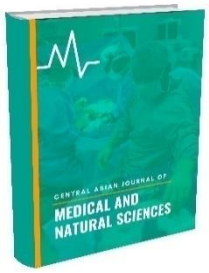
CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES



Volume: 03 Issue: 06 | Nov-Dec 2022 ISSN: 2660-4159

http://cajmns.centralasianstudies.org

An Improvised Virtual Queue Algorithm to Manipulate the Congestion in High-Speed Network

1. **S. Silvia Priscila**
2. **S. Suman Rajest**
3. **Shynu T**
4. **Gnaneswari G**

Received 6th Oct 2022,
Accepted 5th Nov 2022,
Online 12th Dec 2022

[1]Associate Professor, Bharath Institute of Higher Education and Research, Chennai, Tamil Nadu, India
silviaprisila.cbcs.cs@bharathuniv.ac.in

[2]Professor, Bharath Institute of Higher Education and Research, Chennai, Tamil Nadu, India

[3]Master of Engineering, Department of Biomedical Engineering, Agni College of Technology, Chennai, Tamil Nadu, India.

[4]Asst. Professor, CMR Institute of Technology, Bangalore, India
gnaneswari@yahoo.com

Abstract: In the recent technological era, advancement in the application allows faster transmission of data massively over the network, and it leads to the emergence of challenges related to high-speed networks (HSN's). With limitations over the congestion control mechanism, the transmission control protocol mechanism no longer offers support for HSN, and it eventually fails to utilize the resource available. Hence, it is necessary to adopt high-speed variants of congestion control mechanism that offers solution related to massive data transmission, bandwidth utilization and congestion. In this paper, an improvised virtual queue (IVQ) algorithm is adopted to have control over all these three constraints. By selecting all these three constraints, we model a multi-objective optimization process embedded with the IVQ algorithm to maintain a trade-off between the constraints and offer effective congestion control over HSN. The study performs simulations in order to measure the effectiveness of properties of multi-objective optimization-based IVQ. The simulation confirms the improvements over existing congestion control mechanisms like the double index random early detection (DI-RED) model, dynamic random early drop (DRED), and random early detection (RED) in terms of network throughput, delay, packet drop rate etc.

Key words: High-Speed Networks, Improvised Virtual Queue, Congestion, Multi-Objective Optimization.

Introduction

The accelerated growth of High-Speed Networks (HSN) greatly facilitates international cooperation with mass data transport and the sharing of computational services, as well as the creation and implementation of networks combined with 1–10 Gbps bandwidths across several academic establishments. Researchers [1-4] have concentrated on the construction of protocols on transport and network layers to effectively exploit larger bandwidths in the physical layer [5-11]. Future interconnected high-speed packet-switched networks can support several kinds of services

concurrently by one physical infrastructure. Packets from various sessions of various providers and administrative groups in packet-switched networks interact with each other as multiplexed by the same output link of the switch. Packages or programming algorithms at node switching play an important role in managing the relationships between multiple sources of traffic and the various types of services [12-15].

In recent years, much attention has been paid to a subset of disciplines called Virtual Queue (VQ) algorithms. VQ algorithms are close to the idealized GPS policy [16-21], which has proved to have two attractive properties: (a) it can guarantee end-to-end bucket-sharing delays, irrespective of the actions of other sequences; and (b) it can ensure the immediate equal distribution of bandwidth among all backlog sessions irrespective of whether or not their data is traffic. The former property provides support to guaranteed service traffic [22], while the latter is essential for the support of best-effort service traffic [23] and hierarchical service of connection sharing [24-31].

The important issue is that IVQ algorithms require session buffering and untrivial arbitration between all sessions. Arbitration has three main costs: (1) measuring a virtual-time method, a complex calculation of the uniform equal amount of service to be given per session; (2) maintaining a priority queue for ordering packets' forwarding; and (3) managing another priority queue for controlling packages [32]-[36]. Applying this technology in a short way poses a variety of difficulties [37]. Moreover, one easy alternative will be to keep two distinct priority queues for regulation and scheduling for algorithms that need regulation, but shifting packets between two queues may become a severe bottleneck in high-speed implementation [38-41].

In this paper, we introduce an improvised virtual queue (IVQ) algorithm that is adapted to have control over all these three constraints [42-47]. By selecting all these three constraints, we model a multi-objective optimization process embedded with the IVQ algorithm to maintain a trade-off between the constraints and offer effective congestion control over HSN [48-51]. The study performs simulations in order to measure the effectiveness of properties of multi-objective optimization-based IVQ [52].

Proposed Method

Pseudo-code of the Improved Virtual Queue scheme is given below:

At each packet arrival epoch do

Update Virtual Queue Size using ACO algorithm: $VQ \leftarrow max\ (VQ - \tilde{C}(t - s), 0)$

If $VQ + b > B$

Mark or drop packet in the real queue

else

Update Virtual Queue Size: $VQ \leftarrow VQ + b$

endif

$\tilde{C} = max\ (min(\tilde{C} + \alpha * \gamma * C(t - s), C) - \alpha * b, 0)$ /*

Update Virtual Capacity

Update last packet arrival time: $s \leftarrow t$

B is considered as the buffer size

s is considered as the previous packet arrival time

t is considered as the Current time

b is considered as the bytes of current packet

VQ is considered as the total number of bytes in virtual queue.

Steps of ACO based Virtual Queue Algorithm

Initialization:

There are two parts to the initialization of ACO: the first is the initialization of the pheromone trail. Secondly, certain ants are positioned arbitrarily on the selected nodes [53-59]. Each of the ants is then touring the graph, creating a path according to the transition node rule mentioned below [60-65]. Consider a single capacity link (C)with desired link utilization ($\gamma \leq 1$) [66-74]. The congestion-avoidance is estimated as follows:

$$x(i) = d^{-2} - \beta x_i^t x_i^{t-d} p\left(\sum_{j=1}^{N} x_j^{t-d}, C^{t-d}\right)$$

Where

β is the steady state throughput,

C is considered as the virtuallink capacity and

P is the marking probability.

At each link, ACO helps in updating the link using the ant pheromones and it is given as:

$$C' = \alpha\left(\gamma(\tau)C - \lambda\right)$$

where

λ is considered as the total flow of packets into link and

α is considered as the smoothing parameter.

d is considered as the feedback delay,

τ is considered as the pheromone update by the ACO

γ is considered as the utilization rate, which is updated by the ACO

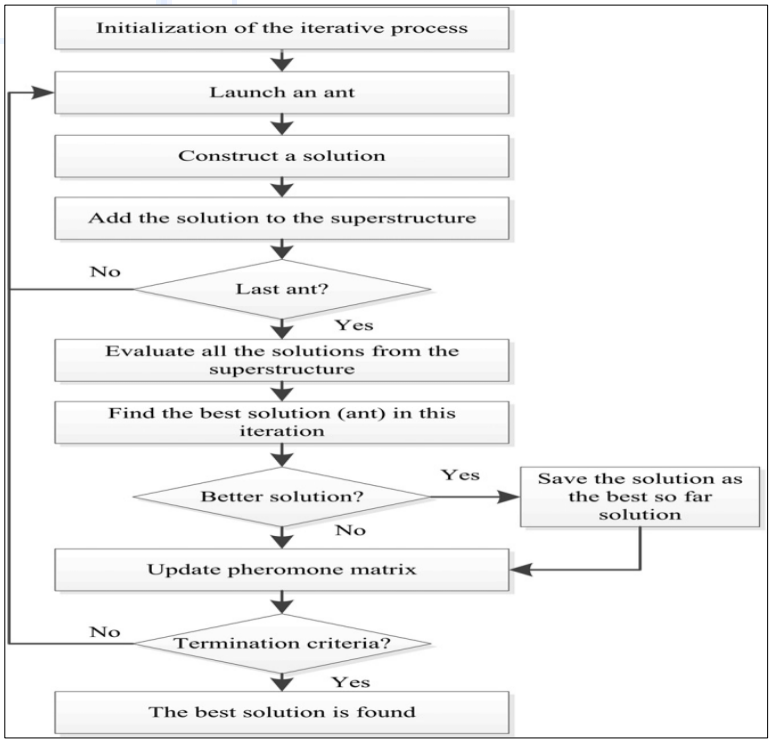


Fig. 1: ACO Process

Solution Construction:

It is noted that the value α offers a faster rate of adaption to changing network conditions [75]. The update at each link is stored in the ant update table at each iteration [76-81].

