IS 709/809:
Computational Methods in IS Research

Research Reflection

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NSF CPS Frontier Awards 2016

- NSF awards $13 million toward research in cyber-physical systems
  - Research to focus on mitigating noise pollution
  - Improving manufacturing systems
  - Autonomous vehicles

- The three new NSF-funded projects will develop technologies to:
  - Monitor and mitigate noise pollution in cities.
  - Quickly identify and overcome problems in manufacturing environments.
  - Improve the capabilities of autonomous vehicles.

The 2016 CPS Frontier awards include:

- **SONYC: A Cyber-Physical System for Monitoring, Analysis and Mitigation of Urban Noise Pollution**
- The $4.6 million, five-year Sounds of New York City (SONYC) project takes aim at New Yorkers' biggest civic complaint -- noise.
- A team of scientists from New York University (NYU) will launch a first-of-its-kind comprehensive research effort to understand and address noise pollution in New York City and other urban areas.
- The project, which involves large-scale noise monitoring, leverages the latest in machine learning, big data analysis, and public participation in scientific research to more effectively monitor, analyze and mitigate urban noise pollution.
- The project has the support of New York City's health and environmental agencies.
VeHICaL: Verified Human Interfaces, Control, and Learning for Semi-Autonomous Systems

- NSF has awarded $4.6 million to a team exploring human cyber-physical systems (h-CPS)
  - systems that operate in concert with human operators
  - improving the interaction between humans, computers and the physical world.
  - The research outcome of the project will have applications in emerging technologies such as semi-autonomous cars and autonomous aerial vehicles (drones).
Software-Defined Control for Smart Manufacturing Systems

- This $4 million, NSF-supported project aims to enhance the security and operations of manufacturing systems
- a new method called "Software Defined Control."

- By making a computer model of a physical system, operators can better detect and address anomalies in the system, and adapt quickly to manufacturing changes with minimal disruption to operations or production.
NIFA/NSF CPS projects

- USDA announces $5 million in funds for smart technology innovations in agriculture
NSF CPS Awards 2017

- NSF CPS project search
  - Keywords: CPS
CPS: Medium: Safety-Critical Wireless Mobile Systems
Award Number: 1739333; Principal Investigator: Cameron (Kamin) Whitehouse; Co-Principal Investigator: Lu Feng, Cody Fleming; Organization: University of Virginia Main Campus; NSF Organization: CNS Start Date: 09/01/2017; Award Amount: $800,000.00
NSF CPS Awards 2018

- NSF CPS project search
  - https://www.nsf.gov/awardsearch/simpleSearch.jsp
  - Keywords: CPS
NSF Future of Work 2018 Awards

- FW-HTF: Collaborative Research: The Next Mobile Office: Safe and Productive Work in Automated Vehicles

- Collaborative Research: FW-HTF: Augmented Cognition for Teaching: Transforming Teacher Work with Intelligent Cognitive Assistants
NSF Future of Work 2018 Awards

- FW-HTF: First Person View and Augmented Reality for Airborne Embodied Intelligent Cognitive Assistants

- FW-HTF: Collaborative Research: An Embodied Intelligent Cognitive Assistant to Enhance Cognitive Performance of Shift Workers

- Collaborative Research: FW-HTF: Integrating Cognitive Science and Intelligent Systems to Enhance Geoscience Practice
NSF Future of Work 2018 Awards

- FW-HTF: Future of Firefighting and Career Training - Advancing Cognitive, Communication, and Decision Making Capabilities of Firefighters

- FW-HTF: The future of classroom work: Automated Teaching Assistants

- FW-HTF: Collaborative Research: Pre-Skilling Workers, Understanding Labor Force Implications and Designing Future Factory Human-Robot Workflows Using a Physical Simulation Platform
Questions