Dr. Ilora Maity

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Date of Birth: 07 Sep 1986
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LinkedIn: https://www.linkedin.com/in/dr-ilora-maity-phd-936872b8/
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Google Scholar: https://scholar.google.co.in/citations?hl=en&user=SbGeTGMAAAAJ
ResearchGate: https://www.researchgate.net/profile/Ilora-Maity

"*Perfection is not attainable, but if we chase perfection, we can catch excellence.*" – Vince Lombardi

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I believe that every day a person has room for improvement, and little improvement each day makes us a better soul for the next day. Therefore, I motivate myself to learn a new thing each day, be it a technical skill, be it a personality enhancement skill, or be it an interpersonal skill.

ABOUT ME

Dr. Ilora Maity, an accomplished researcher with a Ph.D. in Computer Science from IIT Kharagpur, India, specializes in SDN, network slicing, and satellite communications. With a strong publication record, she is eager to contribute her expertise to your team.

RESEARCH INTERESTS

- Quantum Communication Infrastructure
- Software-Defined Networking (SDN)
- Network Slicing
- Satellite Communication
- Mobile Edge Computing (MEC)

WORK EXPERIENCE

Research Associate
June 2021 - Present

Signal Processing and Satellite Communications (SIGCOM) group
University of Luxembourg
Luxembourg

Postdoctoral Researcher
January 2021 - April 2021

Department of Communications and Networking, School of Electrical Engineering
Aalto University
Finland

Technical Analyst
September 2011 - July 2015

Cognizant Technology Solutions India Private Ltd.
Role: Software development

EDUCATION

Doctor of Philosophy (Ph.D),
2021

Computer Science and Engineering
Indian Institute of Technology Kharagpur, West Bengal, India

Master of Engineering (M.E.), 2011
Department of Computer Science and Technology
Bengal Engineering and Science University Shibpur, West Bengal, India

Bachelor of Technology (B.Tech.), 2008
Computer Science and Engineering
MCKV Institute of Engineering, West Bengal, India
West Bengal University of Technology

PAST/CURRENT PROJECTS

ESA Lux4QCI

University of Luxembourg / Jan 2023 – Present
Research on cost-efficient QCI deployment.

SMC LUQCIA

University of Luxembourg / Jan 2023 – Present
Research on Demand-Aware Minimum Cost Quantum Communication Infrastructure and Scheduling key requests with key storage in minimum QCI.

FNR CORE ASWELL

University of Luxembourg / Jun 2021 – May 2023
Led the design of algorithms for dynamic VNE and VNF scheduling in NTNs.

ESA ARTES SatNExV WI Y2.6

University of Luxembourg / May 2022 – Apr 2023
Led the development of RL-based solutions for topology prediction and resource mapping in an NGSO constellation.

ESA ARTES AT ANCORSAT

University of Luxembourg / Jun 2021 – Oct 2022

- Led the investigation of the standard NFV orchestrator for slicing satellite-based IoT services.
- Led the development of the Inter-Slice Scheduler (ISS) software package that simulates the scheduling of satellite uplink bandwidth for satellite based IoT services.

EU HORIZON CHARITY

Aalto University, Finland / Jan 2021 – Apr 2021
Extended the concepts of the software-defined queueing framework by automating the selection of routing paths and queues for traffic flows belonging to heterogeneous priority classes.

DOCTORAL RESEARCH

Thesis Title: Towards Scalable SDN: Enhancement in Data and Control Planes
The Ph.D. dissertation of Dr. Ilora Maity addresses the scalability issues of SDN data and control planes. In her Ph.D. work, she has proposed efficient solution approaches based on a solid mathematical background to enhance SDN scalability. Her solution focuses on rule-space capacity management, flow-rule update, controller placement, control plane load management, and energy-efficient traffic engineering. She has used mathematical concepts

such as queueing theory, game theory, tensor decomposition, Markov predictor, and simulated annealing for her research work.