Each builds a full solution to the problem in compliance with a probabilistic transitional status rule in the iteration [82-89]. The law of state change relies primarily on the pheromone state and the ants' visibility [90]. Visibility is an external opportunity to improve performance in this process [91-95]. It has a reverse association with the distance between *i* and *j*, and it is expressed as η_{ij}. There is probabilistic node transformation law [96-101]. By integrating visibility and pheromone paths, the ant decision table is obtained as:

$$a_{ij}(t) = \frac{\left[\tau_{ij}(t)\right]^{\alpha}\left[\eta_{ij}\right]^{\beta}}{\sum_{l\in N_i}\left[\tau_{il}(t)\right]^{\alpha}\left[\eta_{il}\right]^{\beta}} \qquad \forall j \in N_i$$

The ant (*i*) is the packets and has the quantity of pheromones $\tau_{ij}(t)$ in the path *i* and *j*; N_i is considered as the neighbouring packets from the input devices *i* and β decide the pheromone's relative effect [102-107]. For node *i*, adjacent node *j* is chosen based on transition probability:

$$P_{ij}^{k}(t) = \frac{a_{ij}(t)}{\sum_{l\in N_i^k} a_{ij}(t)} \qquad \forall j \in N_i^k$$

Where *N* is the total list of adjacent nodes from node *i* to ant k at the time t.

Pheromone Updating Rule:

If each ant has found a solution, the strength of pheromone paths at each end of the pheromone update law is modified (global pheromone updating rule) [108-115]. Two steps are used to update the global pheromone law. Firstly, an evaporation process in which a fragment of the pheromone is evaporated, then a strengthening phase in which an elitist ant deposits a quantity of pheromone that has the strongest solution among others [116-121]:

$$\tau_{ij}(t+d) = (1-\rho)\tau_{ij}(t) + \rho\Delta\tau_{ij}^{+}$$

Where ρ (0<1) is regarded as the pheromones' persistence, (1-ρ) is considered as the evaporation rate, *d* is considered as the movements of ant, and $\Delta\tau_{ij}^{+}$ is considered as the total rate of pheromone increment, which is expressed as:

$$\Delta\tau_{ij}^{+} = \frac{1}{L^{+}}$$

Where L^{+} is considered as the length of solution from an elitist ant.

The local pheromone update at the end of each movement decreases the level of the pheromone trail on the roads chosen by this ant colony [122-129]. If an ant passes from *i* to *j*, the local update rules change the pheromone strength on the path between the two nodes as follows:

$$\tau_{ij}(t+1) = \xi\tau_{ij}(t)$$

Where ξ is considered a variable parameter representing the pheromone persistence required for updating the IVQ, this process gets iterated until a stopping criterion is met [130-139].

Results and Discussions

In order to compare the IVQ performance with existing algorithms, carried out simulations in OPNET [140-146]. We looked at 100Mbps connections with a latency of 50µsec (i.e. a km distance between each node pair) and a 1 msec search interval (T) [147-154]. To reduce the effect of the packet size, a limited packet size of 512 bits is needed [155-161].

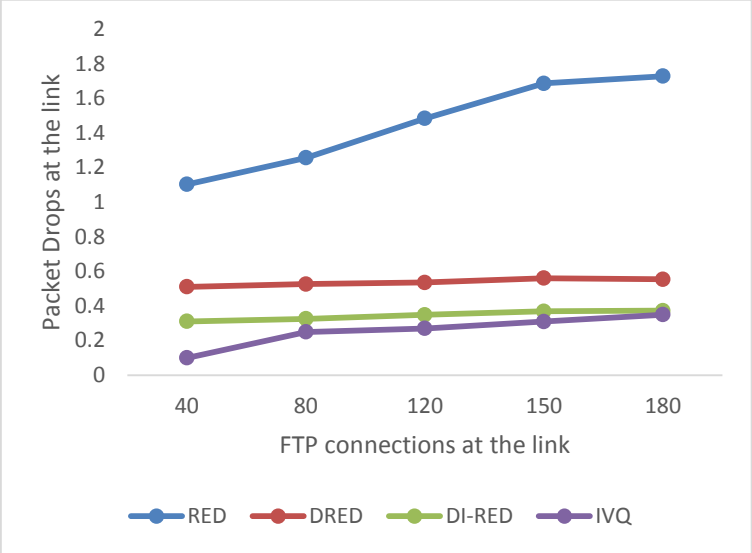


Fig. 2: Losses at the link

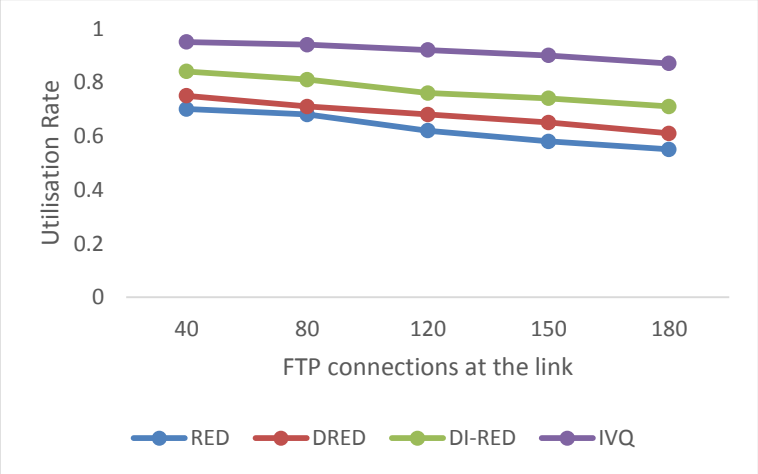


Fig. 3: Utilization at the link

Conclusion

In this paper, we proposed an improvised virtual queue (IVQ) algorithm to control massive data transmission, bandwidth utilization and congestion. The study models a multi-objective optimization function using the three constraints. It develops an anIVQ algorithm to maintain a trade-off between the constraints and offers effective congestion control over HSN. The study performs simulations to measure the effectiveness of properties of multi-objective optimization-based IVQ. The results show that the proposed congestion control mechanism offers improved throughput, delay, and packet drop rates than DI-RED, DRED, and RED.

