DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Secure Trustworthy Learning based Control and Analytics

Quantum Systems

- Learning, adaptation and control of quantum systems.

Autonomous Systems and Robotics

- Navigation and control of autonomous systems including formation control of multi-agent systems such as robots, UAVs. Development of deep reinforcement learning based optimal adaptive control.

Cyber-Physical Systems (CPS) and Resilience

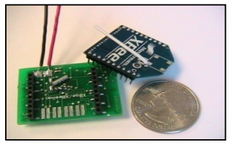
- Development of trustworthy learning and control of CPS with applications to automotive, smart grid, automotive systems and network enabled manufacturing. Mitigate attacks on sensor, actuator and cyber systems using learning methodology, and Block chain.

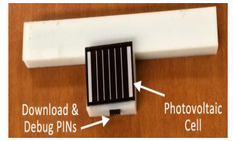
Cyber Manufacturing and Bigdata

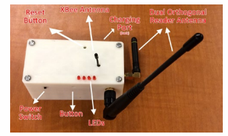
- Use of RFID tag to sense, and track assets in Cyber manufacturing environments and digital twin concepts. Development of novel methods for analyzing Bigdata.

Health care

- Cancer diagnosis, healthcare applications of data analytics

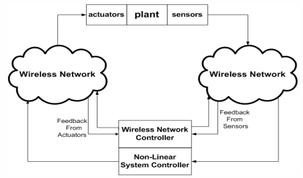


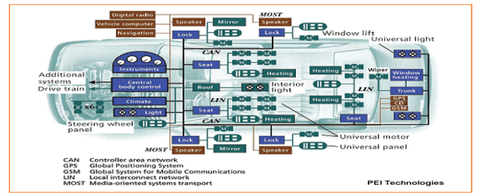




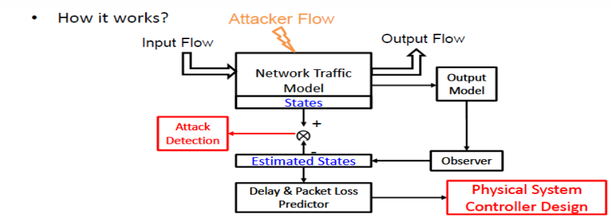
Missouri S&T Mote, RFID tag for networking sensing and decentralized control, diagnostics and prognostics

Formation control of UVV and mobile robot

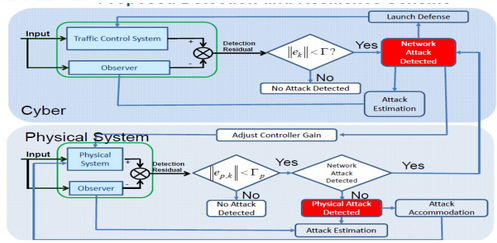




CAN Bus



Attacks on Networked Dynamic Systems



Resilience Scheme

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Recent Funding

Office of Naval Research, Army Research Office, ONR DURIP, Dept of Transportation, Dept of Energy, National Science Foundation, Dept of Education, Honeywell.

Keywords

- Trustworthy Reinforcement Learning-based Optimal Adaptive Control, Secure Cyber-physical-Human Systems, Autonomous Systems & Robotics, Bigdata Analytics

Recognitions

- 2023 Curators' Distinguished Professor, 2021 Univ of Missouri Presidential Award for Sustained Excellence, Multiple Faculty Excellence Awards
- 21 US and International Patents Awarded
- 2018 IEEE Control System Society Transition to Practice Award
- Fellow of the IEEE (USA), National Academy of Inventors, IET & IMC (UK)