



Dr. Satyananda Champati Rai, Ph.D.

Name : Satyananda Champati Rai

Designation : Professor

Department : Department of Computer Science and Engineering
(JOINED THE INSTITUTE IN 2001)

Contact : +918260333609-272 (O), +919078513157 (M)

Email : satya@silicon.ac.in & cr.satya@gmail.com

RESEARCH INTERESTS

1. Internet of Things
2. Machine Learning
3. Wireless Sensor Network
4. Mobile Computing
5. Cloud Computing

Academic Qualifications

Ph. D. (Computer Science), Utkal University, India

M. Tech. (Computer Science) Utkal University, India

PUBLICATIONS

BOOK/MONOGRAPH

- [1]. A. K. Nayak, **S. C. Rai** and R. Mall, Computer Network Simulation Using NS2: CRC Press, Taylor & Francis Group, 2016.
- [2]. **S. C. Rai**, QoS Provisioning in Mobile Ad Hoc Networks - Principles, Practices and Models, LAMBERT Academic Publishing, Germany, 2013, (Monograph).
- [3]. **S. C. Rai**, B. B. Mishra, and S. C. Nayak, Proceeding of NCICT 2011: Allied Publication, New Delhi, 2011, (Edited)

BOOK CHAPTER

- [1]. N.R.Das, **S.C.Rai**, A.K.Nayak, "Scheduling Operations of Smart Appliances Using Demand Response," Advances in Intelligent Computing and Communication, Springer Verlag, Switzerland, pp. 369-397, 2020.

JOURNAL

- [1]. K. Dhal, **S. C. Rai** and P.K.Pattnaik , LIKC: A Liberty of Encryption and Decryption through Imploration from K-Cloud Servers, In Journal of King Saud University- Computer and Information Sciences(Elsevier), 2020 (Inpress).
- [2]. Soumya P. Panda, A. K. Nayak, and **S. C. Rai**, "A survey on speech synthesis techniques in Indian Languages", Multimedia Systems, Vol. 26, No. 4, pp- 453-478, 2020.
- [3]. S. P. Nayak, **S. C. Rai**, S. Pradhan and J. K. Mantri, "RELAS: A Reliable Patient Monitoring System using IoT", IOS Press International Journal, Vol. 24, pp - 83-93, 2020.
- [4]. K. Dhal, P.K.Pattnaik and **S. C. Rai**, RACC: An efficient and revocable fine grained access control model for cloud storage, International Journal of Knowledge-based and Intelligent Engineering Systems, Vol. 23, No. 1, pp.21-32, 2019.
- [5]. S. P. Nayak, S. Das, **S. C. Rai**, S. K. Pradhan, "SIMAS: Smart IoT Model for Acute Stroke avoidance", International Journal of Sensor Network(IJSNET), vol. 30, pp. 83-92, 2019.
- [6]. N. R. Das, **S. C. Rai** and A. K. Nayak, "Performance analysis of heuristic optimization algorithms for demand side energy scheduling with TOU pricing", IJET, Vol.7, No.4, pp 3835-3842 , December 2018.
- [7]. R. K. Dalei, **S. C. Rai** and A. K. Nayak, "A Content Aware Framework with Optimal Path Selection in Wireless Sensor Networks," Journal of Engineering and Applied Sciences, 13 (20 SI), pp. 8629-8633, DOI:10.3923/jeasci.2018.8629.8633, 2018.
- [8]. S. P. Nayak, **S. C. Rai**, S. K. Pradhan, "An IoT Framework for Real-Time Event Detection and Acquisition Using Mobile Sink", International Journal of Engineering & Technology , vol. 7, pp. 466-473, 2018
- [9]. N. R. Das, **S. C. Rai**, A. K. Nayak, " Intelligent Scheduling of Demand Side Energy Usage in Smart Grid Using a Metaheuristic Approach," International Journal of Intelligent Systems and Applications, Vol. 6, pp. 30-39, 2018.
- [10]. R. K. Dalei, A. K. Nayak, **S. C. Rai**, "Low Energy Stable Election Content Matching Routing Protocol for Wireless Sensor Network," International Journal of Control Theory and Applications, Vol. 10, Issue. 13, 2017.
- [11]. N. R. Das, **S. C. Rai** and A. K. Nayak, "Optimization using Game Theory for Demand Side Management in Smart Grid: A Survey", IJACEN, Vol.5, No.5, pp. 39-44 ,July 2017.
- [12]. R. K. Dalei, A. K. Nayak, P. K. Tripathy and **S. C. Rai**, "Content Centric Framework for Wireless Sensor Networks," Journal of Engineering and Applied Sciences, 12 (22 SI), pp. 6234-6239, DOI:10.3923/jeasci.2017.6234.6239, 2017.
- [13]. S. P. Nayak, **S. C. Rai**, "A Performance Analysis of Energy Efficient Routing Protocols in Wireless Sensor Networks," International Journal of Innovations & Advancement in Computer Science (IJIACS), Vol. 4, pp. 248-255, 2015.

