2024 AI in Agriculture and Natural Resources Conference
April 15, 2024 - April 17, 2024

Upcoming Deadlines

The deadline to book your room at the Texas A&M Hotel and Conference Center for the 2024 AI in Agriculture and Natural Resources Conference is **Friday, March 22, 2024**.

Registration for the 2024 AI in Agriculture and Natural Resources Conference closes **Monday, April 1, 2024 at midnight**.

Welcome

2024 AI in Agriculture and Natural Resources: Innovation and Discovery to Manage Sustainability in a New World of Environmental Stress

Join us in our mission to enhance knowledge sharing and foster collaboration among U.S. university faculty, students, industry professionals, and stakeholders to facilitate the efficient, sustainable, and socio-economically equitable implementation of artificial intelligence (AI) technology.

This event marks the third annual AI in Agriculture conference, where we aim to explore the cutting-edge developments in AI and its applications in the agricultural sector.

Dr. Seth Murray plays a pivotal role as the primary grant and fund holder, guiding our efforts to make this conference a success.

We are proud to announce our collaboration with various departments at both Texas A&M and Prairie View A&M to jointly host this prestigious conference.

Dates & Times
April 15, 2024 — 12:00 p.m. - 5:00 p.m.
April 16, 2024 — 8:00 a.m. - 7:00 p.m.
April 17, 2024 — 8:00 a.m. - 5:00 p.m.

Location
Texas A&M Hotel and Conference Center - College Station, Texas

Abstract submission is now open for potential presenters!

All submitted abstracts should be written in English and submitted using the online submissin link, below. The deadline to submit your abstract is **January 22, 2024 at Midnight for consideration in conference oral presentation program**.

We will accept oral abstracts afterward as spots allow.

Each submitted Potential Presenter abstract must include:
- Information on the authors' names and affiliations
- Information relevant to the proposed presentation, depending on its focus – with topics in research, teaching, and extension welcome.
- Abstracts should be between 2,000 and 2,500 characters.

ABSTRACT SUBMISSION

Abstract submission is now open for the student poster session!

All submitted abstracts should be written in English and submitted using the online submission link, below. **Deadline to submit your abstract is March 1, 2024, at Midnight**.

Student Poster Abstract Submission must succinctly present the background and need for the proposed AI application:

- A Peer Review Poster session will highlight the work of undergraduate, and graduate students, and/or individuals with less than five years of postgraduate

career-track experience.
- Abstracts submitted to the poster session that pass a peer review process will be selected for on-site presentation.
- Posters must succinctly present the background and need for the proposed AI application, the methodology that should be implemented to develop and test their proposed idea, and a section that will explain how the proposal contributes to environmental sustainability.

ABSTRACT SUBMISSION

Speakers

Organizing Co-Chairs

Dr. Seth C. Murray

Professor Butler Chair - Corn Breeding and Genetics
The Texas A&M AgriLife

Proposal Lead

Thanos Gentimis

Assistant Professor

Organizing Coordinator

Organizing Committee

Dr. Yiannis Ampatzidis

Associate Professor
University of Florida

MORE INFO

Mahendra Bhandari

Assistant Professor

Texas A&M University AgriLife Research and Extension Center - Corpus Christi

MORE INFO

Dr. Aniruddha Datta

Professor, Electrical & Computer Engineering
Texas A&M University

MORE INFO

Preliminary Agenda

Monday, April 15th

Multi-state S1090 Meeting
10:30 a.m. – 11:30 a.m.

Registration (Foyer)
12:00 p.m. – 6:00 p.m.

Prairie View A&M University Tour
12:00 p.m. – 5:00 p.m.

Pre-conference Workshop
1:00 p.m. – 5:00 p.m.

Welcome (Ballroom)
5:00 p.m. – 6:30 p.m.

Dinner & Networking (Ballroom)
6:30 p.m. – 8:00 p.m.

Tuesday, April 16th

Registration & Breakfast (Foyer)
7:30 a.m. – 8:30 a.m.

Keynote Speaker (Ballroom)
8:30 a.m. – 9:30 a.m.

Coffee Break (Foyer)
9:30 a.m. – 9:50 a.m.

