

Jitendra Kumar

(PhD, SMIEEE)

Assistant Professor

Department of Computer Applications

National Institute of Technology Tiruchirappalli

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Dr. Jitendra Kumar is an Assistant Professor with the Department of Computer Applications, National Institute of Technology Tiruchirappalli, Tamilnadu, India (*an institution of national importance*) since May, 2020. Dr. Kumar obtained a PhD in Machine Learning and Cloud Computing from National Institute of Technology Kurukshetra, Haryana, India in 2019. He conducts research on cloud resource management, optimization, nature-inspired algorithms. He has authored and published a significant number of research articles in peer reviewed and indexed journals and conferences of high repute. He is a senior member of IEEE and member of several other IEEE societies including CIS, TCCLD, SIGHT. He is also member of ACM and MIR Labs. He is an active review board member of various journals and conferences of repute like 'IEEE Transactions on Parallel and Distributed Systems', 'IEEE Transactions on Computers', 'IEEE Systems Journal', 'IEEE Access', 'IJCNN', 'FUZZ-IEEE', 'CEC', etc.

Objective

A career in research & academia where I can leverage my specialized background in machine learning for the advancement and welfare of the society.

Research Interests

Machine Learning, Time Series Analysis, Optimization, Cloud Computing

Education

Doctor of Philosophy

Oct 2015 - July 2019

National Institute of Technology Kurukshetra, India

Master of Technology

July 2011 - May 2013

Dayalbagh Educational Institute Agra, India

Master of Science

July 2009 - Dec 2010

Dayalbagh Educational Institute Agra, India

Bachelor of Computer Applications

July 2005 - Dec 2008

Dr. Bhimrao Ambedkar University Agra, India

Experience

National Institute of Technology Trichy, India

May 2020 - Present

Assistant Professor

- Teaching Data Analytics, Big Data Analytics, Introduction to Programming, and Object Oriented Analysis and Design
- Administrative Responsibilities at Institute Level: Anti Ragging Committee, Institutional Development & Alumni Relations Data Coordinator (CA Department), Verification Officer NIMCET-2021
- Administrative Responsibilities at Department Level: NBA Accreditation Committee (Co-coordinator, MCA), Syllabus Revision Committee (Co-coordinator, MCA), Accommodation & Space Allocation Committee, Coordinator Web Development, Performance Analysis Committee Chairman

GLA University Mathura, India

July 2019 - May 2020

Assistant Professor

- Subjects taught: Introduction to Machine Learning, Design and Analysis of Algorithms, Cloud Computing, Computer Organization
- Student Performance Monitoring Committee Member

Galgotias University Greater Noida, India

April 2014 - Oct 2015

Assistant Professor

- Subjects taught: Computer Programming & Problem Solving, Computer Graphics, Universal Human Values & Ethics
- Department Level Committee Member: Time Table, Result & Analysis, Anti Ragging

- Assisted in developing Online Admission System (<https://www.dei.ac.in/dei/admission/>)

- Assisted Dr. Lotika Singh to develop course notes, assignments, and lab manuals for Parallel Programming, Operating Systems, Introduction to Linux

Publications

Books

- Jitendra Kumar, Ashutosh Kumar Singh, Anand Mohan, Rajkumar Buyya, “[Machine Learning for Cloud Management](#)”, Chapman and Hall/CRC, 1st edition, 2021. (ISBN: 9780367626488)

Book Chapters

- Reshma MO, Jitendra Kumar, Abhishek Verma, “An Adaptive Deep Learning Approach for Stock Price Forecasting”, in *Advances in Cyber Security and Intelligent Analytics*, eds. (Abhishek Verma et al.), Chapman and Hall/CRC, , 2022, , pp. 1-1. (Accepted)