PUBLICATIONS

JOURNAL PAPERS

1. Minu Tiwari, **Ilora Maity** and Sudip Misra, "RATE: Reliability-Aware Task Service in Fog-Enabled IoV Environments," in IEEE Transactions on Cognitive Communications and Networking, Mar. 2024, DOI: 10.1109/TCCN.2024.3375524.
2. Hong-fu Chou, Thang X. Vu and **Ilora Maity**, "Empirical Risk-aware Machine Learning on Trojan-Horse Detection for Trusted Quantum Key Distribution Networks," arXiv preprint arXiv:2401.14622, Jan. 2024, DOI: 10.48550/arXiv.2401.14622.
3. Kai Han, Bingbing Xu, Shengjun Guo, Wenbin Gong, Symeon Chatzinotas, **Ilora Maity**, Quanbing Zhan and Qianyi Ren, "Non-Grid-Mesh Topology Design for MegaLEO Constellations: An Algorithm Based on NSGA-III," in IEEE Transactions on Communications, Jan. 2024, DOI: 10.1109/TCOMM.2024.3354782.
4. Mario Minardi, Thang X. Vu, **Ilora Maity**, Christos Politis, Symeon Chatzinotas, "Traffic-Aware Virtual Network Embedding With Joint Load Balancing and Datarate Assignment for SDN-Based Networks," in IEEE Transactions on Network and Service Management, Jan. 2024, DOI: 10.1109/TNSM.2024.3353079.
5. **Ilora Maity**, Houcine Chougrani and Symeon Chatzinotas, "Fairness-Aware Inter-Slice Scheduler for IoT Services Over Satellite," in IEEE Open Journal of the Communications Society, vol. 4, pp. 3040-3050, Nov. 2023, DOI: 10.1109/OJCOMS.2023.3331622.
6. Haftay Gebreslasie Abreha, Houcine Chougrani, **Ilora Maity**, Youssouf Drif, Christos Politis, Symeon Chatzinotas, "NFV-Enabled Satellite Edge Networks for Mission-Critical Applications," TechRxiv. Jul. 20, 2023, DOI: 10.36227/techrxiv.23703234.v1.
7. **Ilora Maity**, Ravi Dhiman, and Sudip Misra, "EnPlace: Energy-Aware Network Partitioning for Controller Placement in SDN," IEEE Transactions on Green Communications and Networking, vol. 7, no. 1, pp. 183-193, Mar. 2023, DOI: 10.1109/TGCN.2022.3175901.
8. Minu Tiwari, **Ilora Maity** and Sudip Misra, "FedServ: Federated Task Service in Fog-Enabled Internet of Vehicles," in IEEE Transactions on Intelligent Transportation Systems, vol. 23, no. 11, pp. 20943-20952, Nov. 2022, DOI: 10.1109/TITS.2022.3186401.
9. **Ilora Maity**, and Tarik Taleb, "ReSQ: Reinforcement Learning-Based Queue Allocation in Software-Defined Queuing Framework," Journal of Networking and Network Applications, Volume 2, Issue 4, pp. 143–152, Nov. 2022, DOI: 10.33969/J-NaNA.2022.020402.
10. **Ilora Maity**, Sudip Misra, and Chittaranjan Mandal, "ETHoS: Energy-Aware Traffic Engineering for Sustainable Hybrid SDN," IEEE Transactions on Sustainable Computing, vol. 7, no. 4, pp. 875-886, 1 Oct.-Dec. 2022, DOI: 10.1109/TSUSC.2022.3164571.
11. **Ilora Maity**, Sudip Misra, and Chittaranjan Mandal, "SCOPE: Cost-Effective QoS-Aware Switch and Controller Placement in Hybrid SDN," IEEE Systems Journal, vol. 16, no. 3, pp. 4873-4880, Nov. 2021, DOI: 10.1109/JSYST.2021.3124280.
12. **Ilora Maity**, Sudip Misra, and Chittaranjan Mandal, "CORE: Prediction-Based Control Plane Load Reduction in Software-Defined IoT Networks," IEEE Transactions on Communications, vol. 69, no. 3, pp. 1835-1844, Mar. 2021, DOI: 10.1109/TCOMM.2020.3043760.
13. **Ilora Maity**, Sudip Misra, and Chittaranjan Mandal, "DART: Data Plane Load Reduction for Traffic Flow Migration in SDN," IEEE Transactions on Communications, vol. 69, no. 3, pp. 1765-1774, Mar. 2021, DOI: 10.1109/TCOMM.2020.3042271.

