

# Prof. Dharmender Singh Kushwaha

## Books

- Data Structures: A Programming Approach with C – Dharmender Singh Kushwaha, Arun Kumar Misra, PHI, 2012
- Data Structures: A Programming Approach with C, Second Edition – Dharmender Singh Kushwaha, Arun Kumar Misra, PHI, 2014

## Patents

Sr. No.	Authors	Title	Date of Filing	Application No.	Field of Innovation	Published / Granted
1.	Dr. Biru Rajak, Dr. Dushyant Kumar Singh & Prof. Dharmender Singh Kushwaha	A Dynamic Emergency Vehicle Clearance System	26.04.2022	202211024605	COMPUTER SCIENCE	<b>Patent No.: 521324</b>  <b>Granted on: 07.03.2024</b>  Published 23.12.2022
2	Dr. Amrendra Singh Yadav, Prof. Dharmender Singh Kushwaha & Others	Smart AI based Indoor Air Purification device	20.07.2022	368067-001	COMPUTER SCIENCE	<b>Granted Date of Issue: 18.04.2023</b>
3.	Dr. Amrendra Singh Yadav, Prof. Dharmender Singh Kushwaha & Others	AI based Smart Glasses for Identifying Skin Disease	17.08.2022	369319-001	COMPUTER SCIENCE	<b>Granted on: 04.01.2023</b>  Design No. 369319-001

## Journal Papers (Indexed in SCIE/ESCI/Scopus/Others)

S.No.	Journal Paper	Name of Journal	Impact Factor
79.	OrthoHueHashChain: Distortion-Aware Hybrid Video Similarity With On-Chain Provenance, S Pandey, AP Singh, A Pandey, DS Kushwaha, IEEE Access 13, 198373-198389, 2025	IEEE Access (SCIE)	3.6

78.	HashWave: blockchain-powered perceptual hashing for resilient audio piracy detection against signal-processing attacks in decentralized networks, S Pandey, AP Singh, DS Kushwaha, A Pandey, Scientific Reports 15(1), 40320, 2025	Scientific Reports (Nature Portfolio) (SCIE)	3.9
77.	A Novel Approach To Analyse Infectivity Of Pre-Symptomatic Sars-Cov-2 Carriers Against Testing Delays, S Mallick, B Rajak, AK Verma, DS Kushwaha, International Journal of Computer Science and Network Security 25(1), 81-86, 2025	International Journal of Computer Science and Network Security (IJCSNS)	2.487
76.	CovMedCare: confluence of internet of things, blockchain and machine learning for remote monitoring system of pandemic patients, C Krishna, D Kumar, DS Kushwaha, The Journal of Supercomputing 81(1), 332, 2024	The Journal of Supercomputing (SCIE)	2.7
75.	MedBlockSure: Blockchain-based insurance system, C Krishna, D Kumar, DS Kushwaha, Cognitive Computation and Systems 6(4), 98-107, 2024	Cognitive Computation and Systems (ESCI)	1.3
74.	A survey on blockchain architecture and consensus mechanism: design vulnerability and security analysis, S Sharma, DS Kushwaha, International Journal of Cloud Computing 13(5), 485-547, 2024	International Journal of Cloud Computing (Scopus)	1.9
73.	Blockchain-based secure privacy-preserving vehicle accident and insurance registration, AS Yadav, V Charles, DK Pandey, S Gupta, T Gherman, DS Kushwaha, Expert Systems with Applications 230, 120651, 2023	Expert Systems with Applications (SCIE)	7.5
72.	Evolution of Blockchain and consensus mechanisms & its real-world applications, AS Yadav, N Singh, DS Kushwaha, Multimedia Tools and Applications 82(22), 34363-34408, 2023	Multimedia Tools and Applications (Scopus)	3.0
71.	A novel approach for suspicious activity detection with deep learning, N Dwivedi, DK Singh, DS Kushwaha, Multimedia Tools and Applications 82(21), 32397-32420, 2023	Multimedia Tools and Applications (Scopus)	3.0
70.	A Comprehensive Survey on Pandemic Patient Monitoring System: Enabling Technologies, Opportunities, and Research Challenges, C Krishna, D Kumar, DS Kushwaha, Wireless Personal Communications 131(3), 2125-2172, 2023	Wireless Personal Communications (SCIE)	1.9
69.	Performance of Optimized Security Overhead Using Clustering Technique Based on Fuzzy Logic for Mobile ad hoc Network, AS Yadav, A Singh, A Vidyarthi, RK Barik, DS Kushwaha, Cybernetics and Information Technologies 23(1), 94-109, 2023	Cybernetics and Information Technologies (ESCI)	1.2
68.	An Integrated Deep Learning Prediction Approach for Efficient Modelling of Host Load Patterns in Cloud Computing, E Patel, DS Kushwaha, Journal of Grid Computing 21(1), 5, 2023	Journal of Grid Computing (SCIE)	4.038
67.	Restoration and fuzzy logic-based formation of multipath routing protocol in MANET, AS Yadav, N Rakesh, A Vidyarthi, RK Barik, A Singhal, DS Kushwaha, International Journal of System Assurance Engineering and Management 14(Suppl 1), 117-132, 2023	International Journal of System Assurance Engineering and Management (ESCI)	2.02
66.	Distributed Ledger Technology-based land transaction system with trusted nodes consensus mechanism, AS Yadav, S Agrawal, DS Kushwaha, Journal of King Saud University - Computer and Information Sciences 34(8B), 6414-6424, 2022	Journal of King Saud University - Computer and Information Sciences (SCIE)	13.473
65.	Digitization of Land Record through Blockchain-based Consensus Algorithm, AS Yadav, DS Kushwaha, IETE Technical Review 39(4), 799-816, 2022	IETE Technical Review (SCIE)	2.2
64.	A hybrid CNN-LSTM model for predicting server load in cloud computing, E Patel, DS Kushwaha, The Journal of Supercomputing 78(8), 1-30, 2022	The Journal of Supercomputing (SCIE)	2.474
63.	Sidechain: storage land registry data using blockchain improve performance of search records, AS Yadav, N Singh, DS Kushwaha,	Cluster Computing (SCIE)	1.809

