



2025 Training and Symposium

Symposium & Exhibit Hall |
October 14th-16th

Inn of the Ozarks

207 W Van Buren, Eureka Springs, AR

36° 25' 04.4" N 93° 51' 55.8" W | elev 1,260 ft

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Vice Chair: Vacant

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Tina Rotenbury, *United States Forest Service*

ARKANSAS GEOGRAPHIC INFORMATION SYSTEMS BOARD

The State Land Information Board was originally created in 1997 by Arkansas Code 15-21-501. Governor Mike Huckabee appointed twelve initial board members who first met in 1998. Three each of the twelve appointees represent state entities; city, county and local government; the private sector; and institutions of higher education. The twelve voting members serve for a term of four years.

The Board supports economic development and an improved quality of life for Arkansas citizens by providing basic spatial data infrastructure, coordinating geographic information activities, and creating short – and long-term strategies that will result in improved decision making, effective asset management, and reduced costs.

In 2009, the General Assembly renamed the Board as the Arkansas Geographic Information Systems Board, and added the State Technology Officer as the thirteenth voting member of the board.

In 2015, the Arkansas Legislature transferred the Division of Land Surveys to the Arkansas Geographic Information Systems Office. The Division is responsible for the restoration of the U.S. General Land Office original corner monuments of Arkansas, establishing uniform professional surveying and mapping standards, administering rules by referring evidence of violations to the State Board of Professional Engineers and Professional Surveyors, and receiving, filing and publishing land survey plats of Arkansas for public inspection.

ARKANSAS GIS BOARD MEMBERS

Gerald Black, Hot Spring County - Local Government

Randee Edwards, Pike County - Local Government

Hannah Towell, Craighead County - Local Government

Scott Lane, Arkansas Game and Fish Commission - State Government

Darin Mitchell, Vice Chair, Arkansas Parks, Heritage & Tourism - State Government

Scott Alsbrook, Chair, University of Arkansas Medical Sciences - State Government

Mr. Terry Cleaver, PS, U of A-Morrilton - Higher Education

Dr. John Nowlin, Arkansas State University - Higher Education

Scott Foster, PS, Arkansas Surveying and Consulting, Inc. - Private Sector

Matthew Charton, Datascout, LLC - Private Sector

Jay Harton, Arkansas Department of Shared Administrative Services - Office of State Technology, State Chief Technology Officer

2025 Arkansas GIS Users Forum Training and Symposium

Conference Agenda

Tuesday

6:00a – 12:00p	Biennial Symposium Golf Tournament
1:00p – 5:00p	Symposium Registration
1:00p – 1:15p	Welcome & Announcements
1:15p – 2:00p	Opening Speaker
2:00p – 2:30p	Break with Sponsors
2:30p – 4:30p	GIS Board Meeting / GIS State of the State
4:30p – 5:00p	Closing Remarks, Games & Door Prizes
5:00p – 6:30p	“Mappy Hour” with Sponsors
6:30p – 8:30p	Dinner on your own
8:30p	Hospitality Suite opens

Wednesday

7:00a – 5:00p	Symposium Registration
7:00a – 9:00a	Breakfast provided
9:00a – 10:30a	Workshop: AI Tools and Workflows in GIS
10:30a – 10:45a	Break with Sponsors
10:45a – 12:00p	Concurrent Sessions
12:00p – 1:30p	Luncheon with Keynote Speaker
1:30p – 3:00p	Concurrent Sessions
3:00p – 3:30p	Break with Sponsors
3:30p – 5:00p	Concurrent Sessions

