THE UNIVERSITY OF ARIZONA

RESEARCH, INNOVATION & IMPACT
**Data Science Institute**

# The Data Drip

**A DIGEST OF DATA SCIENCE NEWS AT THE UNIVERSITY OF ARIZONA**

November ❄ December 2024

## DATA SCIENCE INSTITUTE
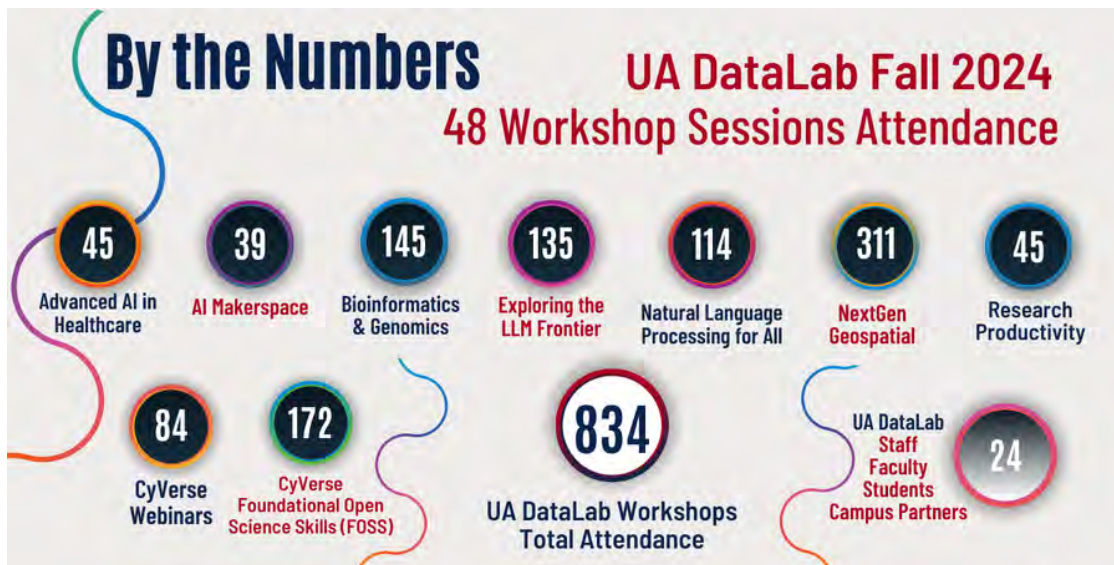
**November/December 2024**

**Spring 2025 UA DataLab workshops coming soon!**

DataLab is a series of no cost, hands-on workshops focused on AI/ML methods, techniques and tools. Taught by educators, practitioners and collaborators from multiple departments at the U of A, it provides a collaborative environment for students, researchers, and industry partners to explore the use of AI/ML for their projects and participate in building the campus community of practice.

The successful Fall 2024 workshop series consisted of 48 sessions with an attendance of over 830. The workshop recordings and slides can be viewed on the **UA DataLab site**. We are adding new sessions on effective use of the new generation of **foundation models** and adapting them for specific research tasks that range from segmenting, counting and tracking multiple objects in images and videos to summarizing text and audio. Trained on massive amounts of data, these models can be readily adapted and tuned for various tasks and now support multiple modalities e.g. vision models can perform optical character recognition (OCR) on images and can answer questions about the extracted text. We will cover how to organize your

data, train and tune these models, and integrate them into your analysis that can run on computational infrastructure in your own lab, campus, NSF resources or deployed in the field (see AI Zone article). Learn more about foundation models and their applications in this **publication**, "On the opportunities and risks of foundation models" by Rishi Bommasani, et al.  Explore AI applications in engineering, life sciences, genomics, healthcare, and more; and boost research productivity with expert-led weekly sessions. Remember to share the **UA DataLab** opportunities with your students, departments, and friends. If there are topics that you would like us to include in the UA DataLab, please **contact us via email**.



By the Numbers — UA DataLab Fall 2024 — 48 Workshop Sessions Attendance

- **45** Advanced AI in Healthcare
- **39** AI Makerspace
- **145** Bioinformatics & Genomics
- **135** Exploring the LLM Frontier
- **114** Natural Language Processing for All
- **311** NextGen Geospatial
- **45** Research Productivity
- **84** CyVerse Webinars
- **172** CyVerse Foundational Open Science Skills (FOSS)
- **834** UA DataLab Workshops Total Attendance
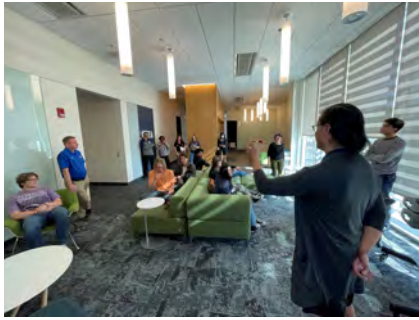- **24** UA DataLab Staff Faculty Students Campus Partners

## AI Zone makes bean counting more fun!

AI powered tools are becoming increasingly accessible and practical and learning how to use them is becoming easier. These tools are allowing analysis that was not feasible a few years ago. Through a NSF grant (SWEETER), the Data Science Institute created the "AI Zone".  The interactive setup allows attendees to explore how AI tools work and how to build solutions using a web browser with **Teachable Machine Learning** and more advanced applications that can track and count objects such as beans and cattle. The AI Zone can be customized for various needs in real world settings. The AI Zone was recently used at the  CALES Invest Ag 100 Council