Journal Papers

Published/Accepted

- Niharika Singh, Jitendra Kumar, Ashutosh Kumar Singh, Anand Mohan, “Privacy-preserving multi-keyword hybrid search over encrypted data in cloud”, *Journal of Ambient Intelligence and Humanized Computing*. (SCI, Q1, Accepted, IF = 7.104, ISSN: 1868-5145)
- Jitendra Kumar, Ashutosh Kumar Singh, “[Performance evaluation of metaheuristic algorithms for workload prediction in cloud environment](#)”, *Applied Soft Computing*, vol. 113, Part A, 2021, pp. 107895. (SCI, Q1, IF = 6.725, ISSN: 1568-4946)
- Deepika Saxena, Ishu Gupta, Jitendra Kumar, Ashutosh Kumar Singh, Xiaoqing Wen, “[A Secure and Multi-objective Virtual Machine Placement Framework for Cloud DataCenter](#)”, *IEEE Systems Journal*, 2021 doi: 10.1109/JSYST.2021.3092521. (SCI, Q1, Accepted, IF = 3.931, ISSN: 1937-9234)
- Ashutosh Kumar Singh, Deepika Saxena, Jitendra Kumar, Vrinda Gupta, “[A quantum approach towards the adaptive prediction of cloud workloads](#)”, *IEEE Transactions on Parallel and Distributed Systems*, vol. 32, no. 12, 2021, pp. 2893-2905. (SCI, Q1, IF = 2.687, ISSN: 0018-9340)
- Jitendra Kumar, Ashutosh Kumar Singh, Rajkumar Buyya, “[Self directed learning based workload forecasting model for cloud resource management](#)”, *Information Sciences*, vol. 543, 2021, pp. 345-366. (SCI, Q1, IF = 6.795, ISSN: 0020-0255)
- Jitendra Kumar, Ashutosh Kumar Singh, Rajkumar Buyya, “[Ensemble learning based predictive framework for virtual machine resource request prediction](#)”, *Neurocomputing*, vol. 397, 2020, pp. 20-30. (SCI, Q1, IF = 5.719, ISSN: 0925-2312)
- Jitendra Kumar, Ashutosh Kumar Singh, “[Decomposition based cloud resource demand prediction using extreme learning machines](#)”, *Journal of Network and Systems Management*, vol. 28, 2020, pp. 1775-1793. (SCI, Q2, IF = 2.026, ISSN: 1064-7570)
- Jitendra Kumar, Deepika Saxena, Ashutosh Kumar Singh, Anand Mohan, “[BiPhase adaptive learning-based neural network model for cloud datacenter workload forecasting](#)”, *Soft Computing*, vol. 24, 2020, pp. 14593-14610. (SCI, Q2, IF = 3.643, ISSN: 1433-7479)
- Jitendra Kumar, Ashutosh Kumar Singh, Anand Mohan, “[Resource-efficient load-balancing framework for cloud data center networks](#)”, *ETRI Journal*, vol. 43, 2021, pp. 53-63. (SCI, Q2, IF = 1.374, ISSN: 1225-6463)

12. Jitendra Kumar, Ashutosh Kumar Singh, “[Cloud datacenter workload estimation using error preventive time series forecasting models](#)”, *Cluster Computing*, vol. 23, iss. 2, 2020, pp. 1363-1379. (**SCI, Q2**, *IF* = 1.809, **ISSN**: 1573-7543)
13. Jitendra Kumar, Ashutosh Kumar Singh, “[Performance assessment of time series forecasting models for cloud datacenters’ workload prediction](#)”, *Wireless Personal Communications*, vol. 116, 2021, pp. 1949-1969. (**SCI, Q3**, *IF* = 1.671, **ISSN**: 0929-6212)
14. Jitendra Kumar, Ashutosh Kumar Singh, “[Adaptive learning based prediction framework for cloud datacenter networks’ workload anticipation](#)”, *Journal of Information Science and Engineering*, vol. 36, iss. 5, 2020, pp. 981-992. (**SCI, Q2**, *IF* = 0.541, **ISSN**: 1016-2364)
15. Ashutosh Kumar Singh, Jitendra Kumar, “[Secure and energy aware load balancing framework for cloud data centre networks](#)”, *Electronics Letters*, vol. 55, iss. 9, May, 2019, pp. 540-541. (**SCI, Q2**, *IF* = 1.316, **ISSN**: 1350-911X)
16. Jitendra Kumar, Ashutosh Kumar Singh, “[An efficient machine learning approach for virtual machine resource demand prediction](#)”, *International Journal of Advanced Science and Technology*, vol. 123, February, 2019, pp. 21-30. (**Scopus**, **ISSN**: 2005-4238)
17. Jitendra Kumar, Ashutosh Kumar Singh, “[Workload prediction in cloud using artificial neural network and adaptive differential evolution](#)”, *Future Generation Computer Systems*, vol. 81, April, 2018, pp. 41-52. (**SCI, Q1**, *IF* = 7.187, **ISSN**: 0167-739X)
18. Jitendra Kumar, Rimsha Goomer, Ashutosh Kumar Singh, “[Long Short Term Memory Recurrent Neural Network \(LSTM-RNN\) based workload forecasting model for cloud datacenters](#)”, *Procedia Computer Science*, vol. 125, January, 2018, pp. 676-682. (**Scopus**, **ISSN**: 1877-0509)