6:00p – 8:30p Social with Dinner included / Awards Presentations

8:30p Hospitality Suite opens

Thursday

6:00a – 7:00a Biennial Symposium 5K Walk/Run

7:00a – 9:00a Breakfast provided

8:00a – 10:00a Symposium Registration

8:00a – 9:00a Forum Meeting and Officer Elections

9:00a – 10:00a UAS Panel

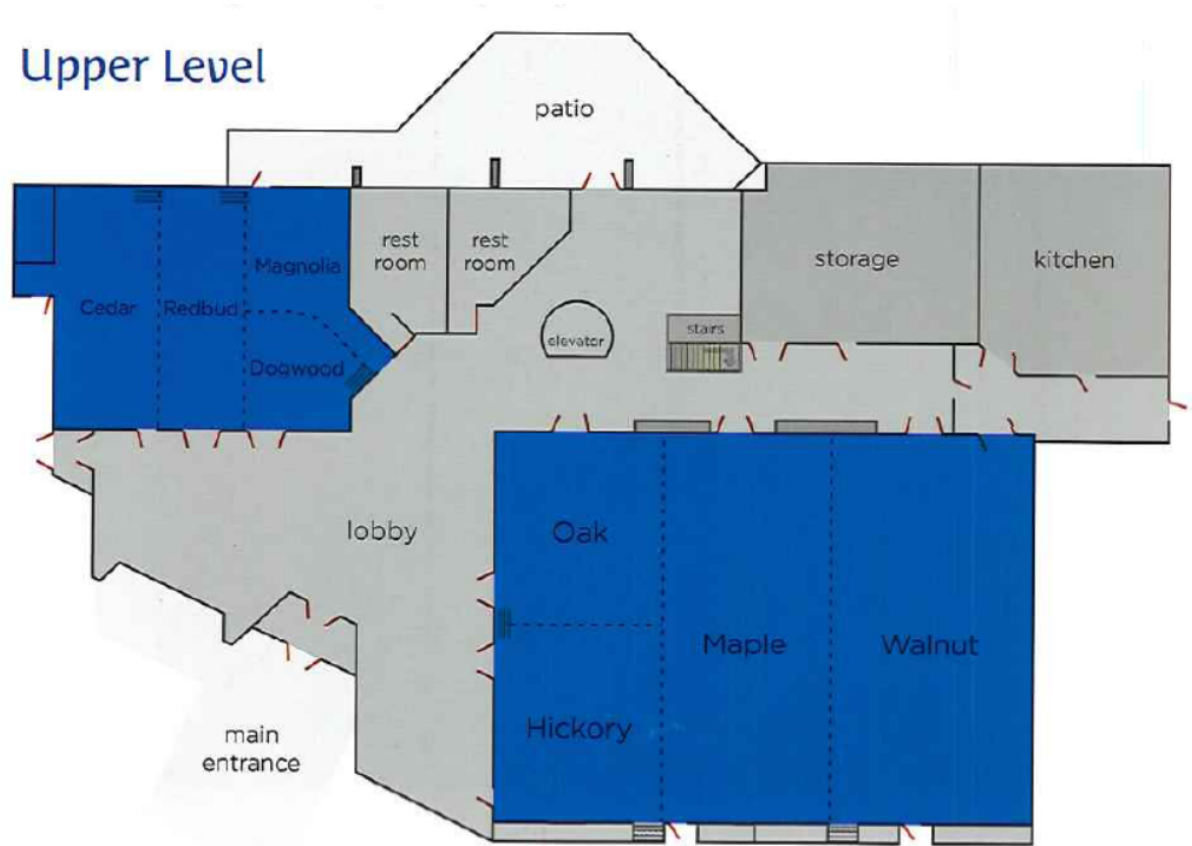
10:00a – 10:30a Break/Checkout

10:30a – 11:00a 5K Awards & Post-Conference Showtime!

11:00a – 12:00p Closing Remarks, Final Door Prizes (**MUST BE PRESENT TO WIN!**)

12:00p Adjourn

CONFERENCE CENTER LAYOUT



SPEAKERS

Opening Speaker – Mike Maloney, Tourism Director - Eureka Springs



Mike serves as the current director of the Eureka Springs City Advertising and Promotion Commission. He holds a Bachelor's Degree from Northwest Missouri State, spent 12 years in public and commercial radio, 20+ years as owner of Maloney Marketing Group, and now has 15 years under his belt working with A & P Commissions, including Eureka Springs. Mike has a passion for the city and is excited to tell us some Eureka Springs history and give us the “where” on what’s new and old in town.