14. **Ilora Maity**, Ravi Dhiman, and Sudip Misra, "MobiPlace: Mobility-Aware Controller Placement in Software-Defined Vehicular Networks," IEEE Transactions on Vehicular Technology, vol. 70, no. 1, pp. 957-966, Jan. 2021, DOI: 10.1109/TVT.2021.3049678.
15. **Ilora Maity**, Ayan Mondal, Sudip Misra, and Chittaranjan Mandal, "Tensor-Based Rule-Space Management System in SDN," IEEE Systems Journal, vol. 13, no. 4, pp. 3921-3928, Dec. 2019, DOI: 10.1109/JSYST.2018.2879321.
16. Ayan Mondal, Sudip Misra, and **Ilora Maity**, "Buffer Size Evaluation of OpenFlow Systems in Software-Defined Networks," IEEE Systems Journal, vol. 13, no. 2, pp. 1359-1366, Jun. 2019, DOI: 10.1109/JSYST.2018.2820745.
17. Ayan Mondal, Sudip Misra and **Ilora Maity**, "AMOPE: Performance Analysis of OpenFlow Systems in Software-Defined Networks," in IEEE Systems Journal, vol. 14, no. 1, pp. 124-131, May 2019, DOI: 10.1109/JSYST.2019.2912843.
18. **Ilora Maity**, Ayan Mondal, Sudip Misra, and Chittaranjan Mandal, "CURE: Consistent Update with Redundancy Reduction in SDN," IEEE Transactions on Communications, vol. 66, no. 9, pp. 3974-3981, Sept. 2018, DOI: 10.1109/TCOMM.2018.2825425.

CONFERENCE PAPERS

1. Haftay Gebreslasie Abreha, **Ilora Maity**, Houcine Chougrani, Christos Politis and Symeon Chatzinotas, “Resource-Aware On-board Content Caching in Multi-Layer Satellite Edge Networks”, in Proceedings of in Proceedings of IEEE International Conference on Communications (ICC), Denvar, CO, USA, 2024.
2. **Ilora Maity** and Symeon Chatzinotas, "Cost-Efficient Network Planning for Quantum Communication Infrastructure", in Proceedings of IEEE Globecom Workshops, 2023.
3. **Ilora Maity**, Thang X. Vu, and Symeon Chatzinotas, "D-Schedule: Dependency-Aware VNF Scheduling inSatellite-Terrestrial Networks", in Proceedings of IEEE International Conference on Communications Workshops (ICC Workshops), Rome, Italy, 2023, pp. 1283-1288, DOI: 10.1109/ICCWorkshops57953.2023.10283666.
4. Haftay Gebreslasie Abreha, Houcine Chougrani, **Ilora Maity**, Van-Dinh Nguyen, Symeon Chatzinotas, and Christos Politis, “Fairness-Aware Dynamic VNF Mapping and Scheduling in SDN/NFV-Enabled Satellite Edge Networks”, in Proceedings of IEEE International Conference on Communications (ICC), Rome, Italy, 2023, pp. 4892-4898, DOI: 10.1109/ICC45041.2023.10279545.
5. Mario Minardi, Youssouf Drif, Thang X. Vu, **Ilora Maity**, Christos Politis and Symeon Chatzinotas, "SDN-based Testbed for Emerging Use Cases in Beyond 5G NTN-Terrestrial Networks," in Proceedings of IEEE/IFIP Network Operations and Management Symposium, Miami, FL, USA, 2023, pp. 1-6, DOI: 10.1109/NOMS56928.2023.10154319.
6. **Ilora Maity**, Thang X. Vu, Symeon Chatzinotas, Mario Minardi, “D-ViNE: Dynamic Virtual Network Embedding in Non-Terrestrial Networks”, in Proceedings of IEEE Wireless Communications and Networking Conference (WCNC), Austin, TX, USA, 2022, pp. 166-171, DOI: 10.1109/WCNC51071.2022.9771560.
7. Minu Tiwari, **Ilora Maity**, and Sudip Misra, “LOAN: Latency-Aware Task Offloading in Association-Free Social Fog-IoV Networks”, in Proceedings of IEEE Global Communications Conference (GLOBECOM), Madrid, Spain, December 2021, pp. 1-6, DOI: 10.1109/GLOBECOM46510.2021.9685399.
8. **Ilora Maity**, Sudip Misra, and Chittaranjan Mandal, "Traffic-Aware Consistent Flow Migration in SDN," in Proceedings of the IEEE International Conference on Communications (ICC), Dublin, Ireland, 2020, pp. 1-6, DOI: 10.1109/ICC40277.2020.9148983.