Five Concurrent Breakout Sessions

9:50 a.m. – 10:10 a.m.
- Session 1A: Sensors & Robotics (Ballroom) — Image Repository for Cotton, Corn, and Sorghum Production Using the Farming amiga robot.
  Oscar Fernandez
- Session 1B: Pests & Diseases (Corps) — Developing an AI-based Plant Weed Detector for Smart Agriculture.
  Ahmed Ahmed
- Session 1C: Social & Economic Implications (Ross) — Ag Econ Smart (AES): A Suite of Agricultural Economics Online Tools.
  Nazia Arbab
- Session 1D: Water & Soils (Reveille) — A regression-based approach to estimate soil water content in cover crop-based cotton production systems from UAS-based images.
  Srinivasulu Ale
- Session 1E: Management – Yield (Traditions) — Integrating Machine Learning Models for Corn Yield Prediction Based on NDRE Data.

Rejina Adhikari

10:10 a.m. – 10:30 a.m.
- Session 1A: Sensors & Robotics (Ballroom) — Hierarchical Reinforcement Learning for Autonomous Harvesting Robots in Dynamic Environments
  Prasad Nethala
- Session 1B: Pests & Diseases (Corps) — From Pests to Prevention: Leveraging mmwave Radar Sensor and Machine Learning for Proactive Pest Management
  Leslie Barreto Gonzalez
- Session 1C: Social & Economic Implications (Ross) — TBD
- Session 1D: Water & Soils (Reveille) — Unfolding the Complexity of Soil: Harnessing AI and Remote Sensing for Cutting-Edge Detection, Monitoring, and PhotoAOP Remediation
  Mishaal Ashkanani
- Session 1E: Management – Yield (Traditions) — Improving Yield Prediction Accuracy with Machine Learning and Field Boundary Effects
  Thanos Gentimis

10:30 a.m. – 10:50 a.m.
- Session 1A: Sensors & Robotics (Ballroom) — Development of a machine vision and spraying system of a robotic precision smart sprayer for specialty crops.
  Vinay Vijayakumar
- Session 1B: Pests & Diseases (Corps) — Weed Detection in Early-Stage Sugarcane Fields Using Machine Learning and Low-Resolution RGB Imagery.
  Lalita Panduangnat
- Session 1C: Social & Economic Implications (Ross) — Using Eye-Tracking to Understand Cattle Producers Take-Up Decision.
  Christopher Boyer
- Session 1D: Water & Soils (Reveille) — Projection of Hydrologic Intensity Duration Frequency Parameters and Their Uncertainties Based on Climate Projections for the 21st Century in the State of Texas.
  Fouad Jabar
- Session 1E: Management – Yield (Traditions) — Machine Learning Based Prediction of Wheat Yield using Farmer's Surveys data.
  Siraj Mohammed

10:50 a.m. – 11:10 a.m.
- Session 1A: Sensors & Robotics (Ballroom) — Performance Benchmarking of Deep Object Detectors to Detect Green Asparagus Towards Robotic Harvesting.
  Jiajun Xu
- Session 1B: Pests & Diseases (Corps) — Drone-Based Intelligent for the Management of Pests in Crops: A Comprehensive Study.
  Shreya Singh
- Session 1C: Social & Economic Implications (Ross) — Blockchain-Enhanced Data Management in AI-Driven Agriculture: A Pathway to Efficiency and Transparency.
  Younghoo Cho
- Session 1D: Water & Soils (Reveille) — 3-Year Agricultural Field Study for GNSS-R Based Soil Moisture Mapping.

Volkan Senyurek
- Session 1E: Management – Yield (Traditions) — TBD

11:10 a.m. – 11:30 a.m.
- Session 1A: Sensors & Robotics (Ballroom) — Streamlining UAV Data Analysis in Agriculture through a Comprehensive Canopy Feature Database.
  Jose Luis Landivar
- Session 1B: Pests & Diseases (Corps) — Detecting citrus pests from sticky traps using deep learning.
  Congliang Zhou
- Session 1C: Social & Economic Implications (Ross) — Evaluating the Performance Extension Bot: An Agriculturally Focused Small Language Chatbot for Land Grant Extension Services.
  Jeffrey Vitale
- Session 1D: Water & Soils (Reveille) — Enhancing Agricultural Water Management: A Desktop Application Integrating UAV Imagery and Ground Sensing for Precision Irrigation.
  Boaz Tulu
- Session 1E: Management – Yield — Modelling root zone soil moisture to be a searchable chart for farming practices in the Southeast US.
  Ziwen Yu

Lunch (Ballroom)
11:30 p.m. – 12:30 p.m.

Panel 1 (Ballroom)
12:30 p.m. – 1:45 p.m.

Coffee Break (Foyer)
1:45 p.m. – 2:00 p.m.

