



Sunirmal Khatua

Assistant Professor
Department of Computer Science & Engineering
University of Calcutta (Technology Campus)
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Personal Data

: Current Position: Assistant Professor
Department: Computer Science & Engineering
DoB: January 1, 1979
Specialization: Cloud Computing
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Awards

1. Visvesvaraya Young Faculty Award from DIC, Government of India, 2018.
2. Best Paper Award from IEEE ANTS, 2015.
3. Young Scientist International Travel Award from DST, Government of India, 2013.
4. Best Employee Award from Tejas Networks India Ltd, 2007.
5. Gold Medal in M.E. from Jadavpur University, 2006.
6. University Medal in M.E. from Jadavpur University, 2006.
7. UGC Scholarship for GATE, 2004-2006.
8. Merit Certificate in B.E., 2003.
9. National Scholarship in 10th Examination.

Academic Qualification

: Ph.D.(Tech.), Jadavpur University, Computer Science & Engineering
M.E., Jadavpur University, Computer Science & Engineering
B.E., Biju Patnaik University of Technology, Computer Science & Engineering

National Examinations

: JEST (for Ph.D.), Indian Institute of Science, 2006
GATE (for M.E.), IIT Madras, 2003

Professional Qualification

: Assistant Professor (Stage-II) in University of Calcutta since 2015.
Assistant Professor (Stage-I) in University of Calcutta, 2009 to 2015.
Lecturer in Jadavpur University, 2008 to 2009.
Research & Development Engineer in Tejas Networks (I) Ltd, 2007 to 2008.
Project Engineer in Wipro Technologies, 2006 to 2007.

Ongoing Research Projects

1. Object Identification through Syntactic as well as Semantic Interpretation from a given Scenario, Rs. 29,00,000/- funded by DRDO, 2017.
2. GPU Cluster Based Computing, SAP-DRS II, Rs. 1,89,00,000/- funded by UGC, 2015.

Courses Taught	: Computer Organization and Architecture Computer Networks Digital Electronics Distributed Systems Computer Graphics Wireless and Mobile Computing Cloud Computing
Research Interests	: Distributed and Cloud Computing Wireless and Mobile Computing Big Data, Internet of Things and 5G
Present Ph.D. Students	: Mr. Ranjan K. Maji, CISR Fellow (Thesis Submitted) Mr. Binay Ray, UGC-UPE Fellow (Thesis Submitted) Mr. Sudip Mondal, UGC Fellow Ms. Somashree Bhadra, Visvesvaraya PhD Fellow Ms. Anurina Tarafdar, UGC NET Fellow Mr. Kamalesh Karmakar, Faculty, MSIT
Publication in International Journals	: [J1] Binay Ray, Avirup Saha, Sunirmal Khatua & Sarbani Roy, “Proactive Fault-Tolerance Technique to Enhance Reliability of Cloud Service in Cloud Federation Environment” in IEEE Transactions on Cloud Computing (TCC) , Revision submitted, 2019, (IF:7.9) . [J2] Benay Ray, Sunirmal Khatua & Sarbani Roy, “Quality and Profit Assured Trusted Cloud Federation Formation Approach”, in IEEE Transactions on Services Computing (TSC) , doi: 10.1109/TSC.2018.2833854, ISSN:1939-1374, 2018, (IF:4.4) . [J3] Ranjan K. Maji, Sunirmal Khatua & Zhumur Ghosh, “A supervised ensemble approach for sensitive microRNA target prediction”, in IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB) , doi: 10.1109/TCBB.2018.2858252, ISSN: 1557-9964, 2018, (IF:2.4) . [J4] S. Bhattacharjee, R. Das, S. Khatua and S. Roy, “Energy-efficient migration techniques for cloud environment: a step toward green computing” in Springer Journal of Supercomputing , doi: 10.1007/s11227-019-02801-0, 2019, (IF:1.5) . [J5] B. Ray, A. Saha, S. Khatua and S. Roy, “Toward maximization of profit and quality of cloud federation: solution to cloud federation formation problem” in Springer Journal of Supercomputing , doi: 10.1007/s11227-018-2620-2, 2018, (IF:1.5) . [J6] Sunirmal Khatua, Preetam Sur, Rajib K. Das & Nandini Mukherjee, “Heuristic-based Resource Reservation Strategies for Public Cloud”, In IEEE Transactions on Cloud Computing (TCC) , vol. 4, no. 4, pp. 392-401, ISSN: 2168-7161, 2016, (IF:7.9) .

