

Milt McGiffen

Milt McGiffen serves as a Cooperative Extension Specialist in Vegetable Crops at the University of California, Riverside. Dr. McGiffen also works as a plant physiologist, with specialties including invasive species, weed science, sustainable agriculture, and alternatives to methyl bromide.

Previous student-led work in the McGiffen has involved the use of unmanned aerial vehicles, which included becoming certified in flying small drones. Students have worked with image data to analyze weed development in fields.

Student-led research poster titles:

Big Satellite Data Analytics on Crop Growth in California by Sulaiman Ahmed

Detecting Damage from Nematodes in Crops Using Remote Sensing by Hovanness Dingilian

Weed Detection through Drone Imaging in an Onion Field by Andrea Barajas

Weed Discrimination using YOLOv8 Deep Learning Algorithm by Simarpal Singh

Flying Drones for Multispectral Image Analysis in Agriculture by Gabriel Livas

Student Recognition:

Hovanness Dingilian won third place for their research poster at the 2023 California Plant and Soil Conference.

Hoori Ajami

Hoori Ajami is an Associate Professor of Groundwater Ecology in UCR's Environmental Sciences department. Specializing in catchment hydrology and spatial analysis, Dr. Ajami's lab is utilizing hydrological modeling tools to estimate potential benefits of management in the Colorado River Basin.

Students have conducted work focused regionally on the Colorado River Basin including: the use of machine learning to study stream flow, climate change simulation analysis, and examination of trends in water table data.

Student-led research titles:

Bias Correcting Simulated Streamflow by Utilizing Machine Learning by Jose Angel Pulido

Groundwater Trends and Agricultural Impact: A Study on California Well Data by Lily Caplon-Guin

Understanding Surface Water and Groundwater Chemistry Variability in the Sierra Nevadas by Valerie Gonzalez

Groundwater Response to Drought is Defined by Evapotranspiration, Antecedent Conditions, and Precipitation Characteristics by William Burgess

Ray Anderson

Ray Anderson is a research soil scientist for the U.S. Salinity Laboratory, USDA-ARS. Currently, Dr. Anderson's work involves estimating crop water requirements in the Southwest of the U.S.

The Anderson lab travels throughout farmland located in the lower Colorado River Basin to conduct soil surveys, and is specifically utilizing an energy balance model called Backward-Averaged Iterative Two-Source Surface temperature and energy balance Solution (BAITSSS) to analyze specialty crop water usage.

Student-led research titles:

Proximal Remote Sensing of Soil Texture in Relationship to Gamma Rays within Arid Zones by Nicholas Jimenez

LSTM Neural Network for Crop Classification in the Yuma Valley Region of the Lower Colorado River Basin by Jordan Guillory

Machine Learning in Crop Classification by Cindy Ho

Ahmed Eldawy

Ahmed Eldawy is an Associate Professor within the Computer Science Department at the University of California, Riverside, and is the creator of the geodatabase for the AI4SA project. Currently, Dr. Eldawy's research focuses include: databases, big data management, and spatial data processing.

The Eldawy lab is specifically creating a geodatabase as part of the backend development of a smartphone application. The application seeks to provide farmers with easy access to tailored management recommendations.

Student-led research titles:

Satellite Big Data Management and Processing by William Bryant

Student recognition:

Vinayak Gajjewar won the 2023 National Student Recognition Award by the ASA, CSSA, and SSSA.

Vagelis Papalexakis

Vagelis Papalexakis serves as an Associate Professor in the Computer Science and Engineering Department at the University of California, Riverside. Dr. Papalexakis's research focus involves tensor decompositions for machine learning and data science.

Student work in Dr. Papalexakis's lab has involved the identification of crop stress using satellite images from farmland in California's Central Valley.

Student-led research titles:

Tensor Decomposition for Hyperspectral Image Analysis by Ingrid Morales

Semantic Segmentation for Crop Type Prediction by Het Patel

Tensor-Based Anomaly Detection in Crop Satellite Data Over Time by Emilio Rivas

Elia Scudiero

Elia Scudiero is an Associate Professor of Precision Agriculture specializing in soil salinity within the Environmental Sciences Department at the University of California, Riverside. Dr. Scudiero is serving as Project Director for the AI4SA project and is leading the project's applied research component.

The Scudiero lab travels to conduct soil surveys within the Colorado River Basin for data used to investigate precision nutrient management. Student-led work has included the analysis of plant and soil relationships.

Student-led research titles:

Using Gamma-Ray Spectrometry to Study Plant Soil Relationships in Ten Lettuce Fields in Salinas Valley by Maritssa Nolasco

Dynamic Response of NDVI to Soil Moisture Variations Under Different Climate and Crop Types in California by Harrison Chow

Student recognition:

Maritssa Nolasco was selected to be a 2023 ASA, CSSA, and SSSA Golden Opportunity Scholar.

Zhaowei Tan

Zhaowei Tan is an Assistant Professor in the Computer Science and Engineering Department, specializing in high-efficiency, reliable, and secure wireless systems. He is particularly passionate about applying these technologies to agriculture. He leads the AGLINK project, supported by OASIS, which utilizes drone-based wireless remote sensing and AI-powered data analysis to enhance decision-making in precision agriculture.

The student-led projects include programming and integrating sensors on drones, building wireless-capable sensors, setting up cloud servers for data collection and analysis, etc.

Student-led research titles:

Building a Lightweight LoRa Sensor Gateway on Drones and Optimizing Drone Planning for Efficient Data Collection

Enhancing In-Situ Sensors with Long-Range, Low-Power Wireless Communication

Amir Verdi

Amir Verdi is an Associate Professor of Urban and Agricultural Water Management in the Environmental Sciences Department at UCR. His research focuses on field irrigation trials, remote sensing and AI modeling, and laboratory work in soil hydrology.

DAF Student-Led Research

Impact of Restricting Irrigation on Canopy Temperature and Greenness of Turfgrass and Groundcovers – Anahy Rivera

Leveraging Machine Learning for Efficient Water Usage and Monitoring Plant Coverage in Urban Landscapes – David Ranai

Student Recognition

David Ranai – First Place, Undergraduate Student Water Science Category, American Society of Agronomy, 2025 Plant and Soil Conference, Poster Competition Award