	Cluster Computing 25(2), 1475-1495, 2022		
62.	A scalable trust based consensus mechanism for secure and tamper free property transaction mechanism using DLT, AS Yadav, N Singh, DS Kushwaha, International Journal of System Assurance Engineering and Management 13(2), 735-751, 2022	International Journal of System Assurance Engineering and Management (ESCI)	0.300
61.	Employing data generation for visual weapon identification using Convolutional Neural Networks, N Dwivedi, DK Singh, DS Kushwaha, Multimedia Systems 28(1), 347-360, 2022	Multimedia Systems (SCIE)	2.018
60.	An efficient tasks scheduling algorithm for batch processing heterogeneous cloud environment, DK Shukla, D Kumar, DS Kushwaha, International Journal of Advanced Intelligence Paradigms 23(1-2), 203-216, 2022	International Journal of Advanced Intelligence Paradigms (Scopus)	0.617
59.	Blockchain-based digitization of land record through trust value-based consensus algorithm, AS Yadav, DS Kushwaha, Peer-to-Peer Networking and Applications 14(6), 3540-3558, 2021	Peer-to-Peer Networking and Applications (SCIE)	3.307
58.	An Efficient Congestion Avoiding Approach for Optimal Path Finding for Emergency Vehicle, B Rajak, S Mallick, DS Kushwaha, Recent Advances in Computer Science and Communications 14(7), 2113-2129, 2021	Recent Advances in Computer Science and Communications (Scopus)	1.06
57.	Makespan Optimization for Dependent Task Scheduling On Multiprocessing System Using Beta ABC, DK Shukla, D Kumar, DS Kushwaha, Journal of Adv. Research in Dynamical and Control Systems, 2020	Journal of Advanced Research in Dynamical and Control Systems (Scopus)	0.308
56.	Solving the Uncapacitated Single Allocation p-Hub Location Problem with Fixed Cost Using Anti-Predatory NIA, RK Sachan, DS Kushwaha, Recent Advances in Computer Science and Communications 14(7), 2288-2299, 2021	Recent Advances in Computer Science and Communications (Scopus)	1.06
55.	A Multi-Objective Anti-Predatory NIA for E-Commerce Logistics Optimization Problem, RK Sachan, DS Kushwaha, International Journal of Applied Metaheuristic Computing (IJAMC) 12(4), 1-27, 2021	International Journal of Applied Metaheuristic Computing (ESCI)	0.841
54.	Inspirations from Nature for Meta-Heuristic Algorithms: A Survey, RK Sachan, DS Kushwaha, Recent Advances in Computer Science and Communications 14(6), 1706-1718, 2021	Recent Advances in Computer Science and Communications (Scopus)	1.06
53.	Nature-Inspired Optimization Algorithms: Research Direction and Survey, RK Sachan, DS Kushwaha, IIT Kanpur, India, 2021	IIT Kanpur, India	
52.	Query Optimization in a Blockchain-based Land Registry Management System, AS Yadav, DS Kushwaha, Ingénierie des Systèmes d'Information 26(1), 13-21, 2021	Ingénierie des Systèmes d'Information (Scopus)	1.66
51.	Task scheduling to reduce energy consumption and makespan of cloud computing using NSGA-II, DK Shukla, D Kumar, DS Kushwaha, Materials Today: Proceedings, 2021	Materials Today: Proceedings (Scopus)	1.46
50.	A Best Effort Classification Model For Sars-Cov-2 Carriers Using Random Forest, S Mallick, B Rajak, AK Verma, DS Kushwaha, International Journal of Computer Science and Network Security (IJCSNS) 21(1), 27-33, 2021	International Journal of Computer Science and Network Security (ESCI)	1.5
49.	Network Traffic Vulnerability Analysis using Machine Learning - A comparative approach, S Mallick, DS Kushwaha, International Journal of Computer Science and Network Security 20(6), 28-35, 2020	International Journal of Computer Science and Network Security (ESCI)	1.5
48.	Simulation of Emergency Vehicle for Shortest Path in Sumo, B Rajak, DS Pradip, A Chandhoke, DS Kushwaha, New Horizons (UGC), 2021	New Horizons	
47.	Orientation Invariant Skeleton Feature (OISF): a new feature for Human Activity Recognition, N Dwivedi, DK Singh, DS Kushwaha, Multimedia Tools and Applications 79(29), 21037-21072, 2020	Multimedia Tools and Applications (SCIE)	2.313
46.	A Fuzzy Logic Based Software Development Cost Estimation Model with Improved Accuracy, S Mallick, DS Kushwaha, Journal of Mechanics of Continua and Mathematical Sciences 15(8), 254-264, 2020	Journal of Mechanics of Continua and Mathematical Sciences (ESCI)	2.8191

