Sangeeta Kakati

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Recruitment Committee
Human-Environment-Technology (HET) Systems Centre
Mykolas Romeris University
Vilnius, Lithuania

Dear Members of the Recruitment Committee,

I am writing with great enthusiasm to apply for the **Senior Researcher in Internet of Things and Automation (Position 2)** at the Human-Environment-Technology (HET) Systems Centre, which I discovered on the MRU employment website. As a final-year PhD researcher at the University of Luxembourg, my work focuses on the core challenges of the edge-cloud continuum, containerization, and IoT systems, making this role a perfect alignment with my expertise and research ambitions.

Why the HET Systems Centre and This Role?

The HET Centre's mission to tackle complex, interdisciplinary problems at the nexus of human, environmental, and technological systems deeply resonates with my research philosophy. My doctoral work, conducted in collaboration with the industrial partner Proximus, has not been purely technical; it has involved designing systems that account for real-world constraints, dynamic infrastructure, and practical deployment challenges which is a key consideration for any IoT and automation solution aimed at societal impact. The Centre's focus on areas like critical infrastructure and digital transformation represents the exact kind of meaningful, applied research environment where I am eager to contribute.

Alignment with Position 2: IoT and Automation

My research provides a strong foundation for this position: * **IoT Systems Development:** I have hands-on experience in full-stack IoT projects, from sensor integration (e.g., IR, LDR) and cloud communication (e.g., Thinkspeak) to developing end-user Android applications for monitoring and control. * **Fog/Edge Automation:** My work on "Mobility-aware Task Offloading in Fog-Assisted Networks" directly addresses automation in distributed systems. I developed algorithms for optimal, reproducible offloading and service migration, minimizing latency and resource usage in dynamic environments akin to smart transportation or energy grids. * **Cross-Platform Deployment:** A significant part of my PhD involves creating execution models for heterogeneous hardware (x86, ARM64, RISC-V). I have practical experience

enabling seamless automation across the edge-cloud continuum using technologies like Docker, WebAssembly, and k3s, which is crucial for scalable IoT solutions.

I am confident that I can immediately contribute to the Centre's existing projects while also helping to develop new research lines in IoT and automation for smart infrastructure, environmental monitoring, or sustainable mobility.

What I Bring to the HET Centre

Beyond my technical skills, I am a proactive researcher with a proven record of publications in high-impact conferences (CCGrid, GLOBECOM, etc.) and a winner of a Best Paper Award. I am keen to collaborate on interdisciplinary grant proposals to attract external funding. Furthermore, my experience as a Teaching Assistant has equipped me with the skills to effectively supervise student projects and contribute to the Centre's educational goals in digital transformation.

I am excited by the prospect of joining a young, dynamic, and international team at the HET Systems Centre and am confident that my background in IoT, distributed systems, and applied computer science will allow me to contribute significantly to your research objectives.

Sincerely,

Sangeeta Kakati
PhD Researcher, University of Luxembourg