- [14]. B. K. Nayak, **S. C. Rai**, B. B. Misra, "A High Connectivity Routing for Diminishing Cluster Size in Wireless Sensor Network," International Journal of Computer Science & Informatics, Vol.2, Issue-3, pp.1-7, 2012.
- [15]. S. Kumar, **S. C. Rai**, R. Mall, and S. K. Pradhan, "MiCi: A Novel Micro-Level Temporal Channel Imploration for Mobile Hosts," InterJRI Computer Science and Networking, Vol. 2, Issue 1, pp. 1-7, August 2010.
- [16]. **S. C. Rai**, B. B. Mishra, A. K. Nayak, R. Mall and S. K. Pradhan, "A Multi-Objective QoS Optimization with Fuzzy based Parameter setting for Real-Time Multicasting," International Journal of Computer Science and Networking Systems, Vol. 3, pp. 530-539, June 2010.
- [17]. M. Nayak, **S. C. Rai**, "A Self-Constructed and Informed Multi-Topology in Mobile Ad hoc Networks," Siddhant: A Journal of Decision Making, Vol 7, No 2, pp. 95-102, Issue: April-June 2007.

CONFERENCE

- [1]. N. R. Das, M. Nayak, **S. C. Rai** and A. K. Nayak, An Analysis of Various Demand Response Techniques in Smart Grid, International Conference on Intelligent and Cloud Computing (ICICC 2019), Springer, pp. 511-520, 2020.
- [2]. K. Dhal, **S. C. Rai**, P.K.Pattnaik and S. Tripathy, KeySED: An Efficient Keyword based Search over Encrypted Data in Cloud Environment, In International Conference on Data Science and Engineering (ICDSE) , IEEE, pp.133-138, 2019.
- [3]. N. R. Das, **S. C. Rai** and A. K. Nayak, "Energy Cost Minimization with Reduced Dissatisfaction for Household Consumers", International Conference on Communication, Computing, Control and Devices (I4CD - 2018) (Springer), December 2018.
- [4]. R. K. Dalei, **S. C. Rai** and A. K. Nayak, "Content Routing Framework for Wireless Sensor Networks," International Conference on Recent Innovations in Electrical, Electronics & Communication Engineering - (ICRIEECE), Bhubaneswar, 27-28 July, 2018.
- [5]. S. P. Nayak, S. Lenka, **S. C. Rai** and S. K. Pradhan, "An Optimal Clustering Algorithm for Wireless Sensor Network," International Conference on Signal Processing and Communication (ICSPC), pp. 462-466, 2017.
- [6]. S. P. Nayak, **S. C. Rai** and S. Pradhan, "A Multi-clustering Approach to Achieve Energy Efficiency Using Mobile Sink in WSN," International Conference on Computational Intelligence in Data Mining, pp. 793-801, 2017.
- [7]. K. Dhal, P. K. Pattnaik and **S. C. Rai**, "Critique of Some Fine-Grained Access Control Models in Cloud Computing Environment," International Conference on Information Technology (ICIT 2016), pp. 206-211, 2016.
- [8]. K. Dhal, P. K. Pattnaik and **S. C. Rai**, "Efficient Attribute Revocation Scheme for Multi-authority Attribute Cloud Storage System," International Conference on Information Technology (ICIT 2016), pp. 200--205, 2016.
- [9]. R. K. Dalei, A. K. Nayak and S. C. Rai, "Real-Time Health Monitoring through Smart and Content-Aware Sensor Networks," in Proceedings of the International Conference on Medical Informatics (ICMI), February 2016.