References

1. Chavan, S., Malangadan, N., & Raina, G. (2016). TCP with virtual queue management policies: Stability and bifurcation analysis. IEEE/ACM Transactions on Networking, 25(2), 1020-1033.
2. Cao, X., Zhang, J., & Poor, H. V. (2018). A virtual-queue-based algorithm for constrained online convex optimization with applications to data center resource allocation. IEEE Journal of Selected Topics in Signal Processing, 12(4), 703-716.
3. Qin, J., Wang, Z., Gao, K., & Zhong, L. (2020). Failure-Aware and Delay-Predicted Multipath Virtual Queue Scheduling for Multimedia Transmission in Edge IoT. Mobile Information Systems, 2020.
4. Kaveh, A., Talatahari, S. (2009). Hybrid Algorithm of Harmony Search, Particle Swarm and Ant Colony for Structural Design Optimization. In: Geem, Z.W. (eds) Harmony Search Algorithms for Structural Design Optimization. Studies in Computational Intelligence, vol 239. Springer, Berlin, Heidelberg.
5. Miao, W., Yan, F., & Calabretta, N. (2016). Towards petabit/s all-optical flat data center networks based on WDM optical cross-connect switches with flow control. Journal of Lightwave Technology, 34(17), 4066-4075.
6. I. Khalifa, H. Abd Al-glil, and M. M. Abbassy, "Mobile hospitalization," International Journal of Computer Applications, vol. 80, no. 13, pp. 18–23, 2013.
7. W. M. Ead, M. M. Abbassy, and E. El-Abd, "A general framework information loss of utility-based anonymization in Data Publishing," Turkish Journal of Computer and Mathematics Education, vol. 12, no. 5, pp. 1450–1456, 2021.
8. W. M. Ead and M. M. Abbassy, "IOT based on plant diseases detection and classification," 2021 7th International Conference on Advanced Computing and Communication Systems (ICACCS), 2021.
9. W. M. Ead and M. M. Abbassy, "A general cyber hygiene approach for financial analytical environment," Financial Data Analytics, pp. 369–384, 2022.
10. W. Ead and M. Abbassy, "Intelligent Systems of Machine Learning Approaches for developing E-services portals," EAI Endorsed Transactions on Energy Web, p. 167292, 2018.
11. Swati Saxena, Shaikh Abdul Hannan, "Women Warrior – Android Mobile Application for Women Security" International Journal of Computer Science and Information Technologies, Volume 13, Issue 3, PP 76-84, India, June 2022.
12. Swati Saxena, Shaikh Abdul Hannan, "A Quaitative Review on Intervention of Robotics in Medical Science", International Journal of Computer Applications, Vol. 179, Number 46, 2021, USA.
13. Sinha Ashish Kumar, Hati Ananda Shankar, Benbouzid Mohamed and Chakrabarti Prasun "ANN-based Pattern Recognition for Induction Motor Broken Rotor Bar Monitoring under Supply Frequency Regulation" Machines (2021), vol: 9(5).
14. Shaikh Abdul Hannan, Manjusha Hivre, Lata, M., Krishna, B. H., Sathyasiva, S., & Arshad, M. W. "Brain damage detection using Machine learning approach", International Journal of Health Sciences, Special Issue 7, 27 Sept. 2022, PP 4910-4924.

15. Shaikh Abdul Hannan, An Examination of the Blockchain Technology: Challenges and Future Opportunities, International Journal of Engineering and Computer Science, Volume11 Issue 09 November2022, Page No.25612-25619.
16. Shaikh Abdul Hannan, "Application and Scope of Blockchain in Technical Research and Higher Education" Vol 20, Issue 15, page 6185-6191, NeuroQuantology, Nov 2022.
17. Shaikh Abdul Hannan, "An Overview of Big Data and Hadoop", International Journal of Computer Application", Volume 154, Number 10,, November 2016, New York, USA.
18. S. Derindere Köseoğlu, W. M. Ead, and M. M. Abbassy, "Basics of Financial Data Analytics," Financial Data Analytics, pp. 23–57, 2022.
19. R. A. Sadek, D. M. Abd-alazeem, and M. M. Abbassy, "A new energy-efficient multi-hop routing protocol for heterogeneous wireless sensor networks," International Journal of Advanced Computer Science and Applications, vol. 12, no. 11, 2021.
20. Prince, Hati Ananda Shankar, Chakrabarti Prasun, Abawajy Jemal Hussein and Ng Wee Keong "Development of Energy Efficient Drive for Ventilation System using Recurrent Neural Network," Neural Computing and Applications, Vol. 33, no. 14, pp. 8659-8668, 2021.
21. Prashant Kumar and Ananda Shankar Hati "Review on Machine Learning Algorithm Based Fault Detection in Induction Motors," Archives of Computational Methods in Engineering, vol: 28, pp: 1929-1940, 2021.
22. M.M.Abbassy, A.A. Mohamed "Mobile Expert System to Detect Liver Disease Kind", International Journal of Computer Applications, vol. 14, no. 5, pp. 320–324, 2016.
23. M. M. and S. Mesbah, "Effective e-government and citizens adoption in Egypt," International Journal of Computer Applications, vol. 133, no. 7, pp. 7–13, 2016.
24. M. M. Abbassy, "The human brain signal detection of Health Information System IN EDSAC: A novel cipher text attribute based encryption with EDSAC distributed storage access control," Journal of Advanced Research in Dynamical and Control Systems, vol. 12, no. SP7, pp. 858–868, 2020.
25. M. M. Abbassy, "Opinion mining for Arabic customer feedback using machine learning," Journal of Advanced Research in Dynamical and Control Systems, vol. 12, no. SP3, pp. 209–217, 2020.
26. M. M. Abbassy and W. M. Ead, "Intelligent Greenhouse Management System," 2020 6th International Conference on Advanced Computing and Communication Systems (ICACCS), 2020.
27. M. M. Abbassy and A. Abo-Alnadr, "Rule-based emotion AI in Arabic Customer Review," International Journal of Advanced Computer Science and Applications, vol. 10, no. 9, 2019.
28. Kumar Prashant and Hati, Ananda Shankar "Deep Convolutional Neural Network based on adaptive gradient optimizer for fault detection in SCIM," ISA Transactions, vol: 111, pp: 350-359, 2021.
29. Kumar Prashant and Hati, Ananda Shankar "Convolutional Neural Network with batch normalization for fault detection in SCIM," IET Electric Power Application, vol: 15, issue: 1, pp. 39-50, 2021.
30. I. Khalifa, H. Abd Al-glil, and M. M. Abbassy, "Mobile hospitalization for Kidney Transplantation," International Journal of Computer Applications, vol. 92, no. 6, pp. 25–29, 2014.

