

Laying the Foundation for Smart and Connected Cities and Communities

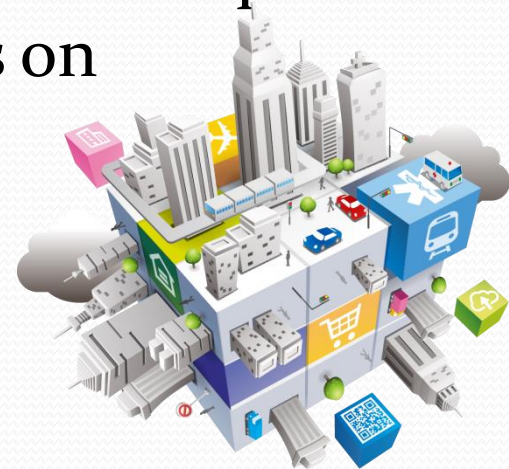
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CS 35L Lab 6

Assignment 10

Smart and Connected Cities

- A smart city uses digital technologies or information and communication technologies to...
- enhance quality and performance
- reduce costs and resource consumption
- engage more with its citizens
- The goal is to effectively integrate networked computer systems and physical devices, with a focus on applications to benefit the public



How and Who...

- The National Science Foundation (NSF) announced 12 new projects--a commitment of \$2.5 million--to help enable a vision for smart and connected cities and communities
- NSF's invests through the Cyber-Physical Systems (CPS) program to develop the principles, methodologies, and tools



National Science Foundation
WHERE DISCOVERIES BEGIN

What...

- University of Wisconsin-Madison: Population Analytics through a Wi-Fi-based Edge Computing Platform
- University of Chicago: Prototyping a Scalable and Evolvable Urban Sensing Platform for Smart Cities
- Vanderbilt University: Experiments with Smart City Hubs: Integration Platform for Human Cyber-Physical Systems In Smart Cities
- Wright State University: Intelligent Agent Incident Command System Augmentation
- Iowa State University: Risk Modeling and Cyber Defense Exercise for Critical Infrastructures Security
- MIT: Autonomy-enabled Shared Vehicles for Mobility on Demand and Urban Logistics

What...

- Columbia University: Advanced Peak Demand Forecast and Battery Dispatch Algorithms to Integrate Storage-based Demand Response with Building Automation Systems
- Ohio State University: A Unified Solution of Mixed Traffic Sensing, Tracking and Acceptable Active Accident Avoidance for On-Demand Automated Shuttles in a Smart City
- Virginia Polytechnic Institute and State University: Fingerprinting for Internet of Things Authentication: Accelerating IoT Research and Education Under the Global City Teams Challenge
- University of Virginia: Detecting and Addressing Adverse Dependencies Across Human-in-the-Loop In-Home Medical Apps
- University of California, Irvine: Exploring Resilience in SmartCity Water Infrastructure
- University of North Texas: Aerial Communication Infrastructure for Smart Emergency Response

Population Analytics through a WiFi-based Edge Computing Platform

- Understanding population analytics to...
- allow officials to plan where to provide useful services
- track how many persons are entering wireless technologies



Cyber-Physical Fingerprinting for Internet of Things Authentication

- Develop new authentication methods with cyber-physical fingerprints extracted from the IoT devices' environment
- Identify, classify, and authenticate devices based on their cyber-physical environment and with limited available prior data



Detecting and Addressing Adverse Dependencies Across Human-in-the-Loop In-Home Medical Apps

- Apps will perform interventions to control human physiological parameters, which may cause dependency problems, since...
- each app is developed independently without knowing how other apps work
- when an app performs an intervention to control its target parameters, it may affect other physiological parameters

Conclusion

- Internet and IoT are the trend
- New technology are closer to us than you think
- Be innovative and creative