- [J7] Sanjay Mondal, Ranjan K. Maji, Zhumur Ghosh and S. Khatua, “ParStream-seq: An improved method of handling next generation sequence data”, in **Elsevier Genomics**, doi: 10.1016/j.ygeno.2018.11.014, 2018, **(IF:2.9)**.
- [J8] Somashree Bhadra, Anirban Kundu and Sunirmal Khatua, “Introducing Eco Friendly Urban Traffic Control Room: A Green Approach” in **International Journal of Green Computing (IJGC)**, 10.4018/IJGC.2017070105, 2017
- [J9] Sandipan Basu and Sunirmal Khatua, “Cloud Security: DDoS Defense Mechanisms”, in **International Journal of Modern Computer Science (IJMCS)**, vol. 4, no. 4, ISSN: 2320-7868, 2016.
- [J10] Subhankar Roy, Sudip Mondal, Sunirmal Khatua & Moumita Biswas, “An Efficient Compression Algorithm for Forthcoming New Species”, in **International Journal of Hybrid Information Technology (IJHIT)**, vol. 8, no. 11, pp. 323 - 332, ISSN: 1738-9968, 2015
- [J11] Subhankar Roy, Kumari Akash Bhagot, Annapurna Sharma & Sunirmal Khatua, “SBVRLDNAComp: An Effective DNA Sequence Compression Algorithm”, in **International Journal on Computational Science & Applications (IJCSA)**, vol. 5, no. 4, pp. 73-85, DOI:10.5121/ijcsa.2015.5407, 2015
- [J12] Ranjan K. Maji, Arijita Sarkar, Sunirmal Khatua, Subhasis Dasgupta and Zumur Ghosh, “PVT: an efficient computational procedure to speed up next generation sequence Analysis”, in **BMC Bioinformatics**, vol. 15, no. 1, pp. 1-15, DOI:10.1186/1471-2105-15-167, 2014, **(IF:2.2)**.
- [J13] Shubhankar Roy and Sunirmal Khatua, “Compression Algorithm for all Specified Bases in Nucleic Acid Sequences”, in **International Journal of Computer Applications (IJCA)**, vol. 75, no. 4, 2013.
- [J14] Subhankar Roy, Sunirmal Khatua, Sudipta Roy and Samir K. Bandyopadhyay, “An Efficient Biological Sequence Compression Technique Using LUT and Repeat in the Sequence”, in **IOSR Journal of Computer Engineering (IOSRJCE)** vol. 6, no. 1, pp.42-50, 2012.
- [J15] Shantanu Pal, Sunirmal Khatua, Nabendu Chaki & Sugata Sanyal, “A New Trusted and Collaborative Agent Based Approach for Ensuring Cloud Security”, in **Annals of Faculty Engineering Hunedoara International Journal of Engineering**, vol. 10, no. 1, ISSN:1584-2665, 2012.

Publication in International
Conferences

- : [C1] Biplab K. Sen, Sunirmal Khatua & Rajib K. Das, “Optimal Mapping of Applications on Data Centers in Sensor Cloud Environment”, in 5th International Doctoral Symposium on Application Computation and Security Systems (ACSS), Springer, pp. 131-142, doi:

- 10.1007/978-981-13-3250-0_10, 2019, India.
- [C2] Aradhita Mukherjee, Sudip Mondal, Nabendu Chaki and Sunirmal Khatua, “Naïve Bayes and Decision Tree Classifier for Streaming Data Using HBase”, in 5th International Doctoral Symposium on Application Computation and Security Systems (**ACSS**), Springer, pp. 105-116, doi: 10.1007/978-981-13-3250-0_8, 2019, India.
- [C3] Sudip Mondal and Sunirmal Khatua, “Accelerating Pairwise Sequence Alignment Algorithm by MapReduce Technique for Next-Generation Sequencing (NGS) Data Analysis”, in Emerging Technologies in Data Mining and Information Security, Springer, pp. 213-220, doi: 10.1007/978-981-13-1498-8_19, 2019, India.
- [C4] Benay Ray, Sunirmal Khatua, Sarbani Roy, “A Game Theoretic Model for Cloud Federation”, in Cloud Computing for Optimization: Foundations, Applications, Challenges, pp. 73-97, ISBN: 978-3-319-73676-1, Springer, 2018, India.
- [C5] Anurina Tarafdar, Rajib K. Das and Sunirmal Khatua, “QoS Aware Energy Efficient VM Consolidation Techniques for a Virtualized Data Center” in 11th International Conference on Utility and Cloud Computing (**UCC**), IEEE/ACM, pp. 114-123, doi: 10.1109/UCC.2018.00020, 2018, Switzerland.
- [C6] Benay Kumar Ray, Oindrilla Ghosh, Srimoyee Bhattacharjee, Sarbani Roy and Sunirmal Khatua, “OCPDA: A novel approach towards detection of overloaded cloud providers in a federated environment”, in International Conference on Advanced Networks and Telecommunications Systems (**ANTS**), IEEE, pp. 1 - 6, doi: 10.1109/ANTS.2018.8710148, 2018, India.
- [C7] Sharmistha Mandal, Sunirmal Khatua & Rajib K. Das, “Bid Selection for Deadline Constrained Jobs over Spot VMs in Computational Cloud”, in Distributed Computing and Internet Technology (**ICDCIT**), pp. 118-128, ISBN: 978-3-319-50471-1, Springer, 2017, India
- [C8] Srimoyee Bhattacharjee, Uttiya Sarkar, Sunirmal Khatua & Sarbani Roy, “PMM: A Novel Prediction Based VM Migration Scheme in Cloud Computing, in Distributed Computing and Internet Technology (**ICDCIT**), pp. 107-117, ISBN 978-3-319-50471-1, Springer, 2017, India.
- [C9] Benay Ray, Asif Middy, Sarbani Roy & Sunirmal Khatua, “Multi-Criteria Based Federation Selection in Cloud, In the proceedings of 9th International Conference on COMMunication Systems & NETworkS (**COMSNETS**), pp. 182 - 189, doi: 10.1109/COMSNETS.2017.7945375, IEEE, 2017, India.
- [C10] Srimoyee Bhattacharjee, Sunirmal Khatua and Sarbani Roy, “A review on energy efficient resource management strategies for cloud”, in 3rd International Doctoral Symposium on Application Computation and Security Systems (**ACSS**), Springer, pp. 3-15, doi: 10.1007/978-981-10-3391-9_1, 2017, India.

- [C11] Biplab K. Sen, Sunirmal Khatua & Rajib K. Das, “Target Coverage using a Collaborative Platform for Sensor Cloud”, in International Conference on Advanced Networks and Telecommunications Systems (**ANTS**), pp. 1-6, ISSN:2153-1684, IEEE, 2015, India.
- [C12] Sunirmal Khatua & Nandini Mukherjee, “Design of a Cloud Service Middleware to Utilize Free Minutes of Public Cloud Resources”, in 23rd Euromicro International Conference on Parallel, Distributed, and Network - Based Processing (**ICPADS**), pp. 514-519, DOI: 10.1109/PDP.2015.82, IEEE, 2015, Melbourne.
- [C13] Partha Sen and Sunirmal Khatua, “A Distributed approach towards Trusted Cloud Computing Platform”, in Applications and Innovations in Mobile Computing (**AIMoC**), pp. 146-151, doi: 10.1109/ AIMOC.2015.7083844, IEEE, 2015, India.
- [C14] Benay Roy, Sunirmal Khatua and Sarbani Roy, “Cloud Federation Using Game Theory”, in 11th International Conference on Distributed Computing and Internet Technology (**ICDCIT**), pp. 345-350, DOI: 10.1007/ 978-3-319-14977-6 36, Springer, 2015, India.
- [C15] Binay Roy, Sunirmal Khatua and Sarbani Roy, “Negotiation based service brokering using game theory, In the proceedings of Applications and Innovations in Mobile Computing (**AiMOC**), pp. 1-8, doi: 10.1109/ AIMOC.2014.6785511,IEEE, 2014, India.
- [C16] Sharmila Bakshi, Anupama Sinha, Sunirmal Khatua & Rajib K. Das, “Finding the Maximum lifetime data-gathering tree in sensor networks, In the proceedings of Intelligent Sensors, Sensor Networks and Information Processing (**ISSNIP**), pp.1-6, doi: 10.1109/ISSNIP.2014.6827596, IEEE, 2014, Singapore.
- [C17] Sunirmal Khatua, Moumita Manna & Nandini Mukherjee, “Prediction-Based Instant Resource Provisioning for Cloud Applications”, in 7th International Conference on Utility and Cloud Computing (**UCC**), pp. 597-602, ISBN: 978-1-4799-7881-6, IEEE/ACM, 2014, London.
- [C18] Sunirmal Khatua and Nandini Mukherjee, “Application-centric Resource Provisioning for Amazon EC2 Spot Instances”, in 19th European Conference on Parallel Processing (**Euro-Par**),pp. 267-278, doi:10.1007/978-3-642-40047-6_29, Springer, 2013, Germany.
- [C19] Sunirmal Khatua and Nandini Mukherjee, “A Novel Checkpointing Scheme for Amazon EC2 Spot Instances”, in 13th International Symposium on Cluster, Cloud and Grid Computing (**CCGrid**), pp.180-181, doi: 10.1109/CC-Grid.2013.71, IEEE, 2013, Netherlands.
- [C20] Anushua Dutta, Kunjal Thakkar, Sunirmal Khatua & Rajib K. Das, Power Efficient Data Gathering for Sensor Network”, in 9th International Conference on Distributed Computing and Internet Technology (**ICDCIT**), pp.232-243, doi:10.1007/978-3-642-

36071-8 18, Springer, 2013, India.

