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PI: Hongwei Zhang
co-PIs: Ahmed Kamal, Arun Somani, Patrick Schnable, Anuj Sharma

Project Title: End-to-End Software-Defined Cyberinfrastruture for Smart Agriculture and Transportation

Hongwei Zhang
Associate Professor
Iowa State University
hongwei@iastate.edu

Ahmed Kamal
Professor
Iowa State University
kamal@iastate.edu

Arun Somani
Professor
Iowa State University
arun@iastate.edu

Patrick Schnable
Professor
Iowa State University
schnable@iastate.edu

Anuj Sharma
Professor
Iowa State University
anujs@iastate.edu

IOWA STATE UNIVERSITY

CyNet: End-to-End Software-Defined Cyberinfrastruture for Smart Agriculture and Transportation

Hongwei Zhang, Ahmed Kamal, Arun Somani, Patrick Schnable, Anuj Sharma, Iowa State University

Challenges Addressed:

- Image processing- and other sensor-based understanding of plant behavior are key to plant genotyping
- Real-world study of connected and automated vehicles (CAVs) is key to safe, efficient, and sustainable transportation
- Existing research and education in agriculture and transportation systems are constrained by the lack of connectivity between field-deployed equipment and cloud infrastructures.
- Cutting-edge network solutions limited to lab testing and use

Solutions:

- Establish the CyNet cyberinfrastructure to provide end-to-end connectivity from field-deployed cameras, sensors, robots, and vehicles to edge and cloud computing infrastructures
- Develop CyNet to enable shared-access and cross-disciplinary collaboration
- Leverage predictable, Reliable, Real-time, and high-Throughput (PRRT) wireless networking solutions from team

Scientific and Broader Impact:

- stimulate research & field deployment of PRRT wireless networks (e.g., 5G and beyond)
- Enable transformative plant science studies, farming practice, and research in connected and automated transportation
- Enable interdisciplinary education activities in networking, computing, agriculture, and transportation
- Help engage under-represented students in STEM education

Metadata tag:

- Project website: http://www.ece.iastate.edu/~hongwei/group/projects/CyNet.html
- Components ready for transition to practice!
- Need more funds to scale up deployment for meet broader demand