31. Hashem Shatnawi, "Computational Fluid Flow Model for the Development of an Arterial Bypass Graft", CFD Lett., vol. 14, no. 10, pp. 99-111, Oct. 2022.
32. Dubey, A., Mujoo, Shaikh Abdul Hannan., Satpathy, G., Arshad, M. W., & Manikandan, E., "Cancer detection using RNA sequencing and deep learning", International Journal of Health Sciences, Special Issue 7, 27 Sept. 2022, PP 4925-4939.
33. Arun Prasad, Shaikh Abdul Hannan, Kavita Panjwani, Muthe Ramu, Kawaender Singh Sidhu, Nagabhusanam Tida, "Detailed Investigation of the role of Artificial Intelligence in stock market predictions, British Journal of Administrative Management, Vol 58, Issue 06, 6th Sept 2022, UK.
34. Anupriya Kamble, Sonali Gaikwad Shaikh Abdul Hannan, Mohammed Alwazzab Alzaharani, Ramesh Manza, "Prediction of the State of Diabetes Disorder using Simple Decision Tree Classification Technique", Pensee Journal, Vol 51, issue 04, 2021.
35. Anupriya Kambe, Shaikh Abdul Hannan, Ramesh Manza and Mohammad Eid Alzahrani, "Prediction of Prediabetes, No Diabetes and Diabetes Mellitus -2 usnig Simple Decision Tree Classification" Springer, Rising Threats in Expert Applications and Solutions. 2021 at IIS University, 2021.
36. Ananda Shankar Hati, and T. K. Chatterjee, "Symmetrical component filter based online condition monitoring instrumentation system for mine winder motor" Measurement, vol. 82, pp. 284-300, 2016.
37. Prince and Hati Ananda Shankar "A Comprehensive Review of Energy-Efficiency of Ventilation System using Artificial Intelligence" Renewable and Sustainable Energy Reviews (2021), vol: 146, 2021 https://doi.org/10.1016/j.rser.2021-.111153.
38. Kumar Prashant and Hati, Ananda Shankar "Transfer Learning Based Deep CNN Model for Multiple Faults Detection in SCIM" Neural Computing and Applications (2021) https://doi.org/10.1007/s00521-021-06205-1.
39. Vatsa Aniket and Hati Ananda Shankar "Depolarization Current Prediction of Transformers OPI System Affected From Detrapped Charge Using LSTM," in IEEE Transactions on Instrumentation and Measurement, vol. 71, pp. 1-11, 2022, Art no. 2511711,
40. V. Venkatesh, N. Vijaya Lakshmi, P. Venkata Suresh, P, Mohana rao, K. Siva, G. Dhana Raju and N. Rama Rao, "Determination and validation of Modafinil in Pharmaceutical Formulation by Spectrophotometric and RP- HPLC Methods" Journal of Pharmacy research, 2011; 4(2):509-511.
41. Sinha Ashish Kumar, Kumar Prashant, Prince and Hati, Ananda Shankar, "ANN Based Fault Detection Scheme for Bearing Condition Monitoring in SRIMs using FFT, DWT and Band-pass Filters" 2020 International Conference on Power, Instrumentation, Control, and Computing (PICC) 2020 IEEE.
42. S. Patil, S. Chintamani, R. Kumar and B. H. Dennis, "Determination of orthotropic thermal conductivity in heat generating cylinder," in ASME 2016 International Mechanical Engineering Congress and Exposition, American Society of Mechanical Engineer, 2016.
43. S. Patil, S. Chintamani, J. Grisham, R. Kumar and B. H. Dennis, "Inverse Determination of Temperature Distribution in Partially Cooled Heat Generating Cylinder," in ASME 2015 International Mechanical Engineering Congress and Exposition , 2015.
44. S. Patil, S. Chintamani, B. Dennis and R. Kumar, "Real time prediction of internal temperature of heat generating bodies using neural network," Thermal Science and Engineering Progress, vol. 23, 2021.

45. R. Upreti, S. Chintamani, S. Patil, A. Akbariyeh and B. H. Dennis, "Stochastic finite element thermal analysis of ball grid array package"," Journal of Electronic Packaging, vol. 144, no. 1, 2022.

46. Prince Kumar and Hati, Ananda Shankar, "Sensor-less Speed Control of Ventilation System Using Extended Kalman Filter For High Performance," 2021 IEEE 8th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON), 2021, pp. 1-6.

47. Prince and Hati Ananda Shankar "Temperature and Humidity Dependent MRAS Based Speed Estimation Technique for Induction Motor used in Mine Ventilation Drive" Journal of Mining Science, 2021, Vol. 57, No. 5, pp. 842–851.

48. Prince and Hati Ananda Shankar "Convolutional Neural Network-Long Short Term Memory Optimization for Accurate Prediction of Airflow in a Ventilation System" Expert Systems with Applications (2022).

49. P. Venkata Suresh, Rama Rao.Nadendla "HPTLC Method for the Simultaneous Estimation of Etophylline and Theophylline in Tablet Dosage Forms"; Asian journal of chemistry, 2011, 23, 1,309-311.

50. P. Venkata Suresh, Rama Rao Nadendla and B. R. Challa; "Quantitative analysis of eletriptan in human plasma by HPLC-MS/MS and its application to pharmacokinetic study", Springer, Anal Bioanal Chem.2011 Nov; 401(8):2539-48. Epub.2011 Sep 3.

51. P. Venkata Suresh, Rama Rao Nadendla and B. R. Challa; "Quantification of Desloratadine in Human Plasma by LC-ESI-MS/MS and Application to a Pharmacokinetic Study"; Elsevier Limited; Journal of Pharmaceutical Analysis, issue 2 (2012), 180-187.

52. P. Venkata Suresh, Rama Rao Nadendla and B. R. Challa; "Quantification of sibutramine and its two metabolites in human plasma by LC–ESI-MS/MS and its application in a bioequivalence study"; Elsevier Limited; Journal of Pharmaceutical Analysis, Vol.2, issue 4, (2012),pp. 249-257.

53. P. Venkata Suresh, Rama Rao Nadendla and B. R. Challa; "Bio- analytical method development and validation of Valsartan by precipitation method with HPLC-MS/MS: Application to a pharmacokinetic study, Journal of Chemical and Pharmaceutical Research, 2013, 5(7):7-20.

54. O. Fabela, S. Patil, S. Chintamani and B. H. Dennis, "Estimation of effective thermal conductivity of porous Media utilizing inverse heat transfer analysis on cylindrical configuration," in ASME 2017 International Mechanical Engineering Congress and Exposition, 2017.

55. Nagamalleswari, G., D.Phanendra, Prabahar, A.E., P. Venkata Suresh, Ramarao, N., "Development and validation of chromatographic method for simultaneous estimation of levocetricine and phenylepherine in pharmaceutical dosage forms" International journal of advances in pharmaceutical research, 2013,Vol 4, issue 7, 1921-26.

56. M.P.Harshitha, P. Venkata Suresh, "Simultaneous determination of residual NSAIDS and antibiotics in raw milk by RP-HPLC", International Journal of Pharmaceutical Sciences and Research, 2014, Vol:5.

57. Kumar Prashant, Hati, Ananda Shankar, Sanjeevikumar Padmanaban, Leonowicz Zbigniew and Prasun Chakrabarti "Amalgamation of Transfer Learning and Deep Convolutional Neural Network for Multiple Fault Detection in SCIM" 2020 IEEE International Conference on Environment and Electrical Engineering and 2020 IEEE Industrial and Commercial Power Systems Europe (EEEIC/I&CPS Europe), 9th-12th June 2020, Madrid, Spain.

58. Kumar Prashant and Hati, Ananda Shankar "Support Vector Classifiers based broken rotor bar detection in Squirrel cage induction motor" Machines, Mechanisms and Robotics, Springer, Singapore, 429-438 DOI: 10.1007/978-981-16-0550-5

59. Kumar Prashant and Hati, Ananda Shankar "Dilated Convolutional Neural Network Based Model For Bearing Faults and Broken Rotor Bar Detection in Squirrel Cage Induction Motors" Expert Systems With Applications (2022).

60. K. Swathi, P. Venkata Suresh, A.Elphine Prabahar, "Colorimetric estimation of Ezetimibe in bulk and pharmaceutical dosage form by MBTH", Pharm analysis & quality assurance, 2014, 1-3.

61. J. Ashok Kumar, P. Venkata Suresh, J. Priyanka, R. Anusha, N. Geetha Anupama, A. E.Prabahar, Rama Rao. N, "A Rapid and Novel Green Analytical Chemistry method for estimation of minocycline hydrochloride in pharmaceutical formulations by Fourier Transform Mid Infrared (FT-MIR) spectroscopy" International Journal of Pharmaceutical Analysis, 2014, 39 (1), 1205 – 1209.

62. Hati, Ananda Shankar, and Chatterjee, T. K., "Some studies on condition monitoring techniques for online condition monitoring and fault diagnosis of mine winder motor", International Journal of Engineering Science and Technology (IJEST), vol. 4, no. 08, pp. 3785-3793, August 2012.

63. Hati, Ananda Shankar, and Chatterjee, T. K., "Current monitoring Instrumentation system for detecting airgap eccentricity in mine winder motor", International Journal of Applied Engineering Research, vol. 10, no. 22, pp. 43000-43007, 2015.

64. Hati, Ananda Shankar, and Chatterjee, T. K., "Axial leakage flux-based online condition monitoring instrumentation system for mine winder motor" Journal of Mines, Metals & Fuels, vol. 63, no. 5&6, pp. 132-140, May-June 2015.

