Fostering Smart and Sustainable Travel through Engaged Communities using Integrated Multidimensional Information-Based Solutions

Project Lead(s):

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Project Work Location:

Atlanta, GA (Georgia Tech Campus)

Project Description:

Advances in information, communication, and sensor technologies (ICSTs) are providing communities the potential to collect quantitative and qualitative data and translate them into intelligent, actionable information. However, the nature of these advances and how they are deployed in communities are typically organic, thereby lacking the deliberate solutions that could bring about benefits to society for the various stakeholder levels of a community.

Triggered by these needs, this project supports research that will develop systematic deployment tools that smart and connected communities can use to achieve their sustainable travel goals. The solutions will be developed using the City of Peachtree Corners (PTC), GA, as a living lab. They include building novel partnerships involving emerging micromobility services in the private sector and the well-established public transit modes. The solutions will involve personalized behavioral interventions to incentivize personal auto users to consider sustainable alternatives. At the community level, public policy interventions will seek to enable flexible and novel travel alternatives, ensuring that all residents have access to timely travel-related information.

To obtain the solutions, the project will draw on methods from multi-objective and multi-agent optimization, machine learning, behavioral economics, and data and policy analytics. Further, the solutions will be deployed at a community scale at PTC. The deployment will involve field data collection, implementing research methods and outputs, and communication and engagement of multiple stakeholders, ranging from residents, mobility and information providers, community influencers, and local government.

This project suits civic-minded students well, providing them with opportunities to gain hands-on smart city experience. Working as a summer cohort and in community pairs with our research team and the City of Peachtree Corners, the interns will help the local

municipality to achieve its sustainability objectives. Interns taking part in this project will be provided with broad learning opportunities in research and activities to enhance transportation- and sustainability-related objectives and contribute to impactful community projects. They will be exposed to learning and implementing knowledge and skills in data collection and analysis, formal research methods, and community engagement strategies. While expanding their professional skills, our interns will gain experience working with local government, community, and other stakeholders.

Project Learning Goals:

(1) Exposure to research methods for developing systematic deployment tools that smart and connected communities can use to achieve their sustainable travel goals.

(2) Collecting travel-related data through using various data collection approaches (e.g., conducting surveys) and data analyzing approaches, such as data processing, integration, and machine learning.

(3) Learning different ways to engage with community stakeholders, including residents, mobility and information providers, community influencers, and local government, to develop and deploy solutions that have the potential to enhance sustainability in the community.

Top Desired Intern Skills:

This project is interdisciplinary in nature, therefore we welcome interns from diverse backgrounds. Any experience and skills in transportation planning, system optimization, data collection and analysis, travel behavior and policy studies, as well as experience in community outreach will significantly contribute to the project.

Intern Deliverables:

This project aims to develop systematic deployment tools that smart and connected communities can use to achieve their sustainable travel goals. Specific needs include:

(1) Participant recruitment and processing of survey data and sensor data aimed at understanding residents' travel behavior and preferences.

(2) Practical methods to generate ways to improve the community's sustainable objectives.

(3) Design and delivery of information to various community stakeholders for directing travelers towards more sustainable travel modes and behaviors.