Under Review

19. Deepika Saxena, Jitendra Kumar, Ashutosh Kumar Singh, Stefan Schmid, “Performance Analysis of Machine Learning Centered Workload Prediction Models for Cloud”, *IEEE Transactions on Parallel and Distributed Systems*. (Under Revision, **SCI, Q1**, *IF* = 2.687)
20. Ashutosh Kumar Singh, Jatinder Kumar, Deepika Saxena, Jitendra Kumar, Athanasios V. Vasilakos, “Power Consumption Forecast Model for Smart Grid based on Dual Phase-adaptive Differential Evolution Learning”, *IEEE Transactions on Power Systems*. (**SCI, Q1**, *IF* = 6.663)
21. Ashutosh Kumar Singh, Rishabh Gupta, Deepika Saxena, Jitendra Kumar, Stefan Schmid, “Maclaurin Series based Deep Neural Network Model for Preserving Data Privacy in Cloud Infrastructure”, *IEEE Transactions on Information Theory*. (**SCI, Q1**, *IF* = 2.501, **ISSN**: 1937-9234)
22. Sakshi Chhabara, Deepika Saxena, Jitendra Kumar, Ashutosh Kumar Singh, “Classified Dynamic Hierarchical Load Balancer for Cloud Data Centers”, *New Generation Computing*. (**SCI, Q3**, *IF* = 1.048)

Conference Papers

23. Sajeev Vijaykumar, Jitendra Kumar, “Cloud Resource Usage Forecasting Using Neural Network and Artificial Lizard Search Optimization”, *2022 10th IEEE Humanitarian Technology Conference (R10 HTC)*, 2022. (**Accepted**)
24. Jitendra Kumar, Ashutosh Kumar Singh, “[Cloud resource demand prediction using differential evolution based learning](#)”, *2019 7th International Conference on Smart Computing & Communications (ICSCC)*, Sarawak, Malaysia, Malaysia, 2019, pp. 1-5. (**Best Paper Award**), (**Scopus**)
25. Vartika Sharma, Sizman Kaur, Jitendra Kumar, Ashutosh Kumar Singh, “[A fast parkinson’s disease prediction technique using PCA and artificial neural network](#)”, *2019 International Conference on Intelligent Computing and Control Systems (ICICCS)*, Madurai, India, 2019, pp. 1491-1496. (**Scopus**)