45.	Securing and Managing Army Cantonment in India Using Internet of Things, T Kumar, P Kukreja, DS Kushwaha, S Pippal, Journal of Mechanics of Continua and Mathematical Sciences 15(6), 434-448, 2020	Journal of Mechanics of Continua and Mathematical Sciences (ESCI)	2.8191
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43.	Creating a Dynamic Real Time Green Corridor and Assessing its Impact on Normal Traffic Flow, B Rajak, S Mallick, DS Kushwaha, Procedia Computer Science 171 (CoCoNet 2019), 2-11, 2020	Procedia Computer Science (Scopus)	0.883
42.	An Approach for Unattended Object Detection through Contour Formation using Background Subtraction, N Dwivedi, DK Singh, DS Kushwaha, Procedia Computer Science 171 (CoCoNet 2019), 1979-1988, 2020	Procedia Computer Science (Scopus)	0.883
41.	Clustering Cloud Workloads: K-Means vs Gaussian Mixture Model, E Patel, DS Kushwaha, Procedia Computer Science 171 (CoCoNet 2019), 158-167, 2020	Procedia Computer Science (Scopus)	0.883
40.	Solving the E-Commerce Logistic Problem using Anti-Predatory NIA, RK Sachan, T Kumar, DS Kushwaha, International Journal of Intelligent Engineering Informatics (IJIEI) 8(1), 54-76, 2020	International Journal of Intelligent Engineering Informatics (IJIEI) (ESCI)	1.173
39.	Anti-Predatory NIA for Unconstrained Mathematical Optimization Problems, RK Sachan, DS Kushwaha, International Journal of Swarm Intelligence Research (IJSIR) 11(1), 1-23, 2020	International Journal of Swarm Intelligence Research (IJSIR) (ESCI)	1.86
38.	An Efficient Emergency Vehicle Clearance Mechanism for Smart Cities, B Rajak, S Mallick, DS Kushwaha, Journal of Mechanics of Continua and Mathematical Sciences 14(5), 78-97, 2019	Journal of Mechanics of Continua and Mathematical Sciences (ESCI)	2.8191
37.	An Intelligent Reconnaissance Framework for Homeland Security, T Kumar, DS Kushwaha, Defence Science Journal 69(4), 361-368, 2019	Defence Science Journal (SCIE)	0.200
36.	An Intelligent Surveillance System based on IoT for Internal Security of a Nation, T Kumar, DS Kushwaha, International Journal of Information Security and Privacy (IJISP) 13(3), 1-30, 2019	International Journal of Information Security and Privacy (IJISP) (ESCI)	1.15
35.	A Generalized and Robust Anti-Predatory Nature-Inspired Algorithm for Complex Problems, RK Sachan, DS Kushwaha, International Journal of Applied Metaheuristic Computing (IJAMC) 10(1), 75-91, 2019	International Journal of Applied Metaheuristic Computing (ESCI)	0.841
34.	Traffic surveillance and speed limit violation detection system, T Kumar, DS Kushwaha, Journal of Intelligent & Fuzzy Systems 32(5), 3761-3773, 2017	Journal of Intelligent & Fuzzy Systems (SCIE)	1.737
33.	A Dynamic File Replication Based On CPU Load And Consistency Mechanism In A Trusted Distributed Environment, M Vardhan, DS Kushwaha, Tehnicki vjesnik-Technical Gazette 24(1), 147-160, 2017	Tehnicki vjesnik - Technical Gazette (SCIE)	0.644
32.	Automatic Intruder Combat System : A way to Smart Border Surveillance, DK Singh, DS Kushwaha, Defense Science Journal 67(1), 50-58, 2017	Defense Science Journal (SCIE)	0.200
31.	ILUT based Skin Colour Modelling for Human Detection, DK Singh, DS Kushwaha, Indian Journal of Science and Technology 9(32), 1-7, 2016	Indian Journal of Science & Technology (Scopus)	0.8
30.	Analysis of Face Feature based Human Detection Techniques, DK Singh, DS Kushwaha, International Journal of Control Theory and Applications 9(22), 173-180, 2016	International Journal of Control Theory and Applications (Scopus)	
29.	An Efficient Approach for Detection and Speed Estimation of Moving Vehicles, T Kumar, DS Kushwaha, Procedia Computer Science 89 (IMCIP 2016), 726-731, 2016	Procedia Computer Science (Scopus)	0.883
28.	Optimizing Basic COCOMO Model Using Simplified Genetic Algorithm, RK Sachan, A Nigam, A Singh, S Singh, M Choudhary, A Tiwari, DS Kushwaha, Procedia Computer Science 89 (IMCIP 2016), 492-498, 2016	Procedia Computer Science (Scopus)	0.883