- [10].S. P. Nayak, **S. C. Rai** and S. K. Pradhan, "MERA-A Multi-Clustered Energy Efficient Routing Algorithm in WSN," International Conference on Information Technology (ICIT 2015), Bhubaneswar, December 2015.
- [11].S. P. Nayak, **S. C. Rai** and S. K. Pradhan, "TIME: Supporting Topology Independent Mobility with Energy Efficient Routing in WSN," 1st International Conference on Next Generation Computing Technologies (NGCT 2015), Dehradun, 4-5 September, 2015.
- [12].B. K. Nayak, M. Mishra, **S. C. Rai** and S. K. Pradhan, "A Novel Cluster Head Selection Method for Energy Efficient Wireless Sensor Network," International Conference on Information Technology, pp. 53-57, December 22-24, Bhubaneswar, 2014.
- [13].B. B. Mishra, A. K. Nayak and **S. C. Rai**, "Achieving Energy Efficiency by Self-adjusting Sensing Range and Positioning in Wireless Sensor Networks," IEEE Second World Congress on Information and Communication Technologies} (WICT 2012), Trivandrum, October 30-November 02, 2012.
- [14].B. K. Nayak, **S. C. Rai** and B. B. Misra, "A High Connectivity Cluster Routing for Energy-Balanced Wireless Sensor Network," International Conference on Computing, Communication and Applications (ICCCA-2012), Madurai, February 22-24, 2012.
- [15].A. K. Nayak, B. B. Misra, **S. C. Rai**, "Energy Efficient Adaptive Sensing Range for Wireless Sensor Network," International Conference on Energy, Automation and Signal (ICEAS-2011), SOA University, Bhubaneswar, December 28-30, 2011.
- [16].A. K. Nayak, **S. C. Rai**, B. B. Misra, B.K. Satapathy and V. Krishna Kumari, "Estimation of Physical Properties of Calcined-Alumina using Swarm Evolved Neural Net," 2009 World Congress on Nature & Biologically Inspired Computing (NaBIC 2009)}, pp. 1264-1269, Coimbatore, December 9-11, 2009.
- [17].**S. C. Rai**, V. V. Sahoo, "A QoS Analysis of Ad-hoc Routing Protocols," National Conference on Modern Trends of Operating System (MTOS-2009), pp. 76-81, Bhubaneswar, March 28-29, 2009.
- [18].D. Sahoo, **S. C. Rai**, "An Evolutionary Approach for Secure Key Exchange Mechanism Among Mobile Hosts," Proc. of National Conference on Modern Trends of Operating System(MTOS-2009), pp. 65-70, Bhubaneswar, March 28-29, 2009.
- [19].D. Sahoo, **S. C. Rai** and S. K. Pradhan, "Threshold Cryptography & Genetic Algorithm Based Secure Key Exchange for Mobile Hosts," Proceedings of IEEE International Advanced Computing Conference (IACC-2009), pp. 1297-1302, Patiala, India, March 6-7, 2009.
- [20].**S. C. Rai**, B. B. Misra, A. K. Nayak, R. Mall and S. K. Pradhan, "A Multi-Objective Pareto-Optimal Genetic Algorithm for QoS Multicasting," Proceedings of IEEE International Advanced Computing Conference (IACC-2009), pp. 1303-1307, Patiala, India, March 6-7, 2009.
- [21].A. K. Nayak, **S. C. Rai**, R. Mall, S. Pradhan, "Comparison of Two Ad hoc Multicast Protocols," National Conference on Embedded Systems (NCESA-2009), pp. 29-38, Bhubaneswar, February 14-15, 2009.
- [22].N. Ray, M. Nayak, **S. C. Rai**, "Fare Share Demand Driven Routing Protocol for Mobile Ad-Hoc Wireless Network," National Conference on Recent

Advances and Future Trends in Information & Communication Technology (NCRAFT-2008), pp. 153-159, Baripada, India, January 19, 2008.

