International Journal on Recent and Innovation Trends in Computing and Communication, Vol. 5(6), pp. 253 – 257, 2017.
157. A.K. Gupta, Y. K. Chauhan, and T Maity, "Experimental investigations and comparison of various MPPT techniques for photovoltaic system," Sādhanā, Vol. 43, no. 8, pp.1-15, 2018.
158. A.K. Gupta, "Sun Irradiance Trappers for Solar PV Module to Operate on Maximum Power: An Experimental Study," Turkish Journal of Computer and Mathematics Education (TURCOMAT), Vol. 12, no.5, pp.1112-1121, 2021.
159. A.K. Gupta, Y.K Chauhan, and T Maity and R Nanda, "Study of Solar PV Panel Under Partial Vacuum Conditions: A Step Towards Performance Improvement," IETE Journal of Research, pp.1-8, 2020.
160. A.K. Gupta, Y.K Chauhan, and T Maity, "A new gamma scaling maximum power point tracking method for solar photovoltaic panel Feeding energy storage system," IETE Journal of Research, vol.67, no.1, pp.1-21, 2018.
161. A. K. Gupta et al., "Effect of Various Incremental Conductance MPPT Methods on the Charging of Battery Load Feed by Solar Panel," in IEEE Access, vol. 9, pp. 90977-90988, 2021, doi: 10.1109/ACCESS.2021.3091502.
162. U. Zulfiqar, S. Mohy-Ul-Din, A. Abu-Rumman, A. E. M. Al-Shraah, And I. Ahmed, "Insurance-Growth Nexus: Aggregation and Disaggregation," The Journal of Asian Finance, Economics and Business, vol. 7, no. 12, pp. 665–675, Dec. 2020. https://doi.org/10.13106/jafeb.2020.vol7.no12.665
163. Al-Shqairat, Z. I., Al Shraah, A. E. M., Abu-Rumman, A., "The role of critical success factors of knowledge stations in the development of local communities in Jordan: A managerial perspective," Journal of management Information and Decision Sciences, vol. 23, no.5, pp. 510-526, Dec. 2020. DOI: 1532-5806-23-5-218

164. Abu-Rumman, Ayman. "Transformational leadership and human capital within the disruptive business environment of academia." World Journal on Educational Technology: Current Issues 13, no. 2 (2021): 178-187.

165. Almomani, Reham Zuhier Qasim, Lina Hamdan Mahmoud Al-Abbadi, Amani Rajab Abed Alhaleem Abu Rumman, Ayman Abu-Rumman, and Khaled Banyhamdan. "Organizational Memory, Knowledge Management, Marketing Innovation and Cost of Quality: Empirical Effects from Construction Industry in Jordan." Academy of Entrepreneurship Journal 25, no. 3 (2019): 1528-2686.

166. Alshawabkeh, Rawan, Amani Abu Rumman, Lina Al-Abbadi, and Ayman Abu-Rumman. "The intervening role of ambidexterity in the knowledge management project success connection." Problems and Perspectives in Management 18, no. 3 (2020): 56.

167. Abu-Rumman, Ayman. "Gaining competitive advantage through intellectual capital and knowledge management: an exploration of inhibitors and enablers in Jordanian Universities." Problems and Perspectives in Management 16, no. 3 (2018): 259-268.

168. Abu-Rumman, A. Al Shraah, F. Al-Madi, T. Alfalah, "Entrepreneurial networks, entrepreneurial orientation, and performance of small and medium enterprises: are dynamic capabilities the missing link?" Journal of Innovation and Entrepreneurship. Vol 10 Issue 29, pp 1-16. Jul 2021. DOI: https://doi.org/10.1186/s13731-021-00170-8

169. A.Al Shraah, A. Abu-Rumman, F. Al Madi, F.A. Alhammad, A.A. AlJboor, "The impact of quality management practices on knowledge management processes: a study of a social security corporation in Jordan" The TQM Journal. Vol. ahead-of-print No. Issue ahead-of- print. Apr 2021. DOI: https://doi.org/10.1108/TQM-08-2020-0183

170. S. Suman Rajest, D.K. Sharma, R. Regin and Bhopendra Singh, "Extracting Related Images from E-commerce Utilizing Supervised Learning", Innovations in Information and Communication Technology Series, pp. 033-045, 28 February, 2021.