26. Sukhman Singh, Tarun Kumar Madan, Jitendra Kumar, Ashutosh Kumar Singh, “[Stock market forecasting using machine learning: today and tomorrow](#)”, *Second International Conference on Intelligence Computing, Instrumentation and Control Technologies (ICICT-2019)*, Kannur, Kerla, India, 2019, pp. 738-745. (Scopus)
27. Preetesh K. Yadav, Sourav Pareek, Shaif Shakeel, Jitendra Kumar, Ashutosh Kumar Singh, “[Advancements and security issues of IoT & cyber physical systems](#)”, *2019 International Conference on Intelligent Computing and Control Systems (ICICCS)*, Madurai, India, 2019, pp. 940-945. (Scopus)
28. Jitendra Kumar, Ashutosh Kumar Singh, “[Dynamic resource scaling in cloud using neural network and black hole algorithm](#)”, *2016 Fifth International Conference on Eco-friendly Computing and Communication Systems (ICECCS)*, Bhopal, India, 2016, pp. 63-67. (*Best Paper Award*), (Scopus)
29. Mayank Dixit, Jitendra Kumar, Rajesh Kumar, “[Internet of things and its challenges](#)”, *2015 International Conference on Green Computing and Internet of Things (ICGCIoT)*, Noida, India, 2015, pp. 810-814. (Scopus)
30. Jitendra Kumar, Rajesh Kumar, Mayank Dixit, “[Result merging in meta-search engine using genetic algorithm](#)”, *International Conference on Computing, Communication & Automation (ICCCA)*, Noida, India, 2015, pp. 299-303. (Scopus)
31. Jitendra Kumar, Lotika Singh, Sandeep Paul, “[GPU based parallel cooperative Particle Swarm Optimization using C-CUDA: A case study](#)”, *2013 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE)*, Hyderabad, India, 2013, pp. 1-8. (Scopus)

Technical Reports

32. Pooja Tiwari, Simran Mehta, Nishtha Sakhuja, Jitendra Kumar, Ashutosh Kumar Singh, “[Credit Card Fraud Detection using Machine Learning: A Study](#)”, *arXiv:2108.10005*, 2021.
33. Harsh Mittal, Deepak Rikhari, Jitendra Kumar, Ashutosh Kumar Singh, “[A study on Machine Learning Approaches for Player Performance and Match Results Prediction](#)”, *arXiv:2018.10125*, 2021.

Research Funding

#P1: Forecasting and Management of Cloud Workloads using Quantum Evolutionary Algorithm

Principal Investigator

On-going

Funding Agency: National Institute of Technology Tiruchirappalli, India

Amount: ₹ 500,000

#P2: Automatic Detection and Monitoring of Plant Disease and Pests using Artificial Intelligence

Co-Investigator

Submitted

Funding Agency: Sony Research Award Program

Amount: ₹ 1,594,472

#P3: Development of Evolutionary Quantum Inspired Machine Learning Algorithms for Sustainable Workload Management in Cloud Computing

Principal Investigator

Submitted

Funding Agency: Science & Engineering Research Board, Govt. of India

Amount: ₹ 2,256,089

Editorship (Special Issue/Books/Magazine)

- Jonathan Wu, Thangarajah Akilan, Jitendra Kumar, Chengsheng Yuan, “Machine Vision Applications and Efficient Deep Learning Models for Resource-Limited Learning,” *Journal of Imaging*, MDPI, 2022. (Open for submission)
- Abhishek Verma, Jitendra Kumar, Hari Mohan Gaur, Vrijendra Singh, Valentina Emilia Balas, “Advances in Cyber Security and Intelligent Analytics,” CRC Press, 2022. (Under Compilation)
- Jitendra Kumar, G. R. Gangadharan, Ashutosh Kumar Singh, Chung-Nan Lee, *Cloud of Things: Foundations, Applications, and Challenges*, CRC Press, 2022. (Under Processing)

Fellowship & Awards

- Visvesvaraya PhD Scheme Fellowship, Ministry of Electronics & Information Technology, Govt. of India. [Oct 2015 - July 2019]
- Graduate Aptitude Test Engineering (GATE) Fellowship, Ministry of Human Resource & Development, Govt. of India. [July 2011 - May 2013]
- Best Paper Award, 2019 International Conference on Smart Computing & Communication (ICSCC), Curtin University, Malaysia.
- Best Paper Award, 2016 International Conference on Eco-friendly Computing & Communication Systems (ICECCS), MANIT Bhopal, India.
- Director Medal, MSc Examination 2011, Dayalbagh Educational Institute, Agra, India.