Ag100 AI Zone with Leonardo


Yuma AI Zone and Nirav

Sahuarita HS students and AI Zone





conference, Yuma AgTech Day, and the Sahuarita HS BIO5 U of A campus tour. At these events, visitors quickly learned how to use AI tools, such as Google's Teachable Machine, to create simple yet powerful AI models. The agriculture industry leaders at the CALES conference explored how AI could scan fields, identify cows, and estimate their weight using image recognition software. At Yuma AgTech Day, farmers witnessed how drones and AI could automatically detect produce issues, like lettuce rot. Meanwhile, Sahuarita High School students watched a demonstration on training AI models to identify, differentiate, and count various types of beans with ease. These hands-on experiences highlight how simple it can be to adopt AI tools for real-world problem solving. Please **contact us via email** to request a demo of the portable, easy-to-use AI Zone or request it for your instructional setting.

## US-RSE 2024 Conference inspires



Michelle Yung and Shravan Aras, PhD attended the recent US-RSE 2024 conference in Albuquerque, NM.  Both left with renewed inspiration and a deeper sense of community. Yung reflected on how the event empowered her to embrace her role as a Research Software Engineer (RSE), while Aras highlighted key discussions on RSE career development and recognition. The transformative conference offered a rich blend of technical workshops, thought-provoking keynote speakers, and valuable networking opportunities. As the RSE movement continues to grow, next year's event in Philadelphia promises to build on this momentum, fostering further collaboration and growth within the global RSE community. **Read their stories and be inspired**.

## NEWS & ACTIVITIES



### CyVerse finds appreciation at SIE Internship Mixer

In early November, the U of A Systems & Industrial Engineering department hosted the SIE Internship Mixer for undergrad and graduate students. Many students arrived prepared, bringing resumes with them. Also in attendance with CyVerse Cloud Native Services were **Edwin Skidmore**, Infrastructure Director, and student UX/Accessibility Developer, Victoria Quang. They joined over a dozen companies looking to hire interns and student workers. After the event, Victoria reflected, "I realize how lucky I am to have a job that not only fits into my career field, but also offers a supportive and enriching environment."



### Roots for Resilience Fall 2024 cohort - the newest experts

**AIR** Director, Sharon Collinge, and Nirav Merchant, **DSI** Director, joined the cohort in extending congratulations to the Fall 2024 **Roots for Resilience program** cohort as they complete the semester and the R4R program.

Having successfully finished the **FOSS** program with CyVerse, the cohort now serve as departmental contacts, using their expertise to support researchers in managing data and ensuring their work is open, reproducible, and scalable. Learn more about their R4R experience and achievements through cohort department presentations and their **full R4R profiles**.

**Edwin Alvarado-Mena**, Government & Public Policy; **William Brasic**,

Economics; **Caleigh Curley**, Public Health Policy and Management Program; **Brielle Hadley**, James E. Rogers College of Law; **Ulises Hernández**, Ecology and Evolutionary Biology; **Alyssa Mae Fink**, Architecture & Institute for Energy Solutions/AI; **Joy Luzingu**, Epidemiology; **Imran Mithu**, Community, Environment & Policy Department; **Chosen Obih**, School of Plant Sciences; **Sudan Pandey**, Structural Engineering; **Cassidy Soloff**, Atmospheric Science; **Sunday Usman**, Systems and Industrial Engineering; **Andrew Wheeler**, Genetics

## AI at Arizona community



Join the AI at Arizona community, a central hub for AI initiatives across campus. For U of A students, faculty, and staff, the community facilitates collaboration, inspires innovation, and accesses resources and information with weekly discussions, hands-on demos, and networking opportunities. **Learn more** and join with your NetID.



**Happy Holidays!**
Enjoy the end of Fall 2024, U of A closure, winter session, and winter break.
**Happy New Year!**

## Share The Data Drip!

Share The Data Drip with your friends and colleagues who can subscribe by **completing this brief form**.  If you have data science news that you want to share in The Data Drip or on the DSI

website, send us an **email**.

**Share!**

# The Data Drip

A digest of Data Science news at the
University of Arizona

## CALENDAR

Review the **DSI calendar of events** page for data science activities and workshops from across campus. Complete the **DSI calendar request form** to have your data science event listed in The Data Drip or on the DSI calendar of events page.

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|---|---|
| Spring and Fall Semesters 2024 | **Catch up on U of A DataLab Spring and Fall 2024 workshop series**<br><br>Missed a UA DataLab workshop? No worries! Check out the Spring and Fall 2024 workshops on the **UA DataLab YouTube channel**. |
| Spring Semester 2025 | **UA DataLab Workshops**<br><br>Expert-led sessions with AI & Cloud Tools for Geographic Analysis; AI Applications in Engineering, Life Sciences, Genomics, Healthcare; and more.  Coming soon! |

## Yes! Add me to the DSI email list.

Subscribe to be added to the Data Science Institute email list. Or **email the Data Science Institute** so we can be of assistance to you and your research.

SUBSCRIBE TO THE DATA DRIP

## Land Acknowledgment

*We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.*