CAIA

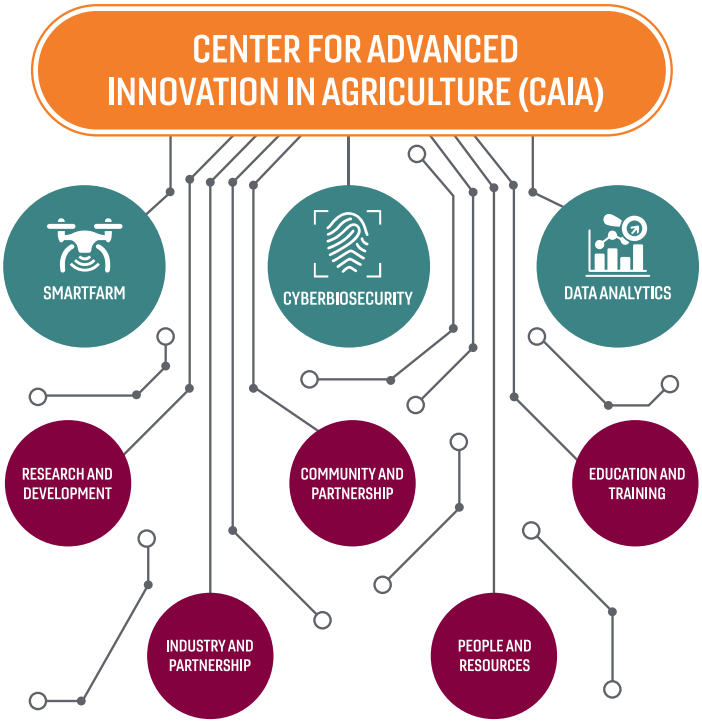
COLLEGE OF AGRICULTURE AND LIFE SCIENCES
CENTER FOR ADVANCED
INNOVATION IN AGRICULTURE
VIRGINIA TECH

LEADING INNOVATION

The Center for Advanced Innovation in Agriculture (CAIA) serves as a catalyst for collaboration and connections where Virginia Tech scientists and stakeholders with diverse expertise partner to solve complex problems and help the agricultural industry adapt to emerging technologies.

By partnering with industry, CAIA develops and validates new technologies in big data, artificial intelligence, cyberbiosecurity, and more to address issues of importance to the agriculture and food supply chain. This synergy enables agriculture to continue to be the driver of Virginia's leading private industry and empowers producers to make informed decisions that boost productivity.

CAIA's affiliated faculty are as diverse as Virginia's agricultural portfolio. Mechanical engineers and plant geneticists are collaborating with animal scientists and computer engineers to develop solutions and educate the next generation of agricultural leaders.

