

## **Smart and Connected Construction Job Sites with Sensing and Robotic Technologies**

With the advancement of data sensing and mobile computing technologies, today's construction sites are connected and require faster and more dynamic information exchange. The location, motion, and status of mobile assets such as workers and construction equipment are essential information for tasks such as safety management, productivity measurement, and progress monitoring. This demands that construction professionals be more effective and organized by successfully utilizing advanced computing and automation technologies to enhance productivity, safety, cost-effectiveness, and quality. This presentation discusses the potential benefits of location awareness of construction resources at job sites using mobile and sensing technologies. Also, the need of location awareness information will be discussed with example applications of on-going research projects at Georgia Tech for real-time decision making, better control over construction processes, and productivity and safety improvement. The first two example applications commonly use Bluetooth technology, which has many capabilities and is affordable to implement at job sites: 1) a proximity safety warning system for monitoring, improving and advancing safety for work zone workers; and 2) an indoor mobile asset tracking system for providing safety alerts to workers in hazards and monitoring and analyzing their safety behavior based on their location. As the third example, real-time 3D visualization of workspace to better assist construction equipment or robotic operations will be introduced. Finally, the potential benefits and challenges of utilizing the mobile and visualization technologies for smart and connected construction job sites will be discussed.