Five Concurrent Breakout Sessions

2:00 p.m. – 2:20 p.m.
- Session 2A: Breeding & Phenotyping (Ballroom) — Transforming Advanced Machine Learning Algorithms into User-Friendly Tools for Breeding.
  Heather Manching
- Session 2B: Livestock (Corps) — Designing a Hybrid Intelligent Decision Support System for Sustainable Beef Production: The Case of Bovine Respiratory Disease and Enteric Emissions Mitigation.
  K. Kaniyamattam
- Session 2C: Education & Outreach (Ross) — Cross-Disciplinary Mentoring for Undergraduates: Data Analytics in Agriculture.
  Yuxia (Lucy) Huang
- Session 2D: Horticulture – Field (Reveille) — A data-driven approach for precision picker activity recognition during manual fruit harvesting.
  Uddhav Bhattarai
- Session 2E: Management Cotton (Traditions) — Artificial Intelligence and Satellite-Based Remote Sensing Model to Predict Cotton (Gossypium spp.) YIELD.
  Dulis Duron

2:20 p.m. – 2:40 p.m.
- Session 2A: Breeding & Phenotyping (Ballroom) — Cotton Chronology: Convolutional Neural Network Enables Single-Plant Senescence Scoring with Temporal Drone Images.
  Aaron DeSalvio
- Session 2B: Livestock (Corps) — Computer vision optimization for smart beef cattle feed scoring in Calan gate systems.
  Egleu Mendes
- Session 2C: Education & Outreach (Ross) — Using ChatGPT with Novice Arduino Programmers: Effects on Performance, Interest, Self-Efficacy, and Programming Ability.
  Donald Johnson
- Session 2D: Horticulture – Field (Reveille) — "Comparing YOLOv8 and Mask RCNN for object segmentation in complex orchard environments."
  Ranjan Sapkota
- Session 2E: Management Cotton (Traditions) — An AI-Driven DigitalTwin Framework for Cotton Feature Forecasting and Yield Prediction.
  Pankaj Pal

2:40 p.m. – 3:00 p.m.
- Session 2A: Breeding & Phenotyping (Ballroom) — High Throughput Phenotyping of the Energy Cane Crop Using UAS LiDAR Data.
  Benjamin Ghansah
- Session 2B: Livestock (Corps) — Automated Sow Posture Detection and Body Condition Estimation by 3D Computer Vision towards Precision Health Monitoring.
  Yibin Wang
- Session 2C: Education & Outreach (Ross) — Expanding AI expertise in the USDA's Agricultural Research Service by connecting graduate students with researchers in a novel internship program.
  Brian Stucky
- Session 2D: Horticulture – Field (Reveille) — AI in the orchard: Improving sustainability through predictive yield in trees.
  Carolina Trentin
- Session 2E: Management Cotton (Traditions) — Digital Twin Model for In-Season Management, Biomass and Yield Forecasting of Cotton Crops.
  Juan Landivar

3:00 p.m. – 3:20 p.m.
- Session 2A: Breeding & Phenotyping (Ballroom) — Spatial Transformer Network YOLO Model for Plant Phenotypic Discovery.
  Yash Vivek Zambre
- Session 2B: Livestock (Corps) — Quantifying nesting behavior metrics of broiler breeder hens with computer vision and big data analytics.
  Aravind Mandiga
- Session 2C: Education & Outreach (Ross) — Knowledge Management in Agricultural Research through Esri's ArcGIS Knowledge.
  Joseph Cullinan
- Session 2D: Horticulture – Field (Reveille) — Quantitative Analysis of Strawberry

Runners for Breeding through Ground and Aerial Imaging.
Xu Wang

- Session 2E: Management Cotton (Traditions) — In-season cotton yield prediction with scale-aware CNN models and UAV RGB imagery.
Haoyu Niu

3:20 p.m. – 3:40 p.m.
- Session 2A: Breeding & Phenotyping (Ballroom) — TBD
- Session 2B: Livestock (Corps) — Classification and Regression Tree Approach for Prediction of E. coli Prevalence in Pasture Poultry Farms.
Abhinav Mishra
- Session 2C: Education & Outreach (Ross) — Jaguza Tech developed an AI platform to provide digital assistance to the farmers both crops, livestock, and aquaculture working in Uganda and Nigeria Ibadan State.
Katamba Ronald
- Session 2D: Horticulture – Field (Reveille) — Winter Damage Detection on Golf Courses through Drone-Based Multispectral Imaging.
Ce Yang
- Session 2E: Management Cotton (Traditions) — Cotton Growth Forecast Using UAV Data with Bayesian Neural CDE.
Lei Zhao

Panel 2 (USDA/NSF AI Institutes Programs)
3:45 p.m. – 5:30 p.m.