9. Baisakhi Das, Gunjan Bhattacharya, **Ilora Maity**, and Biplab K. Sikdar, "Impact of Inaccurate Design of Branch Predictors on Processors' Power Consumption," in Proceedings of the 9th IEEE International Conference on Dependable, Autonomic and Secure Computing, Sydney, NSW, pp. 335-342, December 2011, DOI: 10.1109/DASC.2011.73.
10. Gunjan Bhattacharya, **Ilora Maity**, Biplab K Sikdar, and Baisakhi Das, "Exploring Impact of Faults on Branch Predictors' Power for Diagnosis of Faulty Module," in Proceedings of Asian Test Symposium, New Delhi, pp. 226-231, November 2011, DOI: 10.1109/ATS.2011.41.
11. **Ilora Maity**, Gunjan Bhattacharya, Sukanta Das, and Biplab K Sikdar, "A Cellular Automata based Scheme for Diagnosis of Faulty Nodes in WSN," in Proceedings of IEEE International Conference on Systems, Man, and Cybernetics, Anchorage, AK, pp. 1212-1217, October 2011, DOI: 10.1109/ICSMC.2011.6083863.

BOOK CHAPTER

1. Nasiruddin Khan, Ilora Maity, Sukanta Das, and Biplab K. Sikdar, "A Cellular Automata Based Scheme for Energy Efficient Fault Diagnosis in WSN", International Conference on Cellular Automata, In: Sirakoulis, G.C., Bandini, S. (eds) Cellular Automata. ACRI 2012. Lecture Notes in Computer Science, vol 7495. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-33350-7_24.

MENTORSHIP ACTIVITIES

PhD student Haftay Abreha

University of Luxembourg / Dec 2021 – Present
Thesis Title: Satellite-assisted edge processing for latency reduction and enhanced QoS in mission critical IoT applications

PhD student Mario Minardi

University of Luxembourg / Jun 2021 – Oct 2023
Thesis Title: Traffic Engineering Algorithms for Software Defined Satellite-Terrestrial networks

PhD student Minu Tiwari

IIT Kharagpur, India / Apr 2017 – Nov 2023
Thesis Title: Resource-Aware Service Provisioning in Fog-Based IoT Systems

MS student Ravi Dhiman

IIT Kharagpur, India / Jun 2017 – Aug 2021
Thesis Title: Controller Placement in SDN: Energy and Mobility-Aware Perspectives

TEACHING ASSISTANSHIPS

Programming and Data Structures

IIT Kharagpur, India / Jul 2019 – Dec 2019

Software Engineering

IIT Kharagpur, India / Jan 2019 – Jun 2019

Software Engineering Laboratory

IIT Kharagpur, India / Jan 2019 – Jun 2019

Embedded Software Design and Validation

IIT Kharagpur, India / Jul 2018 – Dec 2018

Software Engineering

IIT Kharagpur, India / Jan 2018 – Jun 2018

Embedded Software Design and Validation
IIT Kharagpur, India / Jul 2017 – Dec 2017