27.	A metric for package level coupling, A Tripathi, DS Kushwaha, CSI Transactions on ICT (CSIT) 2(4), 217-233, 2015	CSI Transactions on ICT (CSIT)	
26.	A Versatile Approach for the Estimation of Software Development Effort Based on SRS Document, A Sharma, M Vardhan, DS Kushwaha, International Journal of Software Engineering and Knowledge Engineering (IJSEKE) 24(1), 1-42, 2014	International Journal of Software Engineering and Knowledge Engineering (IJSEKE) (SCIE)	0.644
25.	A Dynamic File Replication and Consistency Mechanism for Efficient Data Center Operation and its Formal Verification, M Vardhan, DS Kushwaha, Acta Polytechnica Hungarica 11(8), 65-85, 2014	Acta Polytechnica Hungarica (SCIE)	1.286
24.	A Dynamic Consistency Aware File Replication Mechanism & its Application in Data Centre, M Vardhan, DS Kushwaha, International Arab Journal of Information Technology (IAJIT), 2014	International Arab Journal of Information Technology (IAJIT) (SCIE)	0.410
23.	A simple, adaptable and efficient heterogeneous multi-tenant database architecture for ad hoc cloud, SK Pippal, DS Kushwaha, Journal of Cloud Computing: Advances, Systems and Applications 2(1), Article 5, 2013	Journal of Cloud Computing: Advances, Systems and Applications (SCIE)	2.788
22.	An Efficient Web Service Discovery Architecture for Static and Mobile Environments, S Mallick, DS Kushwaha, GSTF Journal on Computing (JoC) 3(1), 129-134, 2013	GSTF Journal on Computing (JoC)	2.276
21.	An empirical approach for early estimation of software testing effort using SRS document, A Sharma, DS Kushwaha, CSI Transactions on ICT 1(1), 51-66, 2013	CSI Transactions on ICT (CSIT)	
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19.	A Demand Based Load Balanced Service Replication Model, M Vardhan, S Mallick, S Mishra, DS Kushwaha, GSTF Journal on Computing (JoC) 2(4), 5-10, 2013	GSTF Journal on Computing (JoC)	2.276
18.	TBFR: A Threshold-Based File Replication Approach for Increased File Availability and its Formal Verification, M Vardhan, DS Kushwaha, International Journal of Information and Communication Technology 5(2), 97-121, 2013	International Journal of Information and Communication Technology (Scopus)	1.154
17.	A Dynamic Fault Tolerant Threshold based Replication Mechanism in Distributed Environment, M Vardhan, A Goel, A Verma, DS Kushwaha, Procedia Technology 6, 188-195, 2012	Procedia Computer Science (Scopus)	0.883
16.	Estimation of Software Development Effort from Requirements Based Complexity, A Sharma, DS Kushwaha, Procedia Technology 4, 716-722, 2012	Procedia Computer Science (Scopus)	0.883
15.	Hybrid reliable load balancing with MOSIX as middleware and its formal verification using process algebra, S Mishra, DS Kushwaha, AK Misra, Future Generation Computer Systems 27(5), 506-526, 2011	Future Generation Computer Systems (SCIE)	6.125
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13.	An Improved Backfilling Algorithm: SJF-B, A Mishra, S Mishra, DS Kushwaha, International Journal on Recent Trends in Engineering & Technology 5(01), 78-81, 2011	International Journal on Recent Trends in Engineering & Technology	4.490
12.	Formal Modeling of Hybrid Load Balancing Algorithm in Trusted Clusters, S Mishra, DS Kushwaha, AK Misra, International Journal on Recent Trends in Engineering & Technology 4(1), 123-128, 2010	International Journal on Recent Trends in Engineering and Technology	4.490
11.	An Efficient Web Service Discovery Architecture, S Mallick, DS Kushwaha, International Journal of Computer Applications 3(12), 1-5, 2010	International Journal of Computer Applications	0.835
10.	Hybrid Load Balancing in Auto-Configurable Trusted Clusters, S Mishra, DS Kushwaha, AK Misra, Journal of Computer Science and Engineering	Journal of Computer Science and Engineering	0.533

