Gwinnett County

The Smart Cities Internship program has provided an excellent experience for me this summer. The biggest strength of the programs is it has allowed me to work on a practical research project with professors while gaining industry exposure working at the Gwinnett County Traffic Control Center (TCC). The research project I'm working on is Connected Vehicle (CV) technology, where we are exploring the feasibility of modifying traffic light schedules in real time to provide clearance for approaching emergency vehicles, specifically fire trucks. This project is one of many practical applications of the CV system that our society has been investigating for decades.

Gwinnett County has already invested and implemented an Intelligent Transportation System (ITS), a county-wide system of fiber-connected centralized-controlled intersections. The system has significantly simplified the collection of signal data since most of it is available straight on the server. After collecting a huge amount of signal status data, I wrote a script to filter data and created an API for streamlined data access. I worked closely with Georgia Tech professor Dr. Angshuman Guin and Civic Data Science students to match the signal data to the paths of each fire truck and then performed analysis on the potential response time improvement. We also visualized those data to show directly where bottlenecks were located and how those sections of road and intersections could be improved with the connected vehicle technology.

While most of my work was focused on research and data, I also participated in some projects at the Gwinnett County Traffic Control Center. I worked with Gwinnet traffic control engineers in the field to manually synchronize the clock on several intersections that have no fiber connection. The afternoon sun and heat helped me to realize the importance and the potential of the ITS system not just for operations but for maintenance activities too. Fortunately, Gwinnett has continued to increase ITS coverage across the county. In early June, I visited a construction site where contractors are testing wireless point to point connections for remote intersections. Moreover, I have completed a new project charter, an administrative document, to describe the next phase ITS construction, and submitted it to the Georgia Department of Transportation for approval.

Overall, the Connected Vehicle project was very fun to work on, and the experience of the internship program was excellent. I believe the platform provided by Georgia Smart will continue to contribute to Smart Cites project successes and ultimately benefit our society.

-Zixiu Fu
Smart Community Corps, 2019