Awards issued prior to January 20, 2025, were funded under previous Administrations and may not reflect the priorities and policies of the current Administration.

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

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Performing Department

(N/A)

Non Technical Summary

The proposed REEU program, DATA SMART Systems, centers around applications of technologyand digital agriculture. The program aims to encourage students to consider research careersfocused on applications of technology within agriculture, life sciences, and other bio-relatedindustries. Planned activities will introduce students to a distinctive combination of skills andfoundational knowledge from engineering, computer science, and biological science. Therecruitment and selection process will first screen for merit, followed bypriority to undergraduate students in STEM majorsfrom higher education institutions that do not offer PhD programs, seeking a balance in the overall particpant distribution. Student participants willwork on research, extension, and/or educational projects such as image analysis for foodprocessing and quantitative genetics for crop characteristics. Professional development andsocial programming round out the 10-week summer experience.The REEU will programmatically be housed within

the Center for Digital Agriculture (CDA) at theUniversity of Illinois at Urbana-Champaign (UIUC), and research activities will be conductedwith 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/orindustry research;3. To increase fluency in digital technologies and applications for agriculture by cross-disciplinaryteams in biological sciences; and

Project Methods

Student Activities and TimetableThe DATA SMART Systems REEU program students will spend 36 hours per week onresearch/extension activities and 4 hours per week on professional development, enrichmentseminars, and activities. Students will submit weekly research and professional developmentreflections 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, selectingstudents and matching with projects mid-spring, and operating the summer experience for 10weeks, 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, programorientation meeting, meeting faculty mentors, lab safety and other training to start work in labs,tours of

campus cultural centers, Python coding introduction, ice cream social (hosted by ISRPAfor all summer REU students on the UIUC campus), campus safety and sexual harassmenttraining, 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 andmachine learning skills for novice learners and expands abilities for those moderatelyexperienced with computation. The course concludes with a 30-hour hackathon. All students inthe 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" duringthis 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 professionaldevelopment seminars. The students will also participate in at least one field trip that enhancestheir knowledge of agriculture and shows applications of digital technology. By the end of week9, each participant will have drafted, revised, and submitted a final project abstract and posterto the program mentor.Across Weeks 1-9, Professional Development seminars and discussions will be delivered incollaboration with the ISRPA. Example session topics include: resume writing, dressing forsuccess, applying for jobs, building a successful LinkedIn profile, finding graduate school,preparing for grad school, finding an advisor, securing funding, preparing and delivering atechnical/scientific presentation. These will be in-person events and give the students anopportunity to interact with other undergraduate researchers.During Week 10, the students will present lightening talks about their projects at the end of theprogram banquet, with an audience of all CDA REU participants, faculty mentors, and otherguests. 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 postersessions. The CDA REU students will present posters at the symposium. The REEU program willprint the participants' posters for them to take after the program and will encourage them topresent their research at national professional conferences like Council on UndergraduateResearch (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 campusREU/REEU groups. Weekly activities have been planned, including mix of local communityevents and events custom-designed for the REEU students, such as: a Scavenger Hunt aroundcampus; Escape room; Thursday Night Free Movie on the Quad; Board Game Night; Ice Skatingon Campus; Rock Climbing on Campus. Additionally, students will be housed near one anotherto encourage the further development of relationships. The CDA REU program coordinator andprogram graduate mentor will actively facilitate social planning. The welcome packet will alsohighlight free events on campus, and many other campus groups regularly post upcomingevents.