	2(1), 16-25, 2010			
9.	A Decentralized Approach for Service Discovery & Availability in P-Grids, R Vashishtha, A Gupta, P Gupta, S Mishra, DS Kushwaha, Journal of Computer Science and Engineering 1(1), 102-111, 2010	Journal of Computer Science and Engineering	0.533	
8.	A New Collaborative Trust Enhanced Security Model for Distributed System, A Kumari, S Mishra, DS Kushwaha, International Journal of Computer Applications 1(26), 117-124, 2010	International Journal of Computer Applications	0.835	
7.	A Complexity Measure based on Requirement Engineering Document, A Sharma, DS Kushwaha, Journal of Computer Science and Engineering 1(1), 112-117, 2010	Journal of Computer Science and Engineering	0.533	
6.	LWSDM: A Layered Web Service Discovery Mechanism, S Mallick, DS Kushwaha, International Journal of Advances in Information Science & Service Science 2(3), 25-31, 2010	International Journal of Advances in Information Science & Service Science	2.97	
5.	Creating Reusable Software Component from Object-Oriented Legacy System through Reverse Engineering, SK Mishra, DS Kushwaha, AK Misra, Journal of Object Technology 8(5), 133-152, 2009	Journal of Object Technology (Scopus)	1.31	
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2.	CICM: A Robust Method to Measure Cognitive Complexity of Procedural and Object-Oriented Programs, DS Kushwaha, RK Singh, AK Misra, WSEAS Transactions on Computers, 2348-2355, 2006	WSEAS Transactions on Computers (Scopus)		
1.	A Cognitive Complexity Metric Suite for Object-Oriented Software, DS Kushwaha, AK Misra, WSEAS Transactions on Computers, 604-611, 2006	WSEAS Transactions on Computers (Scopus)		

