

Dr. Swagatika Sahoo

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Summary

Key focus areas: Exploring how blockchain technology might help make existing systems more resilient, secure, and immutable. Developing interoperable and interconnected blockchain-based applications. Improving privacy and security aspects of federated systems and introducing modular access control paradigms. Verification of smart contracts using formal methods.

Education

- Postdoctoral Researcher, Department of Computer Science and Operations Research, University of Montreal, Montreal, Quebec, Canada, 2025 - 2026.
- Ph.D., Computer Science and Engineering, Indian Institute of Technology Patna, 2019 - 2024.
- M.tech., Computer Science and Engineering, NIST, Berhampur, 2014 - 2016.

Areas of Interest

Blockchain Technology, Formal Methods Language Tools, Federated Systems, Access Control Paradigms, Machine Learning.

Experience

- Assistant Professor, KIIT BHUBANESWAR, MARCH 2023 - DEC 2024.
- Assistant Professor, GIET GUNUPUR, JUN 2018 - DEC 2018.

Skills

Technical expertise: Developing interoperable and interconnected blockchain-based apps on the Ethereum and Hyperledger Blockchain platforms utilising the Solidity and Go programming languages, Improving privacy and security aspects of federated systems, introducing modular access control paradigms, Verification of Smart contracts using formal methods.

Natural languages: Odia (*mother tongue*), English, Hindi.

Interests

Beyond my research, I enjoy reading novels, writing poems, and turning potential waste items into beautiful artworks.

Awards

- Best Paper Award in ACSS 2022 Conference.
- Best Paper Presentation Award in Research Scholar Day '21, IIT Patna.
- Qualified Graduate Aptitude Test in Engineering 2013, 2014, 2016.
- Qualified UGC NET Assistant Professor 2018, 2019.

Publications

JOURNALS

8. Swagatika Sahoo; Raju Halder; Samrat Mondal. **Anomaly-Free Federated Access Control Policy Enforcement Framework for Ethereum**, Cluster Computing. 2025.
7. Atul Thakur; Swagatika Sahoo; Arnab Mukherjee; and Raju Halder, **Making Robotic Swarms Trustful: A Blockchain-Based Perspective**. Journal of Computing and Information Science in Engineering. 2023.
6. Suryakanta Panda; Swagatika Sahoo; Raju Halder; and Samrat Mondal, **Contextual Attribute-based Access Control Scheme for Cloud Storage using Blockchain Technology**, Software: Practice and Experience. 2023.
5. Arnab Mukherjee (First Author); Swagatika Sahoo (First Author); Raju Halder, **A Blockchain-Based Integrated and Interconnected Hybrid Platform for Smart City Ecosystem**, Peer-to-Peer Networking and Applications. 2022.
4. Oindrila Bhadra (First Author); Swagatika Sahoo (First Author); Raju Halder; Chandra Mohan Kumar, **AgroBLF: Blockchain-Based Framework for Smart Agriculture**, Innovations in Systems and Software Engineering. 2022.

3. Swagatika Sahoo; Arnab Mukherjee; Raju Halder, **A Unified Blockchain-based Platform for Global e-waste Management**, International Journal of Web Information Systems. 2021.
2. Swagatika Sahoo; Raju Halder, **Traceability and Ownership Claim of Data on Big Data Marketplace using Blockchain Technology**, Journal of Information and Telecommunication Taylor & Francis. 2021.
1. Swagatika Sahoo; Akshay M. Fajge; Raju Halder; Agostino Cortesi, **A Hierarchical and Abstraction-based Blockchain Model**, Applied Sciences. MDPI. 2019 .

CONFERENCES

7. Aritra Bhaduri, Ayush Kumar Jain, Swagatika Sahoo, Raju Halder and Chandra Mohan Kumar. **Metasurance: A Blockchain-Based Insurance Management Framework for Metaverse**, Proc. of the 19th International Conference on Evaluation of Novel Approaches to Software Engineering (ENASE '24), Angers, France, 28-29 April 2024. SciTePress.
6. Swagatika Sahoo; Raju Halder; Samrat Mondal. **An Automated Policy Verification and Enforcement Framework for Ethereum Applications**, Proc. of the 5th IEEE International Conference on Blockchain and Cryptocurrency (IEEE ICBC '23), UAE, Dubai, 1-5 May 2023. IEEE Press.
5. Oindrila Bhadra; Swagatika Sahoo; Chandra Mohan Kumar; and Raju Halder. **Decentralized Insurance Subrogation Using Blockchain**, Proc. of the 5th International Conference on Blockchain Technology and Applications (ICBTA '22), Pages 1-9. Xi'an, China, 16-18 Dec 2022. ACM Press.
4. Swagatika Sahoo; Saksham Jha; Somenath Sarkar; Raju Halder, **BLRS: An Automated Land Records Management System using Blockchain Technology**, Proc. of the 9th International Symposium on Applied Computing for Software and Smart Systems (ACSS '22) (Accepted for Publication), Springer LNNS.
3. Swagatika Sahoo; Raju Halder, **Blockchain-based Forward and Reverse Supply Chains for E-Waste Management**, Proc. of the 7th International Conference on Future Data and Security Engineering (FDSE '20), Springer CCIS 1178.
2. Swagatika Sahoo; Rishu Roshan; Vikash Singh; Raju Halder, **BDmark: A Blockchain-driven Approach to Big Data Watermarking**; Proc. of the 12th Asian Conference on Intelligent Information and Database Systems (ACIIDS '20), Springer CCIS 1178.
1. Swagatika Sahoo, **A parallel forecasting approach using incremental K-means clustering technique**; Computational Intelligence in Data Mining, Springer Singapore, 2017.