Sangeeta Kakati

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Education

University of Luxembourg, Proximus — Luxembourg
Doctoral Researcher (PhD) Computer Science and Computer Engineering — *Oct'2022-January'2026*
- Interdisciplinary Centre for Security, Reliability and Trust (SnT)

Indian Institute of Information Technology — Guwahati, India
Master of Technology in Computer Science — *July'2020-July'2022*
- CGPA: 8.78

Central Institute of Technology — Kokrajhar, India
Bachelor of Technology in Information Technology — *July'2016-June'2020*
- CGPA: 9.12

Kendriya Vidyalaya — Assam, India
AISSCE (Class 12) — *2014-2016*
- Percentage: 84.6

Kendriya Vidyalaya — Assam, India
AISSE (Class 10) — *2014*
- CGPA: 10

Experience

Project ACE5G, Luxembourg FNR
Industrial Partner: Proximus
- Execution model and performance benchmarking for heterogeneous hardware capabilities available at a higher abstraction level, common for all architectures
- Demonstrate seamless provisioning of cloud resources for applications with constraints and GPU acceleration
- Dealing with changing hardware infrastructure and how to deploy dynamically.
- Technologies allowing software containers to be executed on dynamic nodes without being modified
- Relieve developers of distributed applications from the need to match their software artifacts to the current platform(s), their compute infra-structure supports and from the need to deploy their software to specific nodes (e.g. certain edge nodes)
- Tools Used: Containerd, k3s, runwasi, WebAssembly, Multi-arch containers

Teaching Assistant
Multiple
- Data Structures and Algorithm, Databases, Computer Systems
- Computer Architecture, Operating Systems, Frontend Web development, Hands-on IoT
- Languages Courses: Python, C++

Research Intern
Indian Institute of Technology Guwahati (IITG)
- Security in IoT in terms of: Authentication, Authorization, and Access Control

Software Intern
Indian Oil Corporation Limited
- Application for fetching semester results of an institute

Collaborative Projects

Cross-architecture support for edge-cloud continuum Oct 2022 – Oct 2025

- Implement best software development practices by developing support for heterogeneous hardware architectures in multi-platform containerization.
- Enhance support for WebAssembly in cloud servers(AWS bare metals) and embedded devices
- A reproducible experimental platform for the use of alternative runtimes in Docker
- A general GPU interface with handlers
- Implementation: Wasm, Rust, C++, Docker, Containerd, AWS
- Hardwares: Nvidia Jetson Nano (AARCH64), Starfive VisionFive2(RISCV64)

Mobility aware task-offloading in fog assisted networks July 2021 – July 2022

- Reproducible optimal offloading mechanism for mobile end-users in distributed systems
- Performing migration in services with long term analysis(vehicular services)
- Minimize the case of migration while performing offloading until it is an essential requisite
- Implementation: MobFogSim,iFogSim
- Overall Domain: IoT, Cloud, Fog, Edge

IoT based automated outdoor lighting system | *IoT, Android, Sensors* June 2019 – June 2020

- Enhance the maintenance of current outdoor lighting systems
- Used Thinkspeak as the cloud server to send sensor's data
- Integrated IR, LDR, current sensors to detect the presence of an obstacle
- Detection of faulty lights and real-time display in an Android application

Technical Skills

Subjects: Data Structures, Databases, Networks, Architecture, OS
Languages: C/C++, Rust, Python, Go
Frameworks: Containerd, Docker, AWS, WebAssembly, k3s, Tensorflow, iFogSim, Netsim, Spin
Areas of Interest: Cloud Platforms, Fog/Edge Computing, Containerization, Runtimes, IoT Security
Skills: Programming, Cross-Architecture, Operating Systems, Software Development

Publications & Achievement

- **Kakati, S.** & Brorsson, M., Accelerating the Edge: Wasm Containers and the Future of Portable Compute, Springer Nature Computer Science Journal (*Under Review*).
- **Kakati, S.** & Brorsson, M. (2025, April). Performance and Usability Implications of Multiplatform and WebAssembly Containers. In Proceedings of the 15th International Conference on Cloud Computing and Services Science, pages 15-25, DOI: 10.5220/0013203200003950 (***Best Paper Award.***)
- **Kakati, S.**, & Brorsson, M. (2024, May). A Cross-Architecture Evaluation of WebAssembly in the Cloud-Edge Continuum. In 2024 IEEE 24th International Symposium on Cluster, Cloud and Internet Computing (CCGrid) (pp. 337-346). IEEE.
- **Kakati, S.**, & Brorsson, M. (2024, September). An Investigative Study of WebAssembly Performance in Cloud-to-Edge. In 2024 International Symposium on Parallel Computing and Distributed Systems (PCDS) (pp. 1-5). IEEE.
- **Kakati, S.**, & Brorsson, M. (2023, June). Webassembly beyond the web: A review for the edge-cloud continuum. In 2023 3rd International Conference on Intelligent Technologies (CONIT) (pp. 1-8). IEEE.
- **Kakati, S.**, Alam, M., Matam, R., Barbhuiya, F. A., & Mukherjee, M. (2022, December). Mobility-aware Task Offloading in Fog-Assisted Networks. In GLOBECOM 2022-2022 IEEE Global Communications Conference (pp. 2897-2902). IEEE.
- **Kakati, S.**, Ray, K., & Deka, R. (2022, June). Cloud and Fog Computing based Industrial IoT Production Management. In 2022 2nd International Conference on Intelligent Technologies (CONIT) (pp. 1-5). IEEE.
- **Kakati, S.**, Chouhan, D., Nag, A., & Panja, S. (2022). Survey on Recent Malware Detection Techniques for IoT. In Pattern Recognition and Data Analysis with Applications (pp. 647-659). Springer, Singapore.
- **Kakati, S.**, & Deka, R. (2022, June). Computational and Adaptive Offloading in Edge/Fog based IoT environments. In 2022 2nd International Conference on Intelligent Technologies (CONIT) (pp. 1-6). IEEE.
- **Kakati, S.**, Mazumdar, N., & Nag, A. (2022). Green Cloud Computing for IoT Based Smart Applications. In Green Mobile Cloud Computing (pp. 201-212). Springer, Cham.
- Top 3 **PhD Poster Awards,** SnT, DSSE Luxembourg
- **PhD Presenter, Wasm Google research day 2023**, Google, 33 Erika-Mann-Strasse, Munich Germany
- Best 2 minute **pitch presenter** in the NorthEast Hackathon India