Proposal Defense

Doctor of Philosophy in Information Science (Telecommunications)

"From Sensors to Stories – Enabling Community-driven, Actionable Data Collection for Air Quality Advocacy" by Abhishek Viswanathan

Date: August 29, 2023
Time: 11:00 AM – 12:30 PM
Place: Room 502, IS Building, 135 N Bellefield Ave, Pittsburgh PA 15213

Committee:
- Dr. Amy Babay, Assistant Professor, Department of Informatics and Networked Systems, School of Computing and Information
- Dr. Rosta Farzan, Department of Informatics and Networked Systems, School of Computing and Information
- Dr. Olga Kuchinskaya, Associate Professor, Department of Communication, Kenneth P Dietrich School of Arts & Sciences
- Dr. Prashant Krishnamurthy, Professor, Department of Informatics and Networked Systems, School of Computing and Information
- Dr. Konstantinos Pelechrinis, Associate Professor, Department of Informatics and Networked Systems, School of Computing and Information

Abstract:

This dissertation proposal explores the confluence of community science, sensor networks, and participatory research, within the context of environmental justice. The research centers on the creation and deployment of socio-technical infrastructure for community-generated data initiatives, aiming to provide a practical framework for generating impactful insights and fostering equitable collaborations. The study is rooted in the Hazelwood neighborhood in Pittsburgh, an environmental justice community.

Three core research questions will guide my work, that focus on:

1. Data Reliability and Accessibility: How can data reliability and accessibility be achieved when designing and deploying technical infrastructure for community science to generate data for environmental action?
2. Participatory Research Approaches: How do Participatory Action Research and Engaged Scholarship inform partnerships between important stakeholders to make community science data actionable?
3. Community Stewardship: How can we attain and sustain community stewardship of socio-technical infrastructure for community science in an environmental justice area?

I propose to distribute more air quality monitors and filters to make the technical infrastructure tangible for residents, encouraging data collection and action. Training sessions will provide residents with skills to maintain and troubleshoot monitors, enhancing data accuracy and instilling ownership. Ongoing engagement through monthly meetings and data storytelling workshops will promote data familiarity and community-driven interpretation.
I aim to contribute to academic literature by developing a holistic approach to socio-technical infrastructure development. I will investigate the applicability of Participatory Action Research and Engaged Scholarship in fostering inclusive collaborations and translating data into actionable projects. By emphasizing community stewardship, I hope to foster long-term engagement and ownership, to ensure sustainability. By platforming Hazelwood resident voices and investigating the viability of data-driven solutions, I want to explore a pathway toward equitable and impactful change, advancing environmental justice through collaborative sensing initiatives.