65. Hati, Ananda Shankar, "Vibration monitoring instrumentation system for detecting airgap eccentricity in mine winder motor" Journal of Mine Metals and Fuels, vol. 64, no. 5&6, pp. 240-248, May-June 2016.

66. Gorai Rahul, Hati Ananda Shankar, and Maity Tanmoy, "A new cascaded multilevel converter topology with a reduced number of components" 3rd IEEE 2017 Conference on International conference on Power, Control, Signals and Instrumentation Engineering (ICPCSI-2017), 21-22 September 2017 | IEEE, Chennai, India., pp. 539-543.

67. Gollapalli Nagararaju, Karumudi Bhavya Sai, Kota Chandana, Madhu Gudipati, P.V.Suresh, Nadendla Ramarao; synthesis, evaluation of antioxidant and antimicrobial study of 2-substituted benzothiazole derivatives; Indo American Journal of Pharmaceutical Research; 2015, 50 (03), pg. 1288.

68. G. Nagamalleswari, P. Prachet, A.E. Prabahar, P.V. Suresh, N. Rama Rao; Enantio Separation By Hplc – A Review; IAJPR. 2015; 5(3): 1078-1083. N. Jaya Raju, Ch.Avinash, P.V. Suresh; Evaluation Of In Vitro Anthelmintic Activity Of Seed Extracts Of Thymus Serpyllum; IAJPR. 2015; 5(3): 1230-1233.

69. V. Venkatesh, A. Elphine Prabahar, P. Venkata Suresh, Ch. Uma Maheswari, and N. Rama Rao "RP-HPLC Method for Simultaneous Estimation of Azithromycin and Ambroxol Hydrochloride in Tablets" Asian journal of Chemistry, 2011, 23, 1,312-314.

70. P. Venkata Suresh, Rama Rao.Nadendla, "A New RP-HPLC Method For Simultaneous Estimation Of Etophylline And Theophylline In Tablets" Research Journal of Pharmacy and Technology; Vol: 4No:1: January-February: 2011.

71. V. Venkatesh, N. Vijaya Lakshmi, P. Venkata Suresh, Mohana rao, K. Siva, G. Dhana Raju and N. Rama Rao, "Determination and validation of Modafinil in Pharmaceutical Formulation by Spectrophotometric and RP- HPLC Methods"; Journal of Pharmacy Research, 2011; 4(2):509-511.

72. Jamadon, N.H.; Tan, A.W.; Yusof, F.; Ariga, T.; Miyashita, Y.; Hamdi, M. Utilization of a Porous Cu Interlayer for the Enhancement of Pb-Free Sn-3.0Ag-0.5Cu Solder Joint. Metals 2016, 6, 220.

73. A, V. V. ., T, S. ., S, S. N. ., & Rajest, D. S. S. . (2022). IoT-Based Automated Oxygen Pumping System for Acute Asthma Patients. European Journal of Life Safety and Stability (2660-9630), 19 (7), 8-34.

74. S. S. Rajest, R. Regin, S. T, J. A. C. G, and S. R, "Improving Infrastructure and Transportation Systems Using Internet of Things Based Smart City", CAJOTAS, vol. 3, no. 9, pp. 125-141, Sep. 2022.

75. Regin, R., Rajest , S. S., T , S., G, J. A. C., & R , S. (2022). An Organization's Strategy that is Backed by the Values and Visions of its Employees' Families. Central Asian Journal of Innovations on Tourism Management and Finance, 3(9), 81-96. Retrieved from https://cajitmf.centralasianstudies.org/index.php/CAJITMF/article/view/309

76. Regin, R., Rajest, S. S., T, S., Christabel G, J. A. and R, S. (2022) "The Influence that the Advertising of Pharmaceuticals has on the Economy", Central Asian Journal Of Social Sciences And History, 3(10), pp. 1-18.

77. Regin, D. R., Rajest, D. S. S., T, S., G, J. A. C., & R, S. (2022). An Automated Conversation System Using Natural Language Processing (NLP) Chatbot in Python. Central Asian Journal Of Medical And Natural Sciences, 3(4), 314-336.

78. Rajest, S. S. ., Regin, R. ., T, S. ., G, J. A. C. ., & R, S. . (2022). Production of Blockchains as Well as their Implementation. Vital Annex : International Journal of Novel Research in Advanced Sciences, 1(2), 21–44.

79. T, S., Rajest, S. S., Regin, R., Christabel G, J. A., & R, S. (2022). Automation And Control Of Industrial Operations Using Android Mobile Devices Based On The Internet Of Things. Central Asian Journal of Mathematical Theory and Computer Sciences, 3(9), 1-33.

80. Jerusha Angelene Christabel G, Shynu T, S. Suman Rajest, R. Regin, & Steffi. R. (2022). The use of Internet of Things (Iot) Technology in the Context of "Smart Gardens" is Becoming Increasingly Popular. International Journal of Biological Engineering and Agriculture, 1(2), 1–13.

81. R. Steffi, G. Jerusha Angelene Christabel, T. Shynu, S. Suman Rajest, R. Regin (2022), "A Method for the Administration of the Work Performed by Employees", Journal of Advanced Research in Dynamical and Control Systems, Vol.14, no.1, pp. 7-23.

82. R. Regin, Steffi. R, Jerusha Angelene Christabel G, Shynu T, S. Suman Rajest (2022), "Internet of Things (IoT) System Using Interrelated Computing Devices in Billing System", Journal of Advanced Research in Dynamical and Control Systems, Vol.14, no.1, pp. 24-40.

83. Jamadon, N.H., Ahmad, N.D., Yusof, F., Ariga, T., Miyashita, Y., Shukor, M.H.A. (2017). Effect of Isothermal Aging on Mechanical Properties of Sn-3.0Ag-0.5Cu Solder Alloy with Porous Cu Interlayer Addition. In: Awang, M. (eds) 2nd International Conference on Mechanical, Manufacturing and Process Plant Engineering. Lecture Notes in Mechanical Engineering. Springer, Singapore.

84. Hani, J.N.; Fadzil, J.M.; Farazila, Y.; Tadashi, A.; Yukio, M.; Hamdi, A.S.M. The Effect of Temperature on the Formation Behavior of Reaction Layer in Sn-3.0Ag-0.5Cu Solder Joint with the Addition of Porous Copper Interlayer. Materwiss Werksttech 2017, 48, 283–289,

85. Zahri, NAM, Yusof, F., Miyashita, Y. et al. Brazing of porous copper foam/copper with amorphous Cu-9.7Sn-5.7Ni-7.0P (wt%) filler metal: interfacial microstructure and diffusion behavior. Weld World 64, 209–217 (2020).

86. Nashrah Hani Jamadon, and Nurul Izaan Abdullah Halid, and Abu Bakar Sulong, and Mohd Hamdi Abd Shukor, and Miyashita, Yukio (2020) Evaluation of sintered hydroxyapatite (HA) via powder injection molding. Jurnal Kejuruteraan, 32 (4). pp. 671-676.

87. Basir, A., Sulong, A.B., Jamadon, N.H. et al. Process Parameters Used in Macro/Micro Powder Injection Molding: An Overview. Met. Mater. Int. 27, 2023–2045 (2021).

88. Basir, A.; Sulong, A.B.; Jamadon, N.H.; Muhamad, N. Feedstock Properties and Debinding Mechanism of Yttria-Stabilized Zirconia/ Stainless Steel 17-4PH Micro-Components Fabricated via Two-Component Micro-Powder Injection Molding Process. Ceram Int 2021, 47, 20476–20485.