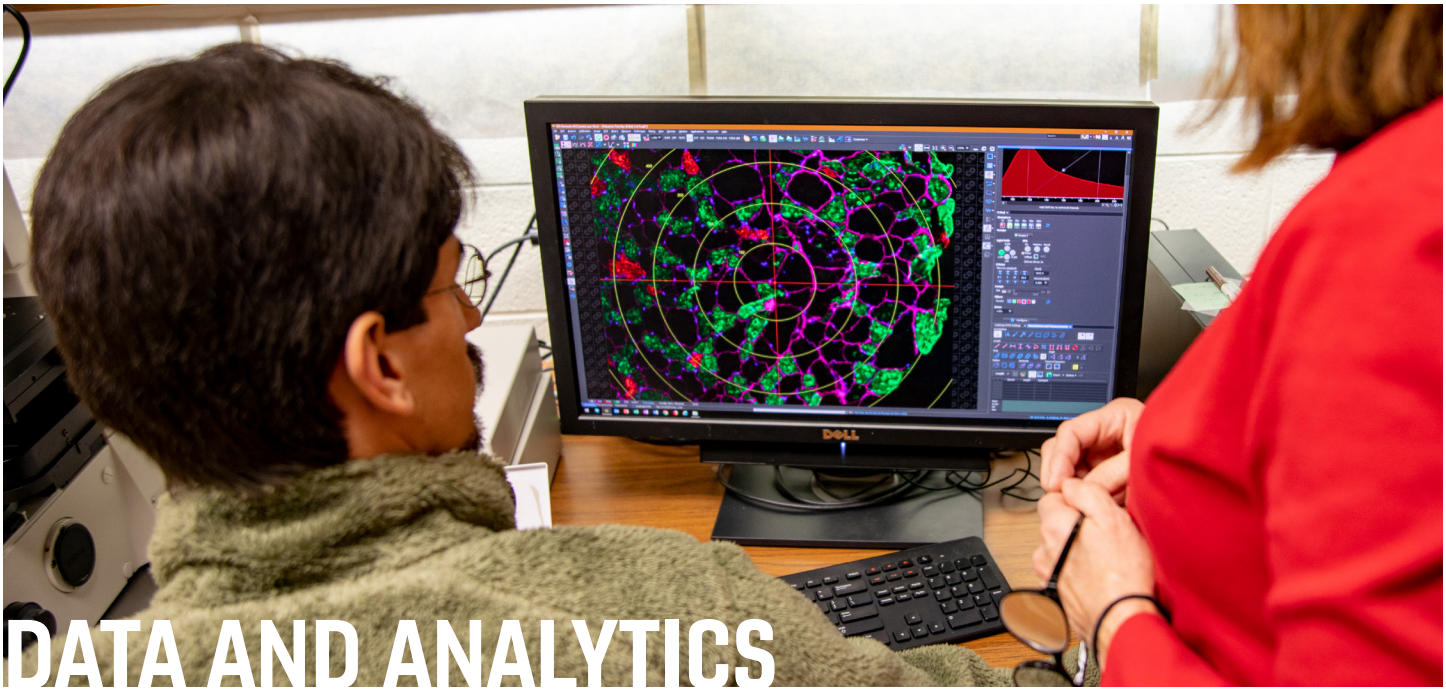


SMARTFARM INNOVATION NETWORK®

This network of research and Extension locations throughout Virginia is grounded in multiple testbeds. **Sustainable precision animal agriculture** incorporates technologies into intensive and extensive animal production systems. The **Controlled Environmental Agriculture Innovation Center in Danville** is a joint initiative between the School of Plant and Environmental Sciences, Virginia Seafood Agricultural Research and Extension Center, and the Institute for Advanced Learning and Research to promote and expand indoor agriculture. Across the commonwealth, our work in **SmartTechnologies for the crop and green industries** promotes autonomous systems to increase yield, reduce environmental impact, and boost economic productivity.

CYBERBIOSECURITY

Cyberbiosecurity is an emerging discipline addressing the educational and workforce gap between cybersecurity, cyberphysical systems, and biosecurity. **Biosecurity** focuses on identifying the risks and addressing protective measures needed to protect humans and animals against disease or invasive or harmful biological agents. **Cyberbiosecurity** focuses on identifying and reducing the risk of security vulnerabilities at the interface of life sciences, information sciences, and biosecurity.



DATA AND ANALYTICS

Agri-food and health informatics are essential for understanding the complexity of the data that technology is delivering to producers. The ability to utilize that data for design, and for identifying risks, resilience, and potential failures is a rich opportunity for CAIA. With the capacity for evaluating data, decision processes and creating strategic efficiencies in labor, production, processing, distribution become more rapid and better grounded. **Artificial intelligence and machine learning** are the basis of such innovations.

CAIA: A RESPONSE TO INDUSTRY REQUESTS

In 2018, the Virginia Tech College of Agriculture and Life Sciences hosted the Agricultural and Natural Resources Summit, where more than 100 industry representatives from across the commonwealth discussed what was required to ensure Virginia remained a global agricultural powerhouse in the decades to come.

The leaders agreed that evolving technology in the industry need to be addressed, the next generation of agricultural leaders need the required skills and knowledge to harness these technologies, and that more private and government investments were required.

The Center for Advanced Innovation in Agriculture was formed in direct response to these requests.

Formed in 2020, CAIA now has more than 105 affiliated faculty members from 38 departments across Virginia Tech who are collaborating to drive new technologies, educate the next generation, and ensure the commonwealth's agricultural industry remains competitive and viable long into the future.

JOIN US

CAIA is actively seeking partners and colleagues from businesses of all sizes to help test technologies, assist in the development of new ideas, and fund projects that expand our reach.

To find out how you can partner with and benefit from CAIA, contact Director Susan Duncan at **duncans@vt.edu** or **540-231-3766**.

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