- [C21] Sunirmal Khatua, Anirban Ghosh & Nandini Mukherjee, “Application-centric Cloud Management”, in 9th International Conference on Computer Systems and Applications (**AICCSA**), pp.9-15, doi: 10.1109/AICCSA.2011.6126627, IEEE, 2011, Egypt.
- [C22] Sunirmal Khatua, Nandini Mukherjee & Nabendu Chaki, “A new agent based security framework for collaborative cloud environment”, in 7th Annual Workshop on Cyber Security and Information Intelligence Research (**CSIIRW**), pp.76-79, ISBN: 978-1-4503-0945-5, ACM, 2011, USA.
- [C23] Sunirmal Khatua, Anirban Ghosh & Nandini Mukherjee, “Optimizing the utilization of virtual resources in Cloud environment”, in International Conference on Virtual Environments, Human-Computer Interfaces and Measurement Systems (**VECIMS**), pp.82-87, DOI: 10.1109/VECIMS.2010.5609349, IEEE, 2010, Italy.
- [C24] Sunirmal Khatua, Subhasis Dasgupta & Nandini Mukherjee, “Pervasive Access To The Data Grid”, in **GCA**, pp.197-203, 2006, USA.

Invited Lectures

- : [L1] “Recent Trends in Internet of Things”, One day workshop on IoT and MBC, in **Supreme Knowledge Foundation**, Kolkata, 2019.
- [L2] “Role of Computing in Greener World: From Desktop to Cloud Based Solutions”, One day workshop in **Ramakrishna Mission Vidyamandira**, Kolkata, 2019.
- [L3] “QoS Aware Energy Efficient VM Consolidation Techniques for a Virtualized Data Center”, in **Technopark Zurich**, Switzerland, 2018.
- [L3] “Various Approaches towards Green Computing and Communication”, Short term course on Smart and Green ICT in **Jadavpur University**, Kolkata, 2018.
- [L4] “Cloud Computing and Big Data Analytics”, One week Faculty Development Program (FDP) in **Trident Group of Institutions**, Bhubaneswar, 2018.
- [L5] “A Grooming Session on Cloud Computing”, Two weeks Series of Lectures in **SOU University**, Bhubaneswar, 2017.
- [L6] “Big data analysis in Public Cloud Environment”, Two weeks Faculty Development Program (FDP) in **Jadavpur University**, Kolkata, 2016.
- [L7] “Cloud Computing and Big Data Analytics”, One day Seminar in **Pailan College of Management & Technology**, Kolkata, 2016.
- [L8] “Applications of Distributed Systems: Recent Trends”, One day Seminar in **Future Institute of Engineering and Management**, Kolkata, 2016.
- [L9] “Resource Optimization Techniques for Applications in Public Cloud”, One week Faculty Development Program(FDP) in **Narula Institute of Technology**,Kolkata,2016.
- [L10] “Cost Minimization Strategies for Public Cloud”, One week Winter School on Recent Advances in Wireless and Mobile Computing & Communications in **Jadavpur**

University, Kolkata, 2015.

[L11] “Cloud Computing and Associated Technologies”, One day Workshop organized by ITRA Project under Asia Media Lab, **Jadavpur University**, Kolkata, 2014.

[L12] “Application-Centric Resource Provisioning for Amazon EC2 Spot Instances”, in **Aachen University**, Germany, 2013.

[L13] “Introduction to Design Patterns, Orientation Course”, Two weeks Faculty Development Program (FDP) in **University of Calcutta**, Kolkata, 2013.

[L14] “Programmatic and management Aspects of Cloud Resources”, One week Winter School in **Jadavpur University**, Kolkata, 2013.

[L15] “Cloud Computing - Concepts, Architectures & Technologies”, One month Refresher Course organized by **Jadavpur University**, Kolkata, 2012.

[L16] “Using Amazon EC2 for Cloud Computing”, A memorial lecture in **Bengal Institute of Technology**, Kolkata, 2011.

[L17] “Grid and Cloud Computing”, One day workshop in **National Convention for Academics and Research**, Hyderabad, 2010.

[L18] “Introduction to Cloud Computing, One day workshop organized by IEEE Calcutta Chapter, **Jadavpur University**, Kolkata, 2010.

Professional Membership

: Member of IEEE, Member of ACM, Life Member of IETE.