



Soumya Nandan Mishra

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Ph.D. - Computer Science and Engineering

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EDUCATION

Qualification	School/College	Branch	Year	Percentage/CGPA
Ph.D.	IIT Guwahati	CSE	2020-Present	9.00
M.TECH (Research)	NIT Rourkela	CSE	2020	9.07
B.TECH	IIIT Bhubaneswar	CSE	2017	8.09
XII	IEMS Rourkela	Science	2013	92.20%
X	St. Paul's School Rourkela	Science	2011	89.14%

EXPERIENCE

- Dell** May 2016 - July 2016
Intern Hyderabad
 - Objective : Extracting diagnostic data from linux based servers and displaying faults as per the specifications .
 - Technology Stack : Python 2.7, MongoDB, PHP, PHP-MongoDB, HTML, CSS.
 - Platform - Linux (CentOs 7)

PROJECTS/THESIS

- IIITCampusApp (B.TECH major project)** January 2017 - April 2017
Under guidance of Dr. Tushar Ranjan Sahoo
 - Features : alerts, course related features, notes, noticeboard, bunk-o-meter
 - Technology Stack : JAVA, XML, MySQL
 - Platform - Android Studio
- Study of Routing Protocols for Low Power IoT Devices (M.TECH (Research) thesis)** July 2017 - June 2020
Under guidance of Dr. Suchismita Chinara
 - Objective: Modify existing IoT-based routing protocol to address challenges like scalability and energy efficiency.
 - Tool used : NS2, COOJA (Contiki OS)
- Adaptive Routing in LLN Networks for Mission-Critical IoT Applications (PhD thesis)** July 2020 - Present
Under guidance of Dr. Manas Khatua
 - Objective: Achieve hard reliability and bounded latency for Mission-Critical IoT Applications.
 - Tool used : COOJA (Contiki OS)

HANDS ON PROJECTS

- IoT Based Smart Anti-Theft System** October - November 2020
Under guidance of Dr. Manas Khatua
 - Implemented Attributes: Data acquisition module, communication module, Image capturing and face detection module, Data Visualization module
 - Components used: Arduino UNO, GSM module, PIR sensor, piezo buzzer, Web camera
 - Programming / Software used: Arduino IDE, Python, ThingSpeak cloud platform
- Smart Wheelchair Management System** August - October 2024
Guided M.TECH. students of IIT Guwahati for their IoT course project
 - Implemented Attributes: Wheelchair location detection, Occupancy of wheelchair, Alert notification
 - Components used: Node MCU, RFID card reader, buzzer, User Interface to display data
 - Programming / Software used: Arduino IDE, HTML

TECHNICAL SKILLS

- Programming:** C, Java, Python
- Tools/Softwares:** NS2 simulator, Cooja simulator, Arduino IDE, MATLAB, Android Studio, Eclipse, Latex, Gnuplot
- Hardware devices:** CC2650 Launchpad, CC2650 Sensor Tag, LoRa Radio module, Node MCU, Arduino UNO, Raspberry Pi, GSM module

TRAINING/ WORKSHOP

- **HP Summer course training in Android** *May 19, 2015 - June 18, 2015*
HP Summer Training Nodal Centre, Kolkata
- **NS-3 Training and workshop** *June 11, 2018 - June 15, 2018*
NIT Surathkal
- **Deep Learning workshop** *June 21, 2018 - June 22, 2018*
IIM Bangalore

HONORARIUM

- **Served as Teaching Assistant** for the online course “**Relational Database Management System**” conducted by IIT Guwahati on Coursera Platform - July 1 to November 25, 2024.
- **Served as Volunteer and Teaching Assistant** in a seven-day Workshop on "**Power Electronics Hardware Design with Microcontroller Programming**" organized by IIT Guwahati sponsored by the Science and Engineering Research Board (SERB), India, under the Accelerate Vigyan scheme - June 24 to June 30, 2023.

AWARDS AND RECOGNITIONS

- **Received best paper award** for presenting one of my PhD research works at the Securing and Managing Advanced Technologies for Industry 4.0 (SAMAT 4.0) Workshop, held as part of the 17th International Conference on Communication Systems & Networks (**COMSNETS 2025**).
- **Awarded Travel grant** for attending **COMSNETS 2025** Conference.
- **Qualified Graduate Aptitude Test in Engineering** (GATE) examination: GATE-2017.
- **Awarded Institute Scholarship for PhD**, IIT Guwahati (2020-2025).