89. Basir, A.; Sulong, A.B.; Jamadon, N.H.; Muhamad, N. Sintering Behavior of Bi-Material Micro-Component of 17-4PH Stainless Steel and Yttria-Stabilized Zirconia Produced by Two-Component Micro-Powder Injection Molding Process. Materials 2022, 15, 2059. https://doi.org/10.3390/ma15062059

90. Gnanasagaran, C.L.; Ramachandran, K.; Ramesh, S.; Ubenthiran, S.; Jamadon, N.H. Effect of Co-Doping Manganese Oxide and Titania on Sintering Behaviour and Mechanical Properties of Alumina. Ceram Int 2022.

91. Jamadon, N.H., Ahmad, M.A., Fuad, H.N.M., Adzila, S. (2023). Mechanical Properties of Injection-Molded Poly-Lactic Acid (PLA) Reinforced with Magnesium Hydroxide for Biomedical Application. In: Emamian, S.S., Awang, M., Razak, JA, Masset, PJ (eds) Advances in Material Science and Engineering. Lecture Notes in Mechanical Engineering. Springer, Singapore. https://doi.org/10.1007/978-981-19-3307-3_33

92. Ali-Mohammad Kamali , Milad Kazemiha, Behnam Keshtkarhesamabadi, Mohsan Daneshvari, Asadollah Zarifkar, Prasun Chakrabarti, Babak Kateb, Mohammad Nami "Simultaneous Transcranial and Transcutaneous Spinal Direct Current Stimulation to Enhance Athletic Performance Outcome in Experienced Boxers", Scientific Reports , 11 : 19722, 2021.

93. Xin Wang, Yuhao Zhou, Tingwen Huang, Prasun Chakrabarti , "Event-triggered Adaptive Fault-tolerant Control for a Class of Nonlinear Multiagent Systems with Sensor and Actuator Faults" , IEEE Transactions on Circuits and Systems I: Regular Papers, 2022.

94. Tuan Pham Van, Dung Vo Tien, Zbigniew Leonowicz , Michal Jasiński , Tomasz Sikorski , Prasun Chakrabarti "Online Rotor And Stator Resistance Estimation Based On Artificial Neural Network Applied In Sensorless Induction Motor Drive", Energies , 13 : 4946 , 2020.

95. Prince, Ananda Shankar Hati , Prasun Chakrabarti , Jemal Hussein , Ng Wee Keong , "Development of Energy Efficient Drive for Ventilation System using Recurrent Neural Network" , Neural Computing and Applications , 33 : 8659 , 2021.

96. Papiya Debnath, Pankaj Chittora, Tulika Chakrabarti, Prasun Chakrabarti, Zbigniew Leonowicz, Michal Jasinski , Radomir Gono, Elżbieta Jasińska, "Analysis of earthquake prediction in India using supervised machine learning classifiers", Sustainibility , 13(2) : 971 , 2021.

97. Pankaj Chittora, Sandeep Chaurasia, Prasun Chakrabarti, Gaurav Kumawat, Tulika Chakrabarti, Zbigniew Leonowiz, Michael Jaisinski, Lukasz Jaisinski, Radomir Gono, Elzbieta Jaisinski, Vadim Bolshev, "Prediction of Chronic Kidney Disease - A Machine Learning perspective", IEEE Access, 9 : 17312-17334,2021.

98. Imayanmosha Wahlang, Arnab Kumar Maji, Goutam Saha, Prasun Chakrabarti, Michał Jasiński , Zbigniew Leonowicz, Elzbieta Jasinska , "Deep Learning methods for classification of certain abnormalities in Echocardiography", Electronics , 10 : 495., 2021.

99. Rajkumar Soni , Prasun Chakrabarti , Zbigniew Leonowicz , Michal Jasinski , Krzysztof Wieczorek , Vadim Bolshev, "Estimation of Life Cycle of Distribution Transformer in Context to Furan Content Formation , Pollution Index and Dielectric Strength", IEEE Access, 9 : 37456, 2021.

100. Yogendra Singh Solanki, Prasun Chakrabarti, Michal Jasinski , Zbigniew Leonowicz, Vadim Bolshev , Alexander Vinogradov, Elzbieta Jasinska, Radomir Gono, Mohammad Nami , "A Hybrid Supervised Machine Learning Classifier System for Breast Cancer Prognosis Using Feature Selection and Data Imbalance Handling Approaches", Electronics ,10(6) : 699, 2021.

101. Siddhartha Bhattacharyya, Tulika Dutta, Sandip Dey, Somnath Mukhopadhayay, Prasun Chakrabarti , "Hyperspectral Multi-level Image Thresholding using Qutrit Genetic Algorithm Expert Systems With Applications", Expert Systems with Applications, 181 : 115107, 2021.

102. Ashish Kumar Sinha, Ananda Shankar Hati , Mohamed Benbouzid , Prasun Chakrabarti , "ANN-based Pattern Recognition for Induction Motor Broken Rotor Bar Monitoring under Supply Frequency Regulation", Machines , 9(5):87, 2021.

103. Sergey Senkevich, Vadim Bolshev, Ekaterina Ilchenko, Prasun Chakrabarti, Michał Jasiński, Zbigniew Leonowicz , Mikhail Chaplygin, "Elastic Damping Mechanism Optimization by Indefinite Lagrange Multipliers", IEEE Access,9 :71784,2021.

104. Akhilesh Kumar Sharma, Gaurav Aggarwal, Sachit Bhardwaj, Prasun Chakrabarti, Tulika Chakrabarti, Jemal Hussain, Siddhartha Bhattarcharyya, Richa Mishra, Anirban Das, Hairulnizam Mahdin, "Classification of Indian Classical Music with Time-Series Matching using Deep Learning", IEEE Access , 9 : 102041-102052 , 2021.

105. Tapan Behl, Anuja Singh ,Aayush Sehgal ,Sukhbir Singh , Neelam Sharma, Tanveer Naved, Saurabh Bhatia, Ahmed Al-Harrasi, Prasun Chakrabarti, Lotfi Aleya,Simona Bungau "Mechanistic Insights into the Role of B Cells in Rheumatoid Arthritis", International Immunopharmacology, 99 : 108078 , 2021.

106. Zuhaib Ashfaq Khan, Hafiz Husnain Raza Sherazi , Mubashir Ali, Muhammad Ali Imran, Ikram Ur Rehman, Prasun Chakrabarti , "Designing Wind Energy Harvester for Connected Vehicles in Green Cities", Energies , 14(17) :5408, 2021.

107. Abrar Ahmed Chhipa , Vinod Kumar, R. R. Joshi, Prasun Chakrabarti, Michal Jaisinski, Alessandro Burgio, Zbigniew Leonowicz, Elzbieta Jasinska, Rajkumar Soni, Tulika Chakrabarti, "Adaptive Neuro-fuzzy Inference System Based Maximum Power Tracking Controller for Variable Speed WECS", Energies ,14(19) :6275, 2021.

108. M A Berlin , N Upadhayaya, A Alghatani, V Tirth, S Islam, K Murali, P R Kshirsagar, Bui Thanh Hung, Prasun Chakrabarti , Pankaj Dadheech , "Novel hybrid artificial intelligence based algorithm to determine the effects of air pollution on human electroencephalogram signals", Journal of Environmental Protection and Ecology , 22(5): 1825-1835,2021.

109. M Abul Hasan, K Raghuveer, P S Pandey, Ashok Kumar, Ashim Bora, Deepa Jose, P R Kshirsagar, Bui Thanh Hung, Prasun Chakrabarti , M M Khanapurkar , "Internet of Things and its applications in Industry 4.0 for Smart Waste Management", Journal of Environmental Protection and Ecology , 22(6): 2368-2378,2021.