Research Collaborations

- National Institute of Technology Kurukshetra, India
- Indian Institute of Information Technology Design and Manufacturing Jabalpur, India
- Indian Institute of Information Technology Allahabad, India
- Indian Institute of Science Bangalore, India
- Delhi Technological University, New Delhi, India
- The University of Melbourne, Australia
- Lakehead University, Canada
- University of Windsor, Canada
- Nanjing University of Information Science and Technology, Nanjing, China
- National Sun Yat-sen University, Kaohsiung, Taiwan
- University of Arad, Romania

Professional Membership

- | | |
|---|---------------------|
| • Senior Member, Institute of Electrical and Electronics Engineers (IEEE) | Aug 2012 - Today |
| • Member, IEEE Computational Intelligence Society | Dec 2021 - Today |
| • Member, Association for Computing Machinery (ACM) | Jan 2021 - Today |
| • Member, IEEE SIGHT | Jan 2021 - Today |
| • Member, Machine Intelligence Research Labs | July 2020 - Today |
| • Member, IEEE Young Professionals | Jan 2014 - Today |
| • Member, Cloud Computing Community, IEEE | March 2013 - Today |
| • Member, IEEE Communications Society | Jan 2013 - Dec 2013 |

Student Supervision

PhD: 1 Ongoing

Masters: 1 Ongoing 15 Completed

Keynote/ Expert/ Invited Talks

- Presenting Scientific Data: Plots, Postscripts, and PDF Graphics in T_EX, National Institute of Technology, Kurukshetra, India. [March 15, 2022]
- Quantum Evolutionary Neural Network: Biological inspired computing and quantum principles, ABESIT College of Engineering, Ghaziabad, Uttar Pradesh, India. [Nov 25, 2021]
- Research Confront and Document Preparation using LaTeX, National Institute of Technology, Kurukshetra, India. [Aug, 2021]
- Evolutionary Neural Networks, PSNA College of Engineering & Technology, Dindigul, Tamilnadu, India. [Jan 14, 2021]
- Plots & Figures in L^AT_EX, ABESIT College of Engineering, Ghaziabad, Uttar Pradesh, India. [Feb 11, 2021]
- Machine Learning: Today and Tomorrow, Gulzar Group of Institutes, Ludhiana, Punjab, India. [Oct 6, 2020]

Presentations in Conferences

- 2017 International Conference on Smart Computing & Communications (ICSCC), Dec 7-8, 2017, National Institute of Technology, Kurukshetra, India
- 2016 Fifth International Conference on Eco-friendly Computing & Communication Systems (ICECCS), Dec 8-9, 2016, National Institute of Technology, Bhopal, India
- 2015 International Conference on Computing, Communications & Automation (ICCCA), May 15-16, 2015, Galgotias University, Greater Noida, India
- 2013 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), July 7-10, 2013, Hyderabad International Convention Center (HICC), Hyderabad, India

Seminar/ Workshop Attended

- E-Content Development, Aug 10-14, 2020, National Institute of Technology Tiruchirappalli, India
- High Impact Teaching Skills, Jan 13-15, 2020, GLA University, Mathura, India
- T3 IBM Workshop on Introduction to Artificial Intelligence & Machine Learning, Dec 30, 2019 - Jan 1, 2020, GLA University, Mathura, India
- T3 IBM Workshop on Security in Cloud, July 15-17, 2019, GLA University, Mathura, India
- One day seminar-cum-awareness program on Data Analysis, Nov 1, 2018, National Institute of Technology, Kurukshetra, India
- Multiobjective Optimization using Metaheuristics, March 3-7, 2018, Indian Institute of Technology Kanpur, India
- Research Evaluation Workshop, Visvesvaraya PhD Scheme for Electronics & IT/ITES, Nov 16-18, 2017, Andhra University, Visakhapatnam, India
- Article & Thesis Writing with L^AT_EX, March 30-31, 2017, National Institute of Technology, Kurukshetra, India
- International Workshop on Computational Intelligence and Applications, May 23-25, 2016, South Asian University, New Delhi, India
- National Workshop on Cyber Security: Innovations & Opportunities (CyberSec-2016), Feb 12-13, 2016, National Institute of Technology, Kurukshetra, India
- Workshop on Android development, July 27-29, 2015, Galgotias University, Greater Noida, India
- Workshop on Universal Human Values and Ethics, July 13-21, 2015, Galgotias University, Greater Noida, India
- Workshop on Mobile Application Development using IBM Worklight, Galgotias University, Greater Noida, India
- Bridges between Physics & Biology, March 31, 2013, Dayalbagh Educational Institute, Agra, India
- Engineering and Analysis of Evolutionary Algorithms (EAEA-2013), Jan 16-18, 2013, Dayalbagh Educational Institute, Agra, India
- Bio Inspired Systems, April 3, 2012, Dayalbagh Educational Institute, Agra, India
- Soft Computing Techniques for Biometric Technologies, March 30, 2010, Dayalbagh Educational Institute, Agra, India
- Dream Spark Yatra, Microsoft