- [23]. D. Sahoo and **S. C. Rai**, "A Secure Key Exchange Mechanism in Ad-Hoc Networks," International Conference on Modeling and Simulation, pp. 1329-1334, Coimbatore, India, August 27-29, 2007.
- [24]. **S. C. Rai**, A. K. Nayak, "On-Demand QoS Routing for Multimedia Provisioning in Mobile Ad Hoc Networks," National Conference on Computational Intelligence and Its Application (NCCIA-2007), pp.135-143, Balasore, India, July 27, 2007.
- [25]. D. Sahoo, **S. C. Rai**, "SAM: A Secure Access Mechanism in Mobile Ad-Hoc Networks," National Conference on Information Technology (NCIT 2007), pp. 67-71, Bhubaneswar, May 16-17, 2007.
- [26]. **S. C. Rai**, A. K. Nayak, "A Survey on QoS Provisioning for MAC sub-layer of Mobile Ad Hoc Networks," National Seminar on Recent Trends in Information & Communication Technology (RTICT'05), pp. 56-62, Balasore, India, August 20, 2005.
- [27]. S. Dehuri, M. Satapathy, **S. C. Rai**, "An Intelligent Support System (ISS) for Geographically Scattered Data," All India Seminar on Geographical Information System, pp. 51-55, Bhubaneswar, March 27, 2004.

STUDENT GUIDANCE

PHD GUIDANCE

- [1]. **Rabindra Kumar Dalei**; Thesis Title - Energy Efficient Content Aware Routing in Wireless Sensor Networks, SOA Deemed to be University, Bhubaneswar, March 2019 .
- [2]. **Nilima Rani Das**; Thesis Title - Intelligent Control and Optimization of Energy Consumption in Smart Homes, SOA Deemed to be University, Bhubaneswar, August 2019.
- [3]. **Kasturi Dhal**; Thesis Title - Some Access Control Mechanism for Data Sharing in Cloud Computing Environment, KIIT Deemed to be University, Bhubaneswar, August 2020.
- [4]. **Samaleswari Prasad Nayak**; Thesis Title - Real-Time Healthcare with Cloud-Based Wireless Sensor Network, Utkal University, Vani Vihar, Bhubaneswar, November 2020.

M.TECH./B.TECH. PROJECT GUIDANCE

- ✓ I have supervised 25 M. Tech. students in their dissertation work.
- ✓ B. Tech. project supervised – more than 100

LIST OF PRESENTATIONS

- [1]. Scientific Computing using C / C++, An UGC Sponsored FDP at School of Mathematics Statistics and Computer Science, Utkal University, June 1-21, 2004.
- [2]. Internet Technology for the Professionals, An UGC Sponsored FDP at the Post Graduate Department of Computer Science and Application, Utkal University, May 15 to June 4, 2006.
- [3]. A Workshop on Computer Graphics and Multimedia, Department of CSE, IT & MCA, Jointly Organized by Krupajal Engineering College & Orissa Computer Application, Bhubaneswar, January 25-28, 2007.
- [4]. National Workshop on Network Simulator (NS2) & Its Applications (NWNS2-2012), Department of CSE and IT, Trident Academy of Technology, Bhubaneswar, March 17-20, 2012.
- [5]. National Workshop on Soft Computing Tools and It's Application, Dept. of CSE, Seemanta Engineering College, Baripada, May 20-24, 2013.
- [6]. Workshop on Network Simulation, Post Graduate Department of Computer Science & Application, Utkal University, Bhubaneswar, November 9-10, 2013.
- [7]. Workshop on Scientific Document Preparation using LaTeX, Department of CSE, IT & MCA, Silicon Institute of Technology, Bhubaneswar, December 28-29, 2015.
- [8]. Seminar on Cloud Computing and Internet of Things, Denkanal Autonomous College, Dhenkanal, 2nd December 2016.

- ✓ Member of IEEE, ACM, ISTE, OITS, IE, IAMI