171. Souvik Ganguli, Abhimanyu Kumar, Gagandeep Kaur, Prasanta Sarkar and S. Suman Rajest, "A global optimization technique for modeling and control of permanent magnet synchronous motor drive", Innovations in Information and Communication Technology Series, pp. 074-081, 28 February, 2021.

172. Jappreet Kaur, Tejpal Singh Kochhar, Souvik Ganguli and S. Suman Rajest, "Evolution of Management System Certification: An overview", Innovations in Information and Communication Technology Series, pp. 082-092, 28 February, 2021.

173. R. Regin, S. Suman Rajest and Bhopendra Singh, "Spatial Data Mining Methods Databases and Statistics Point of Views", Innovations in Information and Communication Technology Series, pp. 103-109, 28 February, 2021.

174. D. K. Sharma, B. Singh, E. Herman, R. Regine, S. S. Rajest and V. P. Mishra, "Maximum Information Measure Policies in Reinforcement Learning with Deep Energy-Based Model," 2021 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), 2021, pp. 19-24, doi: 10.1109/ICCIKE51210.2021.9410756.

175. F. Arslan, B. Singh, D. K. Sharma, R. Regin, R. Steffi and S. Suman Rajest, "Optimization Technique Approach to Resolve Food Sustainability Problems," 2021 International Conference on

Computational Intelligence and Knowledge Economy (ICCIKE), 2021, pp. 25-30, doi: 10.1109/ICCIKE51210.2021.9410735.

176. G. A. Ogunmola, B. Singh, D. K. Sharma, R. Regin, S. S. Rajest and N. Singh, "Involvement of Distance Measure in Assessing and Resolving Efficiency Environmental Obstacles," 2021 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE), 2021, pp. 13-18, doi: 10.1109/ICCIKE51210.2021.9410765.
177. D. K. Sharma, B. Singh, M. Raja, R. Regin and S. S. Rajest, "An Efficient Python Approach for Simulation of Poisson Distribution," 2021 7th International Conference on Advanced Computing and Communication Systems (ICACCS), 2021, pp. 2011-2014, doi: 10.1109/ICACCS51430.2021.9441895.
178. Srivastava Y., Ganguli S., Suman Rajest S., Regin R. (2022) Smart HR Competencies and Their Applications in Industry 4.0. In: Kumar P., Obaid A.J., Cengiz K., Khanna A., Balas V.E. (eds) A Fusion of Artificial Intelligence and Internet of Things for Emerging Cyber Systems. Intelligent Systems Reference Library, vol 210. Springer, Cham. https://doi.org/10.1007/978-3-030-76653-5_16
179. D. K. Sharma, N. A. Jalil, R. Regin, S. S. Rajest, R. K. Tummala and T. N, "Predicting Network Congestion with Machine Learning," 2021 2nd International Conference on Smart Electronics and Communication (ICOSEC), 2021, pp. 1574-1579, doi: 10.1109/ICOSEC51865.2021.9591897.
180. D. Hemavathi, V. R. Kumar, R. Regin, S. S. Rajest, K. Phasinam and S. Singh, "Technical Support for Detection and Prediction of Rainfall," 2021 2nd International Conference on Smart Electronics and Communication (ICOSEC), 2021, pp. 1629-1634, doi: 10.1109/ICOSEC51865.2021.9591762.
181. Jayakumar P., Suman Rajest S., Aravind B.R. (2022) An Empirical Study on the Effectiveness of Online Teaching and Learning Outcomes with Regard to LSRW Skills in COVID-19 Pandemic. In: Hamdan A., Hassanien A.E., Mescon T., Alareeni B. (eds) Technologies, Artificial Intelligence and the Future of Learning Post-COVID-19. Studies in Computational Intelligence, vol 1019. Springer, Cham. https://doi.org/10.1007/978-3-030-93921-2_27
182. Abu-Rumman, A. Al Shraah, F. Al-Madi, T. Alfalah, "The impact of quality framework application on patients' satisfaction", International Journal of Human Rights in Healthcare, Vol. ahead-of-print No. Issue ahead-of- print. Jun2021. DOI: https://doi.org/10.1108/IJHRH-01-2021-0006.
183. Zafar, S.Z., Zhilin, Q., Malik, H., Abu-Rumman, A., Al Shraah, A., Al-Madi, F. and Alfalah, T.F. (2021), "Spatial spillover effects of technological innovation on total factor energy efficiency: taking government environment regulations into account for three continents", Business Process Management Journal, Vol. 27 No. 6, pp. 1874-1891. https://doi.org/10.1108/BPMJ-12-2020-0550
184. Tawfiq A. Al- asadi and Ahmed J. Obaid, 2016. Object-Based Image Retrieval Using Enhanced SURF. Asian Journal of Information Technology, 15: 2756-2762. 10.36478/ajit.2016.2756.2762.
185. Tawfiq A. Al- asadi and Ahmed J. Obaid, 2016. Discovering similar user navigation behavior in Web log data. International Journal of Applied Engineering Research, Vol. 11, No. 16: 8797-8805.
186. Tawfiq A. Al- asadi and Ahmed J. Obaid, 2016. Object Detection and Recognition by Using Enhanced Speeded Up Robust Feature, International Journal of Computer Science and Network Security (IJCSNS), Vol. 16, No. 4: 66-71.
187. Tawfiq A. Al- asadi and Ahmed J. Obaid, 2016. An efficient web usage mining algorithm based on log file data, Journal of Theoretical and Applied Information Technology, Vol. 16, Vol. 92, No. 2:

215-224.

188. Tawfiq A. Al-asadi, Ahmed J. Obaid, Rahmat Hidayat, Ts. Azizul Azhar Ramli, 2017. A Survey on Web Mining Techniques and Applications, International Journal on Advanced Science Engineering and Information Technology, Vol. 7, No. 4: 1178-1184.
189. Tawfiq A. Al-Asadi, Ahmed J. Obaid, Ahmed A. Alkhayat, 2017. Proposed Method for Web Pages Clustering Using Latent Semantic Analysis, Journal of Engineering and Applied Science, Vol. 12, No. 8: 8270-8277.
190. Nora Omran Alkaam, Ahmed J. Obaid, Mohammed Q. Mohammed, 2018. A Hybrid Technique for Object Detection and Recognition Using Local Features Algorithms, Journal of Advanced Research in Dynamical and Control Systems, Vol. 10, No. 2: 2330-2344.
191. K. Balachander, S. Ramesh, Ahmed J. Obaid, 2018. Simulation Of 1KW Multi-Level Switch Mode Power Amplifier, International Journal of Innovations in Scientific and Engineering Research (IJISER), Vol. 5, No. 9: 85-92.
192. Saba Alyasiri, Ahmed J. Obaid, 2018. A New Approach for Object Detection, Recognition and Retrieving in Painting Images, Journal of Advanced Research in Dynamical and Control Systems, Vol. 10, No. 2: 2345-2359.
193. Ahmed J. Obaid, 2020. An Efficient Systematized Approach for The Detection of Cancer in Kidney, International Journal of Scientific and Engineering Research, Vol. 7, No. 1: 1-7.
194. Obaid A. J. and Sharma S. 2020 Recent Trends and Development of Heuristic Artificial Intelligence Approach in Mechanical System and Engineering Product Design Saudi Journal of Engineering and Technology 5 86-93
195. Oabid A.J., AlBermany S., Alkaam N.O. (2020) Enhancement in S-Box of BRADG Algorithm. In: Solanki V., Hoang M., Lu Z., Pattnaik P. (eds) Intelligent Computing in Engineering. Advances in Intelligent Systems and Computing, vol 1125. Springer, Singapore. https://doi.org/10.1007/978-981-15-2780-7_80
196. Shubham Sharma & Ahmed J. Obaid (2020) Mathematical modelling, analysis and design of fuzzy logic controller for the control of ventilation systems using MATLAB fuzzy logic toolbox, Journal of Interdisciplinary Mathematics, 23:4, 843-849, DOI: 10.1080/09720502.2020.1727611
197. Shubham Sharma, Ahmed J. Obaid, 2020. Contact-Mechanics and Dynamics Analysis of Three-Different Ellipsoidal Raceway Geometries for Deep Groove BallBearing Using Abaqus 6.13 Version Fea Simulation for High Load-Bearing as Well As Speed-Rotating Applications, International Research Journal of Multidisciplinary Science & Technology, Vol. 3, No. 5: 36-43.
198. Chandrashekhar Meshram, Rabha W. Ibrahim, Ahmed J. Obaid, Sarita Gajbhiye Meshram, Akshaykumar Meshram, Alaa Mohamed Abd El-Latif, Fractional chaotic maps based short signature scheme under human-centered IoT environments, Journal of Advanced Research, 2020, ISSN 2090-1232, https://doi.org/10.1016/j.jare.2020.08.015.