Volunteer Activities

- Sixth International Conference on Smart Computing and Communication (ICSCC-2017)
- National IT Challenge for Youth with Disabilities 2016

Editorial/Review Board Member

- Editorial Board Member, Research Reports on Computer Science (RRCS)
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Transactions on Computers
- IEEE Systems Journal
- IEEE Access
- Future Generation Computer Systems, Elsevier
- Journal of Parallel and Distributed Computing, Elsevier
- Parallel Computing, Springer
- Journal of Supercomputing, Springer
- Applied Intelligence, Springer

- Engineering Optimization, Taylor & Francis
- Journal of Information Science & Engineering
- Pertanika Journal of Science & Technology (JST)
- Journal of Bionic Engineering, Springer
- 2022 IEEE World Congress on Computational Intelligence (IEEEWCCI2022), Italy
 - 2022 International Joint Conference on Neural Networks (IJCNN 2022)
 - 2022 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2022)
 - 2022 IEEE Congress on Evolutionary Computation (IEEE CEC 2022)
- 2021 IEEE conference on “IoT for Rural Healthcare 2021” (CIRH)
- 2021 International Conference on Emerging Trends and Technologies on Intelligent Systems
- 2020 International Conference on Decision Aid Sciences and Applications
- 2020 International Conference on Advances in Computing, Communication Control and Networking
- 2020 International Conference on Cutting-Edge Technologies in Computing and Communication Engineering
- 2017 Sixth International Conference on Smart Computing and Communications
- 2016 Fifth International Conference on Eco-friendly Computing and Communication Systems
- 2015 First International Conference on Computing, Communications and Automation

Competitions

- DExtreme, 6.0 IEEE Xtreme Programming Competition 2012
- Quantos, 11.0 IEEE Xtreme Programming Competition 2017

Conference Committee Member

- TPC Member, 2022 International Conf on Emerging Trends and Technologies on Intelligent Systems (ETTIS-2022)
- TPC Member, 2022 International Conference on Decision Aid Sciences and Applications (DASA-2022)
- TPC Member, 2022 International Conference on Communication Systems and Network Technologies (CSNT-2022)
- TPC Member, 2021 International Conference on Information Systems and Computer Networks (ISCON-2021)
- TPC Member, 2021 International Conf on Emerging Trends and Technologies on Intelligent Systems (ETTIS-2021)
- TPC Member, 2021 International Conference on Secure Cyber Computing and Communications (ICSCCC-2021)
- Session Chair, 2020 International Conference on Smart Communication and Imaging Systems (MEDCOM-2020)
- TPC Member, 2019 International Conference on Computing, Communication, and Intelligent Systems (ICCCIS-2019)
- Session Chair, 2015 International Conference on Computing, Communications & Automation (ICCCA-2015)

Research Assistant Supervision

- Hanna Dettki, Tübingen - Eberhard Karls Universität Tübingen, Germany [DAAD RISE 2021]
- Sanjeev Vijaykumar, National Institute of Technology Tiruchirappalli, India

References

Prof. Ashutosh Kumar Singh

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Prof. Rajkumar Buyya

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