Software Engineering
IIT Kharagpur, India / Jan 2017 – Jun 2017

Software Engineering Laboratory
IIT Kharagpur, India / Jan 2017 – Jun 2017

Programming and Data Structures Laboratory
IIT Kharagpur, India / Jul 2016 – Dec 2016

OUTREACH ACTIVITIES

1. Delivered a talk on "Software-defined networks for quantum communication infrastructure" at the SnT/SES workshop at the University of Luxembourg on QCI RDI on 14/06/2022.
2. Delivered a talk on "Agile network configuration for 5G internet-of-things services over satellite" at the IPBG SDN Workshop at the University of Luxembourg on 23/09/2021.

MEMBERSHIPS

- IEEE Member
- IEEE Computer Society Member
- IEEE Communications Society Member
- IEEE Young Professional

TECHNICAL PROGRAM COMMITTEE MEMBERSHIPS

- IEEE Globecom 2023 SAC Aerial Communication Track
- IEEE ICC 2024 SAC Aerial Communication Track
- International Conference on Frontiers in Computing and Systems (COMSYS) 2022
- International Conference on Frontiers in Computing and Systems (COMSYS) 2021
- Softwarized Next Generation Networks for IoT Services Workshop (SIGNIS) 2021

EDITORIAL BOARD MEMBERSHIP

International Journal of Wireless Communications and Mobile Computing

REFEREE SERVICES

Journals	**Conferences**
• IEEE Transactions on Sustainable Computing • IEEE Wireless Communications • IEEE Transactions on Wireless Communications • IEEE Transactions on Communications • IEEE Wireless Communications Magazine • IEEE Systems Journal • IEEE IoT Journal • IEEE Transactions on Network and Service Management • IEEE Transactions on Mobile Computing • Springer Cluster Computing	• IEEE Globecom 2023 • IEEE ICC 2023 • International Conference on Frontiers in Computing and Systems (COMSYS), 2022 • IEEE Globecom 2022 • IEEE Infocom Workshops, 2022 • International Conference on Frontiers in

• Pervasive and Mobile Computing • International Journal of Communication Systems • IEEE Transactions on Network Science and Engineering • IEEE Communications Letters • IEEE Transactions on Communications • IEEE Vehicular Technology Magazine • IEEE Transactions on Vehicular Technology • MDPI Electronics • MDPI Axioms • MDPI Aerospace • MDPI Applied Sciences • MDPI Sensors	Computing and Systems (COMSYS), 2021 • IEEE Globecom Workshops: Softwarized Next Generation Networks for IoT Services Workshop (SIGNIS), 2021 • IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS), 2016

TECHNICAL SKILLS

Programming Languages	Python, Java, C
Development/Productivity Tools	Texmaker, MATLAB, Spyder, CPLEX, Gurobi Optimizer, Eclipse, Wireshark
SDN Controllers	ONOS, Ryu, Floodlight, Pox
SDN Emulator	Mininet
Other Tools for Network Simulation	Open-Source MANO (OSM), OpenVIM, UERANSIM, free5GC

AWARDS AND ACHIEVEMENTS

- Received recognition for review contributions to International Journal of Communication Systems (2023 and 2020).
- Received fellowship for pursuing Ph.D degree from Ministry of Human Resource Development (MHRD), India (2015).
- Recipient of Assimilator of the Quarter (Best Newcomer) award, Cognizant Technology Solutions India Private Ltd., Kolkata, Q1 (2013).
- Recipient of award for 1st rank in M.E. in Department of Computer Science and Engineering in Bengal Engineering and Science University, Shibpur (2012).

LANGUAGES

- English (Native)
- Bengali (Native)
- Hindi (Advanced)
- German (A2 Level)
- Luxembourgish (A1 Level)

HOBBIES

Reading, Vlogging, Hiking