

The background is a dark blue gradient. On the left side, there are several vertical teal lines of varying thicknesses that curve slightly towards the right. At the bottom, there are several horizontal teal lines that curve upwards towards the right, creating a sense of depth and movement. The overall aesthetic is clean, modern, and tech-oriented.

Network Connectivity in Rural Areas

CONNECTIVITY FOR REMOTE RESEARCHERS

University of Georgia

- Founded 1875.
- Public flagship land-grant research university.
- 43,700 Students.
- 41,539 acres.



Precision Agriculture

- Research on precision agriculture at the University of Georgia (UGA) began in the mid-1990s at the Tifton Campus.
- Agriculture continues to be the No. 1 industry in the state of Georgia.
- Integrative Precision Agriculture (IPA) is one of five areas for UGA to continue investing in and building excellence.
- Goals – Research, Education, Extension, Partnerships.



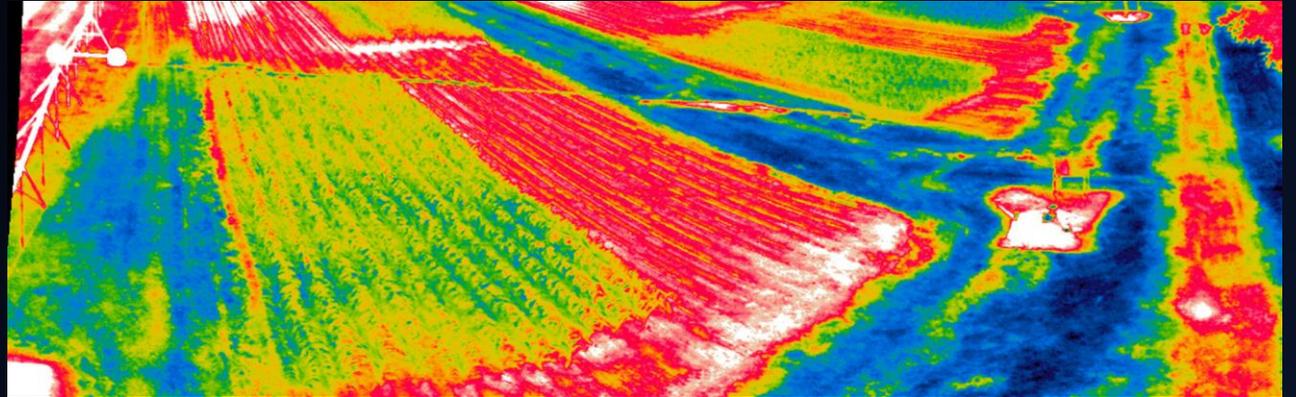
SENSORS, DATA, & AGRICULTURE

Robotics & Automation

AI & Modeling

Imaging

Sensors & Wireless communications



Wireless

- Currently, connections of farm end points rely on Wi-Fi or Bluetooth for short-range wireless communication, while remote applications use 4G cellular.
- Emerging precision agriculture applications demand higher data rates, lower latency and high-density communication.
- The need for data flow seamlessly among field devices and cloud-based facilities for storage, processing and decision making.

Challenges

- Not all use cases can be fulfilled with the current connectivity available in rural areas of the state.
- Delivering network coverage across fields.
- Wi-Fi and 4G can cover some use cases but not all.
- Building a well engineered connectivity solution that delivers higher bandwidth to and across remote sites.

How do we address these challenges?

- 4G to 5G
- Long-range radio (LoRA)
- Private LTE
- Wireless mesh network (WMN)
- Satellite
- ???????