Keynote Speaker – Dr. Joseph Kerski, PhD, GISP - Geographer & Educator



Joseph Kerski is a geographer with a focus on Analyzing change over space and time across multiple fields of study. His research analyzes the use of Geographic Information Systems (GIS) in education. He has served as the President of the National Council for Geographic Education and has given 2 TED Talks on “The Whys of Where”. He holds 3 degrees in geography (BA, MA, PhD) and has served as geographer in 5 major sectors of society, including as an independent consultant, in government, academia, private industry (as Education Manager for Esri), and in nonprofit organizations (with roles in geography and education associations). Joseph has authored over 100 chapters and articles, and 200 podcasts on GIS, education, space, place, and related topics. He has visited over 350 schools and 400 universities around the world. He regularly conducts professional development for educators. He has created over 7,000 videos, 2,500 lessons, 1,500 blog essays, and authored 12 books. But as a lifelong learner, he feels as though he’s just getting started and thus actively seeks mentors, partners, and collaborators.

LETTER FROM THE CHAIR

Welcome to the 2025 GIS User Forum Symposium and Training. This is our 17th biennial symposium and we are excited to be in Eureka Springs, Arkansas to enjoy its unique style. It has been an honor to serve as Chair to this organization and I would like to personally thank all of the members of the Executive Committee for their hard work and dedication to this organization and to GIS in the state of Arkansas.

In 1990, the Arkansas GIS Users' Forum was founded on the principles of collaboration and sharing. That still continues now with a vibrant community of GIS users across the state and even the nation and world. As the scope of information sharing has grown we still revel in the opportunity to foster local collaboration. We have done this by working to bring new training opportunities to the state, supporting the local user chapters, hosting an annual Spring Meeting, and have once again planned a symposium showcasing the amazing work of our GIS community. Of course, this would not be possible without the amazing work you do and the willingness to share with others. I am thankful for the organizers and attendees of the very first symposium and I am thankful for all of you who continue this today.

This 17th biennial symposium will bring an action packed line-up of speakers, presentations, and fun. I am thrilled to have our awesome speakers and look forward to hearing their wisdom. Then there is the heart of this organization; you sharing your projects and ideas to others. And, of course, let's have a lot of fun while we are all here! The Executive Committee has planned a full agenda with ample opportunity for networking with our sponsors and attendees so I encourage you to make new friends and make this the best symposium ever. Again, thank you for joining us for the 2025 Arkansas GIS Users Forum Symposium and Training!

Sunny Farmahan

Chair, Arkansas GIS Users Forum

CONCURRENT SESSION SCHEDULE

TUESDAY	Ballroom
6:00 am - noon	Biennial Symposium Golf Tournament
1:00	Welcome and Announcements (15 min)
1:15	Opening Speaker (45 min)
1:30	
1:45	
2:00	
2:15	Break (30 min)
2:30	GIS Board Meeting \ GIS State of the State (2 hrs)
2:45	
3:00	
3:15	
3:30	
3:45	
4:00	
4:15	
4:30	
4:45	
5:00	"Mappy Hour" with Sponsors (90 min)
5:15	
5:30	
5:45	
6:00	
6:15	
6:30	Dinner On Your Own
8:30	Hospitality Suite Open