Poster Session (Social & hors d'oeuvres)
5:30 p.m. – 7:00 p.m.

Wednesday, April 17th

Breakfast (Foyer)
7:30 a.m. – 8:30 a.m.

Panel 3 – Water (Ballroom)
8:30 a.m. – 9:45 a.m.

Coffee Break (Foyer)
9:45 a.m. – 10:00 a.m.

Five Concurrent Breakout Sessions

10:00 a.m. – 10:20 a.m.
- Session 3A: Data Methods (Ballroom) — An unsupervised deep learning approach to estimate the reliability of the training dataset in predicting the testing set is proposed."
Bob Fedor
- Session 3B: Social Implications of AI (Corps) — Detection of Unknown Crop Threats at Scale using Bayesian Nonparametrics.
Baxter Eaves

- Session 3C: Horticulture – Greenhouse & Controlled Env. (Ross) — Multimodal Sensing for On-Plant Size and Weight Estimation of Greenhouse Strawberry.
  Al Bashir
- Session 3D: Rangeland, Forestry, & Ecology (Reveille) — Harnessing Innovative Artificial Intelligence and Climate-Smart Technologies in Rangeland Systems.
  Marcia Fernandes
- Session 3E: Management Systems (Traditions) — Digital Twin Models: Implications for Farm Management.
  Yuri Calil

10:20 a.m. – 10:40 a.m.
- Session 3A: Data Methods (Ballroom) — Data to Science Engine (D2SE) - A Data-driven Open Science Ecosystem for Sustained Innovation.
  Jinha Jung
- Session 3B: Social Implications of AI (Corps) — Effective Transfer and Adoption of AI technologies: Lessons learned from other agricultural innovations.
  Rafael Landaverde
- Session 3C: Horticulture – Greenhouse & Controlled Env. (Ross) — Quality Index Measurement System for Tomatoes based on Self-Attention Convolutional Neural Networks and Channel Pruning and Quantization.
  Yaqoob Majeed
- Session 3D: Rangeland, Forestry, & Ecology (Reveille) — Improving Strategies for Multi-step Prediction of Time Series using Convolutional Neural Network: A Case Study in Aboveground Vegetation Biomass Forecasting.
  Efrain Noa Yarasca
- Session 3E: Management – Systems (Traditions) — Web-based tool for early season stand counts using CNN on UAS imagery.
  Mahmoud Eldefrawy

10:40 a.m. – 11:00 a.m.
- Session 3A: Data Methods (Ballroom) — Enhancing Agricultural Practices through MultiObject Tracking and Segmentation of Homogeneous Objects.
  Zahra Khademi
- Session 3B: Social Implications of AI (Corps) — Behavioral and Technological Drivers of Adoption of Digital Twins in Agriculture.
  Michelle Segovia
- Session 3C: Horticulture – Greenhouse & Controlled Env. (Ross) — Scene Graph Generation from Point Cloud Data of Tomato Plants: Segmentation and Spatial Relationships.
  Prasad Nethala
- Session 3D: Rangeland, Forestry, & Ecology (Reveille) — Application of Remote Sensing and Artificial Intelligence for Detection and Quantification of Invasive Plant Encroachment in West Texas Rangelands.
  Sayantan Sarkar
- Session 3E: Management Systems (Traditions) — AgSkySight: Automating the UAV Image Data Processing Workflow for Precision Agriculture.
  Matheus Siqueira de Souza

11:00 a.m. – 11:20 a.m.
- Session 3A: Data Methods (Ballroom) — Advancing the Symbiosis and Synergy of Research and Extension: Transforming Food Systems' Efficiency and Sustainability with Predictive AI Dissemination.
  Chin-Ling Lee
- Session 3B: Social Implications of AI (Corps) — Factors Affecting Farmer Adoption of Unmanned Aerial Vehicles: Current and Future.
  Tong Wang
- Session 3C: Horticulture – Greenhouse & Controlled Env. (Ross) — Bruised Fruit Detection Using Deep Machine Learning Algorithm.
  Ping Zhang
- Session 3D: Rangeland, Forestry, & Ecology (Reveille) — "Proximal sensors provide a promising solution for obtaining reliable ground-based measurements of pasture height and biomass."
  Rashmi Sharma
- Session 3E: Management Systems (Traditions) — Machine Learning Algorithms for Fertilizer Application and Corn Cob Quality Prediction Based on Soil Nutrient Data.
  Binita Thapa