110. Vivek Jain, Prasun Chakrabarti , Massimo Mitolo , Zbigniew Leonowicz, Michal Jasinski , Alexander Vinogradov, , Vadim Bolshev , "A Power-Efficient Multichannel Low-Pass Filter Based on the Cascaded Multiple Accumulate Finite Impulse Response (CMFIR) Structure for Digital Image Processing", Circuits, Systems and Signal Processing , 2022 (http://doi.org/10.1007/s00034-022-01960-5).

111. Akhilesh Kumar Sharma, Shamik Tiwari, Gaurav Aggarwal, Nitika Goenka, Anil Kumar, Prasun Chakrabarti, Tulika Chakrabarti, Radomir Gono, Zbigniew Leonowicz, Michal Jasiński , "Dermatologist-Level Classification of Skin Cancer Using Cascaded Ensembling of Convolutional Neural Network and Handcrafted Features Based Deep Neural Network", IEEE Access , 10 : 17920-17932, 2022.

112. Tanima Bhattacharya, Debashrita Das, Giselle A. Borges e Soares, Prasun Chakrabarti, Zhaoquan Ai, Hitesh Chopra, Alexandru Madalin Hasan , Simona Cavalu , "Novel Green Approaches for the Preparation of Gold Nanoparticles and Their Promising Potential in Oncology", Processes , 10(2) : 426, 2022

113. Imayanmosha Wahlang, Arnab Kumar Maji , Goutam Saha, Prasun Chakrabarti, Michal Jasinski , Zbigniew Leonowicz, Elzbieta Jasinska , "Brain Magnetic Resonance Imaging Classification using Deep Learning Architectures with gender and age", Sensors , 22 :1766, 2022.

114. S. Hemalatha, Pravin R. Kshirsagar, Hariprasath Manoharan, N. Vasantha Gowri, A. Vani, Sana Qaiyum, P. Vijayakumar, Vineet Tirth,Sulaima Lebbe Abdul Haleem, Prasun Chakrabarti and Dawit Mamiru Teressa "Novel Link Establishment Communication Scheme against Selfish Attack Using Node Reward with Trust Level Evaluation Algorithm in MANET",Wireless Communications and Mobile Computing , 2022.

115. Gaurav Kumawat, Santosh Kumar Viswakarma, Prasun Chakrabarti , Pankaj Chittora, Tulika Chakrabarti , Jerry Chun-Wei Lin, "Prognosis of Cervical Cancer Disease by Applying Machine Learning Techniques", Journal of Circuits, Systems, and Computers, 2022

116. M Vasaghi , S Z Mousavi, M Owrangi, M Zadeh, Ali Kamali, Mehdi Dehghani, Prasun Chakrabarti, Mohammad Nami , "Neural Correlates in Functional Brain Mapping among Breast Cancer Survivors Receiving Different Chemotherapy Regimens; a qEEG/HEG – based Investigation", Japanese Journal of Clinical Oncology, 2022.

117. Maryam Owrangi, Mohammad Javad Gholamzadeh, Maryam Vasaghi Gharamaleki, Seyedeh Zahra Mousavi, Ali-Mohammad Kamali, Mehdi Dehghani, Prasun Chakrabarti , Mohammad Nami , "Comparative analysis of the chemotherapy-related cognitive impairments in patients with breast cancer: a community-based research", Cancer Investigation,2022.

118. Hariprasath Manoharan, Radha Krishna Rambola, Pravin R. Kshirsagar, Prasun Chakrabarti, Jarallah Alqahtani, Quadri Noorulhasan Naveed, Saiful Islam, Walelign Dinku Mekuriyaw, "Aerial Separation and Receiver Arrangements on Identifying Lung Syndromes Using the Artificial Neural Network", Computational Intelligence and Neuroscience, 2022.

119. Negin Farhadian , Alireza Moradi , Mohammad Nami , Kamran Kazemi , Mohammad Rasoul Ghadami , Alireza Ahmadi , Reza Mohammadi , Mohammad Naseh Talebi , Prasun Chakrabarti ,

Babak Kateb , Habibolah Khazaie , "The nexus between sleep disturbances and mental health outcomes in military staff – a systematic review", Sleep Science , 15(3), 2022.

120. Chakrabarti P., Bhuyan B., Chaudhuri A. and Bhunia C.T., "A novel approach towards realizing optimum data transfer and Automatic Variable Key (AVK)", International Journal of Computer Science and Network Security, 8(5), pp.241-250, 2008.
121. Chakrabarti P, Goswami P.S., "Approach towards realizing resource mining and secured information transfer", International Journal of Computer Science and Network Security, 8(7), pp.345-350, 2008.
122. Chakrabarti P., Choudhury A., Naik N. , Bhunia C.T., "Key generation in the light of mining and fuzzy rule", International Journal of Computer Science and Network Security, 8(9), pp.332-337, 2008.
123. Chakrabarti P., De S.K., Sikdar S.C., "Statistical Quantification of Gain Analysis in Strategic Management" , International Journal of Computer Science and Network Security,9(11), pp.315-318, 2009.
124. Chakrabarti P. , Basu J.K. , Kim T.H., "Business Planning in the light of Neuro-fuzzy and Predictive Forecasting", Communications in Computer and Information Science , 123, pp.283-290, 2010.
125. Prasad A. , Chakrabarti P., "Extending Access Management to maintain audit logs in cloud computing", International Journal of Advanced Computer Science and Applications ,5(3),pp.144-147, 2014.
126. Sharma A.K., Panwar A., Chakrabarti P. ,Viswakarma S., "Categorization of ICMR Using Feature Extraction Strategy and MIR with Ensemble Learning", Procedia Computer Science, 57,pp.686-694,2015.
127. K. Sridhar, Ajay Reddy Yeruva, Renjith P N, Asmita Dixit, Aatif Jamshed, and Ravi Rastogi, "Enhanced Machine learning algorithms Lightweight Ensemble Classification of Normal versus Leukemic Cel", Journal of Pharmaceutical Negative Results, Vol.13, no.SI-9, pp. 496–505, 2022.
128. Nita S. patil, Sanjay M. Patil, Chandrashekhar M. Raut, Amol P. Pande, Ajay Reddy Yeruva, and Harish Morwani, "An Efficient Approach for Object Detection using Deep Learning", Journal of Pharmaceutical Negative Results, Vol.13, no.SI-9, pp. 563–572, 2022.
129. A. Ahmad et al., "Energy Efficient Intrusion Detection in a heterogeneous environment of Wireless sensor networks," NeuroQuantology, vol. 20, no. 13, pp. 1493–1503, 2022.
130. F. Karim, H. Abulkasim, E. Alabdulkreem, N. Ahmed, M. Jamjoom, and S. Abbas, "Improvements on new quantum key agreement protocol with five-qubit Brown states," Modern Physics Letters A, vol. 37, p. 2250128, 2022.
131. H. Abulkasim, E. Alabdulkreem, and S. Hamad, "Improved Multi-party Quantum Key Agreement with Four-qubit Cluster States," CMC-Computers Materials & Continua, vol. 73, pp. 225-232, 2022.
132. H. Abulkasim, E. Alabdulkreem, F. Karim, N. Ahmed, M. Jamjoom, M. Hadjouni, et al., "Cryptanalysis and Improvements on Quantum Key Agreement Protocol Based on Quantum Search Algorithm," Security and Communication Networks, vol. 2022, 2022
133. H. Abulkasim, M. Jamjoom, and S. Abbas, "Securing Copyright Using 3D Objects Blind Watermarking Scheme," CMC-Computers Materials & Continua, vol. 72, pp. 5969-5983, 2022.

134. Elhadad, S. Hamad, A. Khalifa, and H. Abulkasim, "A steganography approach for hiding privacy in video surveillance systems," in Digital Media Steganography, ed: Elsevier, 2020, pp. 165-187.