CONCURRENT SESSION SCHEDULE

WEDNESDAY	Ballroom	Cedar	Redbud	Magnolia/Dogwood
7:00	Breakfast provided			
7:30				
8:00				
8:30	Workshop: AI Tools and Workflows in GIS - Dr. Joseph Kerski			
9:00				
9:30				
10:00	Break			
10:30		EDUCATION: Reimagining K12 Geospatial Technology Engagement through Analysis: A Proposal for a Statewide GIS Education Agenda (O'Connell)	TRANSPORTATION: Bridging the Gap: LiDAR and GIS Applications in Bridge Inspection (Lambert)	STATE & LOCAL GOV: Automatic Reconstruction of Historical Buildings through Deep Learning and Map Analysis (Wu)
10:45		TRANSPORTATION: What's Shakin' - ARDOT's Earthquake Response (Norris)	TRANSPORTATION: Introduction to Linear Referencing (Kacir)	STATE & LOCAL GOV: High Definition (HD) Mapping (Cormier)
11:15		TRANSPORTATION: Bicycle ridership in Northwest Arkansas (Culpepper)	TRANSPORTATION: There's a MAP for that! ARDOT's County & City Maps (Hawkins)	STATE & LOCAL GOV: Transforming Public Works With ArcGIS Solutions (Eblimit)
11:45	Break / Allow staff to bring lunch out			
Noon	Keynote luncheon - Dr. Joseph Kerski			
1:15				
1:30		EDUCATION: GIS programs at Arkansas' Universities (Nowlin)	STATE & LOCAL GOV: One Desk to Another: Making GIS Job knowledge Stick (Kacir)	STATE & LOCAL GOV: ArcGIS Business Analyst (Eblimit)
2:00		AGRICULTURE: Spatial analysis of crop stubble burning: optimizing zones to prioritize funding for sustainable post-harvest practices in eastern Arkansas (Nowlin)	STATE & LOCAL GOV: Streamlining the Business License Workflow: From Application to Approval with ArcGIS Survey-Embedded Dashboards (Hess)	STATE & LOCAL GOV: Election Precincts Update (Johnson)

2:30		EDUCATION: Virtual Reality and GIS: Beyond Education and Entertainment? A Hands-On Demo Showcasing Immersive Geospatial Tools	STATE & LOCAL GOV: Preparing Spatial Data for a Non-Spatial Computerized Maintenance Management System (CMMS) (Wheeler)	EDUCATION: Machine Learning-Driven Estimation of Forest Aboveground Biomass Using GEDI LiDAR and Multi-Sensor Earth Observations (Hamdi)
3:00	Break			
3:30		STATE & LOCAL GOV: Streamline Data Editing Using Attribute Rules (Sedberry)	STATE & LOCAL GOV: Unlocking the Power of AI Assistants in ArcGIS (Barbie)	STATE & LOCAL GOV: I Used to Segment Roads by Hand... Then I Met ArcGIS & k-Means (Kompella)
4:00		STATE & LOCAL GOV: New Esri User Types (Pinero)	STATE & LOCAL GOV: ArcGIS Field Operations: Best Practices for Enabling Mobile Workflows (Barbie)	
4:30		STATE & LOCAL GOV: Mapping for action: Arkansas's first ecological mapping system models statewide habitat classifications to support decennial wildlife action plan objectives (Nilz)	STATE & LOCAL GOV: LiDAR Update (Duran)	
5:00	Free Time & Get Ready for Social!			
6:00	Social with Dinner included			
7:00				
8:00	Break to clean up			
8:30	Hospitality Suite			



Best Western Inn of the Ozarks - Eureka Springs, AR

CONCURRENT SESSION SCHEDULE

THURSDAY	Ballroom
6:00	Biennial Symposium 5K Walk/Run
6:30	
7:00	Breakfast provided
7:30	
8:00	Forum annual business meeting and election of officers
8:30	
9:00	UAS Panel (Jake Norris @ ARDOT is POC)
9:30	
10:00	Break/Checkout
10:30	Golf/5K Awards & Post-Conference Showtime!
11:00	Closing remarks, Final Door Prizes (MUST BE PRESENT TO WIN!)
11:30	
Noon	Adjourn

