

United States Department of Agriculture
Project Initiation

Project Data for Accession Number 1033349

Project Title

Digital Applications of Technology in Agriculture for Sustainable, Multidisciplinary, Accessible, Resilient, and Translatable Systems (DATA SMART Systems)

Project Details

Sponsoring Institution National Institute of Food and Agriculture	Project Status ACTIVE
Funding Source NIFA Non Formula	Grant Year 2026
Grant No. 2026-67037-46304	Cumulative Award Amt. \$750,000.00
Proposal No. 2023-08714	Multistate No. (N/A)
Project Start Date Sep 01, 2026	Project End Date Aug 31, 2031
Program Code [A7401] Research and Extension Experiences for Undergraduates	

Project Director

Green-Miller, A.

Recipient Organization

UNIVERSITY OF ILLINOIS
506 S WRIGHT ST
Urbana, ILLINOIS 618013620

Performing Department

(N/A)

Non Technical Summary

The proposed REEU program, DATA SMART Systems, centers around applications of technology and digital agriculture. The program aims to encourage students to consider research careers focused on applications of technology within agriculture, life sciences, and other bio-related industries. Planned activities will introduce students to a distinctive combination of skills and foundational knowledge from engineering, computer science, and biological science. The recruitment and selection process will first screen for merit, followed by priority to undergraduate students in STEM majors from higher education institutions that do not offer PhD programs, seeking a balance in the overall participant distribution. Student participants will work on research, extension, and/or educational projects such as image analysis for food processing and quantitative genetics for crop characteristics. Professional development and social programming round out the 10-week summer experience. The REEU will programmatically be housed within

United States Department of Agriculture Project Initiation

the Center for Digital Agriculture (CDA) at the University of Illinois at Urbana-Champaign (UIUC), and research activities will be conducted with faculty mentors in laboratories at UIUC.

Animal Health Component

Animal Health Component: 10%

Research Effort Categories

Basic	0%
Applied	100%
Developmental	0%

Classification

Knowledge Area (KA)	Subject of Investigation (SOI)	Field of Science (FOS)	Percent
903	7410	2020	100%

Knowledge Area

[903] Communication, Education, and Information Delivery

Subject Of Investigation

[7410] General technology

Field Of Science

[2020] Engineering

Keywords

big data, computer vision, crops, genomics, livestock, machine learning, precision agriculture

Goals / Objectives

1. To mentor/foster research exploration for motivated and high potential students in STEM; 2. To demonstrate a path for undergraduate students to be successful in graduate school and/or industry research; 3. To increase fluency in digital technologies and applications for agriculture by cross-disciplinary teams in biological sciences; and

Project Methods

Student Activities and Timetable
The DATA SMART Systems REEU program students will spend 36 hours per week on research/extension activities and 4 hours per week on professional development, enrichment seminars, and activities. Students will submit weekly research and professional development reflections to the program mentor. The DATA SMART Systems REEU program will be fully synchronized with the CDA REU program, beginning with recruitment of participants and faculty-proposed projects in late fall, selecting students and matching with projects mid-spring, and operating the summer experience for 10 weeks, primarily in June and July. The Management Plan provides greater timeline details. Week 1 will focus on Orientation and Background. Activities include a campus tour, program orientation meeting, meeting faculty mentors, lab safety and other training to start work in labs, tours of

United States Department of Agriculture Project Initiation

campus cultural centers, Python coding introduction, ice cream social (hosted by ISRPA for all summer REU students on the UIUC campus), campus safety and sexual harassment training, and overview of program expectations and roles. Week 2 will require the student to complete the AIFARMS AI Foundry for Ag Applications shortcourse and hackathon (or similar, comparable experience). This foundational AI course introduces basic artificial intelligence and machine learning skills for novice learners and expands abilities for those moderately experienced with computation. The course concludes with a 30-hour hackathon. All students in the 2022, 2023, 2024, and 2025 CDA REU cohort successfully completed the course and hackathon. The DATA SMART Systems REEU program graduate mentor will offer extra "office hours" during this week to supplement the class time, reinforce concepts, and troubleshoot challenges. Weeks 3-9, the students will focus on their research projects while also attending professional development seminars. The students will also participate in at least one field trip that enhances their knowledge of agriculture and shows applications of digital technology. By the end of week 9, each participant will have drafted, revised, and submitted a final project abstract and poster to the program mentor. Across Weeks 1-9, Professional Development seminars and discussions will be delivered in collaboration with the ISRPA. Example session topics include: resume writing, dressing for success, applying for jobs, building a successful LinkedIn profile, finding graduate school, preparing for grad school, finding an advisor, securing funding, preparing and delivering a technical/scientific presentation. These will be in-person events and give the students an opportunity to interact with other undergraduate researchers. During Week 10, the students will present lightning talks about their projects at the end of the program banquet, with an audience of all CDA REU participants, faculty mentors, and other guests. Students will also spend one day at the UIUC STEM Career Exploration and Symposium, attending research presentation sessions, panel discussions on careers in STEM, and poster sessions. The CDA REU students will present posters at the symposium. The REEU program will print the participants' posters for them to take after the program and will encourage them to present their research at national professional conferences like Council on Undergraduate Research (CUR), National Diversity in STEM Conference (SACNAS), etc. In addition to professional experiences, ample opportunities are available for social interactions, within the DATA SMART Systems REEU student group and across the other UIUC campus REU/REEU groups. Weekly activities have been planned, including mix of local community events and events custom-designed for the REEU students, such as: a Scavenger Hunt around campus; Escape room; Thursday Night Free Movie on the Quad; Board Game Night; Ice Skating on Campus; Rock Climbing on Campus. Additionally, students will be housed near one another to encourage the further development of relationships. The CDA REU program coordinator and program graduate mentor will actively facilitate social planning. The welcome packet will also highlight free events on campus, and many other campus groups regularly post upcoming events.