135. Elhadad, S. Abbas, H. Abulkasim, and S. Hamad, "Improving the security of multi-party quantum key agreement with five-qubit Brown states," Computer Communications, vol. 159, pp. 155-160, 2020.

136. M. Jamjoom, H. Abulkasim, and S. Abbas, "Lightweight Authenticated Privacy-Preserving Secure Framework for the Internet of Vehicles," Security & Communication Networks, 2022.

137. H. Abulkasim and A. Alotaibi, "Improvement on 'multiparty quantum key agreement with four-qubit symmetric W state'," International Journal of Theoretical Physics, vol. 58, pp. 4235-4240, 2019.

138. B. R. Rajagopal, B. Anjanadevi, M. Tahreem, S. Kumar and M. Debnath, and K. Tongkachok, "Comparative Analysis of Blockchain Technology and Artificial Intelligence and its impact on Open Issues of Automation in Workplace," 2022 2nd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE), 2022, pp. 288-292.

139. B.R. Rajagopal, E. Kannapiran, A.D. Gupta, M.Momin and DSK Chakravarthy, "The future prospects and challenges of implementing big data in healthcare management using Structural equation model analysis," Bull. Env. Pharmacol. Life Sci., Spl Issue [1] 2022, pp. 1111-1119, 2022.

140. NP. Krishnam, M.S. Ashraf, B.R. Rajagopal,P.Vats and DSK Chakravarthy and S.M. Rafi, "Analysis Of Current Trends, Advances And Challenges Of Machine Learning (Ml) And Knowledge Extraction: From Ml To Explainable AI," Industry Qualifications The Institute of Administrative Management UK, Vol.58, pp. 54-62, May 2022.

141. A.D.Gupta, S.M. Rafi, B.R. Rajagopal, T.Milton and S.G.Hymlin, "Comparative analysis of internet of things (IoT) in supporting the health care professionals towards smart health research using correlation analysis," Bull.Env.Pharmacol. Life Sci., Spl Issue [1] 2022, pp. 701-708, 2022.

142. Roja Boina, "Assessing the Increasing Rate of Parkinson's Disease in the US and its Prevention Techniques", International Journal of Biotechnology Research and Development, 3(1), pp. 1-18, 2022.

143. K. Suresh and E. Parimalasundar, "A Modified Multi Level Inverter with Inverted SPWM Control," in IEEE Canadian Journal of Electrical and Computer Engineering, vol. 45, no. 2, pp. 99-104, Spring 2022.

144. K. Suresh and E. Parimalasundar, "A novel dual-leg DC-DC converter for wide range DC-AC conversion," Automatika, vol. 63, no. 3, pp.572-579, 2022.

145. Parimalasundar Ezhilvannan and Suresh Krishnan, "An efficient asymmetric direct current (DC) source configured switched capacitor multi-level inverter," Journal Européen des Systèmes Automatisés, vol. 53, no. 6, pp.853-859, 2020.

146. E. Parimalasundar, S. Jayakumar, R. Ravikumar and K. Suresh, "Investigation analysis of open circuit and short circuit fault on cascaded H-bridged multilevel inverter using artificial neural network approach," International Journal of Electrical and Electronics Research, vol. 10, no. 2, pp.320-326.

147. R. Oak, M. Du, D. Yan, H. Takawale, and I. Amit, "Malware detection on highly imbalanced data through sequence modeling," in Proceedings of the 12th ACM Workshop on Artificial Intelligence and Security - AISec'19, 2019.

148. R. Oak, "Poster: Adversarial examples for hate speech classifiers," in Proceedings of the 2019 ACM SIGSAC Conference on Computer and Communications Security, 2019.

149. R. Oak and M. Khare, "A novel architecture for continuous authentication using behavioural biometrics," in 2017 International Conference on Current Trends in Computer, Electrical, Electronics and Communication (CTCEEC), 2017, pp. 767–771.

150. R. Oak, "A literature survey on authentication using behavioural biometric techniques," in Intelligent Computing and Information and Communication, Singapore: Springer Singapore, 2018, pp. 173–181.

151. M. Khare and R. Oak, "Real-time distributed denial-of-service (DDoS) attack detection using decision trees for server performance maintenance," in Asset Analytics, Singapore: Springer Singapore, 2020, pp. 1–9.

152. S. Pandya, T. R. Gadekallu, P. K. Reddy, W. Wang and M. Alazab, "InfusedHeart: A Novel Knowledge-Infused Learning Framework for Diagnosis of Cardiovascular Events," in IEEE Transactions on Computational Social Systems, doi: 10.1109/TCSS.2022.3151643.

153. B. Arunadevi, D. Saravanan, K. Villallba-Condori, K. Srivastava, M. K. Chakravarthi and R. Rajan, "Orthographic Comparison Revealed by Ambient Sentiment Classification," 2021 5th International Conference on Electronics, Communication and Aerospace Technology (ICECA), pp. 834-838, 2021.

154. K. S. Rao, D. J. Pradeep, Y. V. Pavan Kumar, M. K. Chakravarthi and C. P. Reddy, "Quantitative Analysis on Open-Loop PI Tuning Methods for Liquid Level Control," 2021 4th International Symposium on Advanced Electrical and Communication Technologies (ISAECT), pp. 1-5, 2021.

155. R. Rajeswari, H. Raja, K. Srivastava, G. S. Sajja, M. K. Chakravarthi and R. Rajan, "Technologies for Systematic Procedure Generation of Enhanced Wound Care Devices Through Discriminative Intelligence," 2021 5th International Conference on Electronics, Communication and Aerospace Technology (ICECA), pp. 839-844, 2021.

156. M. K. Chakravarthi, Y. V. Pavan Kumar, D. J. Pradeep, C. P. Reddy, A. Vaishnavi and N. S. Greeshma Reddy, "Arduino Based PI Control for a Nonlinear TITO System Using LabVIEW," 2021 4th International Symposium on Advanced Electrical and Communication Technologies, pp. 1-6, 2021.

157. Sharma, DK; Singh, Bhopendra; Anam, Mamoona; Regin, R; Athikesavan, D; Chakravarthi, M Kalyan;," Applications of Two Separate Methods to Deal with a Small Dataset and a High Risk of Generalization", IEEE, 2nd International Conference on Smart Electronics and Communication (ICOSEC), pp. 1600-1606, 2021.

158. Vageesan, V; Chakravarthi, M Kalyan; Kumar, V Bharath; Charan, Godavarthi; ," Anoxic Microbial Methanogenic Detection For Food Safety Sustentation", IEEE, International Conference on Recent Trends on Electronics, Information, Communication & Technology (RTEICT), pp.495-498, 2021.

159. Sharma, DK, Singh, Bhopendra, Regin, R; Steffi, R, Chakravarthi, M Kalyan, "Efficient Classification for Neural Machines Interpretations based on Mathematical models",IEEE, 7th International Conference on Advanced Computing and Communication Systems (ICACCS), 1, pp.2015-2020, 2021.

160. Karthik, Mamidala Vijay, Chakravarthi, M Kalyan, Yapanto, Lis M, Selvapandian, D, Harish, R, Subramani, Karthick, "Optical Analysis of the UPQC using PI Controller in Power flow System"

2021 7th International Conference on Advanced Computing and Communication Systems (ICACCS),1 ,pp. 2006-2010, 2021.

161. Sathyaseelan, Mohit P, Chakravarthi, M Kalyan, Sathyaseelan, Amit P, Sudipta, Soumya, "IoT based COVID De-Escalation System using Bluetooth Low Level Energy",IEEE, 6th International Conference on Inventive Computation Technologies (ICICT), pp.174-177, 2021.