RESEARCH INTERESTS

- **Internet of Things (IoT) Protocols**
 - Performance analysis and improvement of IoT Network Protocols
- **AI/ML/DL in IoT/IIoT**
 - ML/DL based IDS for IoT/IIoT
 - Artificial Intelligence of Things (AIoT)
- **Network Security**
 - Attack Detection in IoT/IIoT
 - Lightweight Authentication
- **Cyber Physical System Security**
 - Cyber attacks in Smart Micro-grid
 - Attack detection, User authentication

CONFERENCES/ JOURNALS/ BOOK CHAPTERS

- **Conferences**
 - **Soumya Nandan Mishra**, Manas Khatua. "Delay and Energy Efficient Multipath Selection for Achieving Hard Reliability in MC-IoT Network". IEEE International Conference on Communication Systems & Networks (**COMSNETS 2025**). Bengaluru, India.
 - **Soumya Nandan Mishra**, Manas Khatua. "Energy-Efficient Multipath Selection to Achieve Hard Reliability for Mission Critical data transmission in Industrial IoT". IEEE International Conference on Communication Systems & Networks (**COMSNETS 2025, SAMAT Workshop**). Bengaluru, India. [**Best Paper Award**]
 - **Soumya Nandan Mishra**, Manas Khatua. "Achieving Hard Reliability in RPL for Mission-Critical IoT Applications". IEEE World Forum on Internet of Things (**WF-IoT 2022**). Yokohama, Japan.
 - **Soumya Nandan Mishra**, Manu Ellapila, Suchismita Chinara. "Development of Survival Path Routing Protocol for Scalable Wireless Sensor Networks". IEEE International Conference on Information Technology (**ICIT 2018**). Bhubaneswar, India.

- **Soumya Nandan Mishra**, Suchismita Chinara. "CA-RPL: A Clustered Additive Approach in RPL for IoT Based Scalable Networks". Springer EAI International Conference on Ubiquitous Communications and Network Computing (**UBICNET 2019**). Bengaluru, India.
- **Soumya Nandan Mishra**, Manu Ellapila, Suchismita Chinara. "EHA-RPL: A Composite Routing Technique in IoT Application Networks". Springer International Conference on Sustainable Technologies for Computational Intelligence (**ICTSCI 2019**). Jaipur, India.
- Anchal Chaurasia, **Soumya Nandan Mishra**, Suchismita Chinara. "Performance Evaluation of Software-Defined Wireless Networks in IT-SDN and Mininet-WiFi". IEEE International Conference on Advances in Information Technology (**ICAIT 2019**). Chikmagalur, India.
- Ranjit Kumar, Suchismita Chinara. **Soumya Nandan Mishra**. "CBUC: A Connectivity Based Unequal Clustering Protocol for Scalable Wireless Sensor Networks". ISER International Conference on Science, Technology, Engineering and Management (**ICSTEM 2019**). Bali, Indonesia.
- Prabin Kumar, Neelam Mahapatro, **Soumya Nandan Mishra**. "Automation System for Secure Remote Control and Surveillance". IEEE International Conference on Computer, Electrical & Communication Engineering (**ICCECE 2020**). Kolkata, India.
- **Journal**
 - **S. N. Mishra** and M. Khatua, "Reliable and Delay Efficient Multi-Path RPL for Mission Critical IoT Applications," **IEEE Transactions on Mobile Computing**, vol. 23, no. 6, pp. 6983–6996, June 2024.
 - **S. N. Mishra** and M. Khatua, "Game Theoretic Congestion Control to Achieve Hard Reliability in Mission-Critical IoT," **IEEE Transactions on Mobile Computing**, vol. 23, no. 12, pp. 14159–14170, Dec. 2024.
 - **S. N. Mishra** and M. Khatua, "Reliability-Aware Packet Replication in Multi-Path Data Transmission for Mission-Critical IoT Networks," **Ad Hoc Networks**.(Accepted)
 - Manu Ellapila, **Soumya Nandan Mishra**, Suchismita Chinara. "RPL Adaptation with Survivable Path Routing for IoT Applications". **INFOCOMP Journal of Computer Science 2019**.
- **Book chapters**
 - Suchismita Chinara, Ruchira Naskar, Jamimamul Bakas and **Soumya Nandan Mishra** "Illegitimate EPR Modification: A major threat in IoT based healthcare system and its remedy through blind forensic measures" in **IoT: Security And Privacy Paradigm**, CRC Press, Taylor & Francis Group
 - Suchismita Chinara, Ranjit Kumar and **Soumya Nandan Mishra** "IoT: Foundations and Applications" in **IoT: Security And Privacy Paradigm**, CRC Press, Taylor & Francis Group

REFEREES

- **Dr. Manas Khatua**
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