Proposal Defense
Doctor of Philosophy in Information Science

"**Provisioning Meaningful and Sustainability-Conscious Next Generation Network Connectivity for Societal Good**" by **Kuheli Sai**

Date: July 8, 2024
Time: 10:00 AM – 12:00 PM
Place: Room 828 Information Science Building, 135 North Bellefield Avenue, Pittsburgh PA 15260
https://pitt.zoom.us/meeting/register/tJcuceCuqjMsEtb6AG7rb9D069cmidmrA7bx

Committee:
- Dr. David Tipper, Advisor, Professor, Department of Informatics and Networked Systems, School of Computing and Information, University of Pittsburgh
- Dr. Hassan Karimi, Professor, Department of Informatics and Networked Systems, School of Computing and Information, University of Pittsburgh
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- Dr. Stephen Lee, Assistant Professor, Department of Computer Science, School of Computing and Information, University of Pittsburgh

Abstract:

Data-Driven Science has demonstrated tremendous potential in solving numerous practical and real-world problems that exist in the scope of United Nations (UN) Sustainable Development Goals (SDGs). In this dissertation, we are taking the opportunity to demonstrate one such application of data science from the lens of societal need and while helping us connect to some of the UN SDGs. Specifically, we are hoping to contribute towards creating smart cities and community by **provisioning meaningful and sustainability-conscious next-generation network connectivity** within cities in the United States that directly contribute towards UN SDGs 11 (sustainable cities and communities) and UN SDGs 13 (climate action). This regard, first we emphasize on our data-driven empirical analysis of publicly available civic data sources such as 311 city service requests where we have observed Information and Communication Technology (ICT) usage pattern across neighborhoods with contrasting yet pre-existing socio-economic structure. Thereafter, taking this too into account we propose to: (1) geographically place sustainability aware micro data center at the edge of the network in diverse under connected and underserved geographic regions in cities with distinct profiles, (2) plan to demonstrate sovereignty of United States to make this development of components for physical deployment of green edge infrastructure a reality, and (3) gauge public interest about sovereignty on the digital domain.
Our proposal is by design following numerous societal values: it is sustainability conscious, will contribute to digital equity initiative, and help co-create inclusive and equitable digital society. In addition, we anticipate our proposal could be beneficial both for the local-level resource allocation, societal decision making, and at the global level policy development.