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27. Perceptual Hash Computation of Multimedia Objects Using Improved KL Transform, S Pandey, NR Pradhan, AP Singh, DS Kushwaha, Digital Communication and Soft Computing Approaches Towards Sustainable Energy Developments (ISSETA 2023), 61-69, 2024
26. Use Cases of Blockchain in Post-Covid Healthcare, C Krishna, D Kumar, DS Kushwaha, Integration of AI-Based Manufacturing and Industrial Engineering Systems with the Internet of Things, 167-179, CRC Press, 2023
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24. Warehouse Setup Problem in Logistics: A Truck Transportation Cost Model, RK Sachan, DS Kushwaha, Advances in Intelligent Systems and Computing 1229 (SAI 2020), 43-62, 2020
23. Analysis of Workloads for Cloud Infrastructure Capacity Planning, E Patel, DS Kushwaha, Advances in Intelligent Systems and Computing 847, 29-42, 2019 (Scopus)
22. Traffic Control and Management Over IoT for Clearance of Emergency Vehicle in Smart Cities, B Rajak, DS Kushwaha, Lecture Notes in Networks and Systems 40 (ICTCS 2017), 121-130, 2019 (Scopus)
21. An Approach for Traffic Congestion Detection and Traffic Control System, T Kumar, DS Kushwaha, Lecture Notes in Networks and Systems 40 (ICTCS 2017), 99-108, 2019 (Scopus)
20. Adapting and Reducing Cost in Cloud Paradigm (ARCCP), K Tripathi, DS Kushwaha, Advances in Intelligent Systems and Computing 654, 165-174, 2018 (Scopus)
19. Test Case Reduction Using Decision Table for Requirements Specifications, A Gupta, A Gupta, DS Kushwaha, Advances in Intelligent Systems and Computing 439 (ICICT 2015), 411-418, 2016 (Scopus)
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17. Tracking Movements of Humans in a Real-Time Surveillance Scene, DK Singh, DS Kushwaha, Advances in Intelligent Systems and Computing 437 (SocProS 2015), 491-500, 2016 (Scopus)

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12. Authentication and Authorization Interface Using Security Service Level Agreements for Accessing Cloud Services, D Bajpai, M Vardhan, DS Kushwaha, Contemporary Computing (IC3 2012), 370-382, 2012
11. On Demand Logical Resource Replication Scheme as a Service, M Vardhan, A Goel, A Verma, S Mishra, DS Kushwaha, Advances in Communication, Network, and Computing (CNC 2012), 31-36, 2012
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9. Load Balancing in Cluster Using BLCR Checkpoint/Restart, H Hariyale, M Vardhan, A Pandey, A Mishra, DS Kushwaha, Advances in Computing and Information Technology (ACC 2012), 729-737, 2012
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79. Enhanced Skin Lesion Classification Using CNN and Fine-Tuned VGG16 Model, D Chauhan, A Sharma, A Verma, DS Kushwaha, IEEE International Conference on Intelligent Signal Processing and Effective Communication Technologies (INSPECT 2024), 1-6, 2024
78. Vehicle-to-Vehicle Energy Trading Blockchain System for Electric Vehicles, AS Yadav, A Tripathi, A Kumar, DS Kushwaha, 16th International Conference on Knowledge and Smart Technology (KST 2024), 18-23, 2024
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75. The efficient consensus algorithm for land record management system, AS Yadav, S Shikha, S Gupta, DS Kushwaha, IOP Conference Series: Materials Science and Engineering 1022(1) (ICCRDA 2020), 012090, 2021 (Scopus)

74. VChain: Efficient Blockchain based Vehicular Communication Protocol, A Kumar, AS Yadav, DS Kushwaha, 10th International Conference on Cloud Computing, Data Science & Engineering (Confluence 2020), 762-768, 2020 (Scopus)
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71. Neural Network Based Classification of Virtual Machines in IaaS, E Patel, A Mohan, DS Kushwaha, 5th IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON 2018), 1-8, 2018 (Scopus)
70. Congestion control in software defined network, T Jain, DS Kushwaha, S Mallick, 5th IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON 2018), 1-5, 2018 (Scopus)
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