11:20 a.m. – 11:40 a.m.
- Session 3A: Data Methods (Ballroom) — Application of TensorFlow model for identification of herbaceous mimosa (Mimosa strigillosa) from digital images.
  Tri Setiyono
- Session 3B: Social Implications of AI (Corps) — Industrial Perspective of Data Rights and Obligations in Agriculture reflected by the key factors of agriculture technology providers.
  Ziwen Yu
- Session 3C: Horticulture – Greenhouse & Controlled Env. (Ross) — TBD
- Session 3D: Rangeland, Forestry, & Ecology (Reveille) — Enhanced Image Classification of Agricultural Forage Plants and Weeds through a CNN Model Utilizing RMSprop Optimization.
  Aftab Siddique
- Session 3E: Management Systems (Traditions): Machine Learning for Predicting CO_2 Emissions — Enhancing Climate-Smart Agricultural Systems with Biochar and Organic Amendments.
  Anoop Valiya Veettil

11:40 a.m. – 12:00 a.m.
- Session 3A: Data Methods (Ballroom) — Confident machine learning improves the prediction accuracy of ResNet-18.
  Zhanyou Xu
- Session 3B: Social Implications of AI (Corps) — Toward sustainable culture media: Using artificial intelligence to optimize reduced-serum formulations for cultivated meat.
  Reza Ovissipour
- Session 3C: Horticulture – Greenhouse & Controlled Env. (Ross) — Enhancing Crop Health: An Embedded Edge AI Solution for Real-Time Disease Detection.
  Mike Ojo

- - Session 3D: Rangeland, Forestry, & Ecology (Reveille) — Automating Forest Stand Delineation using AI Integration of Optical Imagery, Airborne LiDAR, and Forest Inventory Data.
      Can Vatandaslar
  - Session 3E: Management Systems (Traditions) — TBD

Lunch (Ballroom)
12:00 p.m. – 1:00 p.m.

Keynote Speaker (Ballroom)
1:00 p.m. – 2:00 p.m.

Coffee Break (Foyer)
2:00 p.m. – 2:30 p.m.

Panel 4 - Industry/Technology (Ballroom)
2:30 p.m. – 2:45 p.m.

Next Steps & Planning (Ballroom)
4:00 p.m. – 5:00 p.m.

Optional Business Meetings
5:00 p.m. – 7:00 p.m.

NOTE: The agenda will be finalized closer to the event kick-off. *

Registration Options

Early-bird pricing is available until February 9, 2024!

In Person
(Early-Bird)

$390

After 2/9/2024

$440

REGISTER NOW

In Person
(Student Early-Bird)

$275

After 2/9/2024

$325

REGISTER NOW

Virtual
(Early-Bird)

$125

After 2/9/2024

$175

REGISTER NOW

Virtual
(Student Early-Bird)

$100

After 2/9/2024

$150

REGISTER NOW

Sponsorship Options

Diamond

Level

$10,000

Includes:

8 complimentary attendees

Display table (if desired)

SPONSOR NOW

Platinum

Level

$5,000

Includes:

3 complimentary attendees

Display table (if desired)

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Gold

Level

$2,500

Includes:

2 complimentary attendees

1/2 Display table (if desired)

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Silver

Level

$1,000

Includes:

1 complimentary attendee

SPONSOR NOW

Accommodations

The Texas A&M Hotel and Conference Center

- Get 10% discount for booking with room block at the host site!
- The **first 100 attendees to book their accommodations with Texas A&M Hotel & Conference Center** are eligible to receive a 10% discount on their conference registration fees.

BOOK YOUR ROOM!

Airports

College Station, Texas is home to Easterwood Airport (https://www.flyeasterwood.com/), a regional airport that services College Station with connecting flights on American Airlines through Dallas. Rental cars from Alamo, Avis, Budget, Enterprise, and National are available at Easterwood Airport. Hertz is available 20 minutes off-site in College Station. Uber and Lyft are also available for a 10-minute commute to the hotel.

Austin (AUS) (https://www.austintexas.gov/airport) and Houston (IAH) (https://www.fly2houston.com/iah/overview) airports are approximately a two-hour drive and an hour-and-a-half drive, respectively. Rental cars are available at both airports. GroundShuttle.com (https://groundshuttle.com/) (1-855-303-4415 (tel:1-855-303-4415)) offers daily shuttles between Houston International Airport and Easterwood Airport in College Station.

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Site Information

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Military Families (https://fch.tamu.edu/programs/military-programs/)

Risk, Fraud & Misconduct Hotline (https://secure.ethicspoint.com/domain/media/en/gui/19681/index.html)

Texas Homeland Security (https://gov.texas.gov/organization/hsgd)

Texas Veteran's Portal (https://veterans.portal.texas.gov/)

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