SESSION ABSTRACTS

Wednesday– Ballroom

8:30 – 10:00a

Presenter: Dr. Joseph Kerski

Title: AI Tools and Workflows in GIS

WORKSHOP

Wednesday– Cedar

10:30 – 10:45a

Presenter: Dr. Stephen O'Connell

Title: Reimagining K12 Geospatial Technology Engagement through Analysis: A Proposal for a Statewide GIS Education Agenda

The outlook for the Geospatial workforce in the next decade remains stronger than ever with GIS Technician or Analyst positions routinely listed as Bright Outlook careers with skills that are in demand. Students in GIS, Geography, Planning and related degree programs are extremely successful at finding employment upon graduation yet recruiting students into these programs remains challenging. Incoming students do not have consistent exposure to the unique skills available in spatial analysis and related technologies before enrolling in post-secondary education. For eight years, from 2017 through 2024, with the support of Esri, a statewide mapping competition was held as a way to promote spatial understanding and engagement amongst primary and secondary students. Projects demonstrated wonderful techniques of storytelling, problem solving, and spatial analysis with several garnering national recognition from Esri. Despite the availability of ArcGIS Online for K12 educators and monetary awards for the best projects, engagement in this competition was limited with fewer than 15 teachers serving as mentors over the course of the entire eight year run of the competition. The challenges of providing technological and project management support to students and educators creates a significant barrier to consistent use of geospatial software in the classroom. A collective effort between higher education programs and industry professionals is needed to maintain the support necessary to create a sustainable geospatial education infrastructure and to prepare today's students to fill the workforce needs of tomorrow. This presentation presents a framework to advance this initiative and to guide efforts that will bridge the gap between classroom curriculum and real-world problem solving.

Wednesday– Cedar

10:45 – 11:15a

Presenter: Jake Norris

Title: What's Shakin' - ARDOT's Earthquake Response

We will, we will, Know what Rocks! (Sung like Queen – We will rock you)

The ARDOT's Bridge Inspection Earthquake Response Plan presentation outlines the Arkansas Department of Transportation's (ARDOT) efforts to develop an updated earthquake response plan. The plan focuses on ensuring safety and adherence to established guidelines. It includes the deployment of 29 bridge inspection teams, supported by engineers and technology staff, to cover the state's 12,960 bridges.

The presentation highlights ARDOT's history of designing bridges for seismic effects since the 1980s and the recent acquisition of EmergencyX and Shakecast software to enhance earthquake response capabilities. This presentation involves scenarios to gain insight into how the bridges of Arkansas might be impacted.

Wednesday– Cedar

11:15 – 11:45a

Presenter: Brian Culpepper

Title: Bicycle ridership in Northwest Arkansas

CAST at the University of Arkansas (UA) has partnered with WeAreTrailblazers (TB) to develop a geostatistical model for estimating bicycle ridership across roads and paved trails in Northwest Arkansas (NWA). This model will support active transportation planning and related studies, benefiting local agencies, organizations, and the broader community.

Wednesday– Cedar

1:30 – 2:00p

Presenters: Dr. John Nowlin, Arkansas State University

Stephen O'Connell, University of Central Arkansas

Patrick Hagge, Arkansas Tech University

Jason Tullis, University of Arkansas

Scott Alsbrook, University of Arkansas for Medical Sciences

Hamdi Zurqani, University of Arkansas, Monticello

Title: GIS programs at Arkansas' Universities

Universities across Arkansas are playing a vital role in preparing the next generation of GIS professionals through innovative academic programs, applied research, and community partnerships. This session brings together representatives from leading institutions, including Arkansas State University, University of Central Arkansas, Arkansas Tech, University of Arkansas for Medical Sciences and University of Arkansas, Monticello, to highlight their unique GIS offerings. Presenters will discuss their program offerings, curriculum design, experiential learning opportunities, and pathways for student engagement with real-world projects. The session will also provide insights into how Arkansas universities are addressing workforce needs and supporting regional development through GIS education. Attendees will leave with a clearer understanding of academic pathways in GIS across the state and how these programs can serve as resources for students, employers, and communities alike.

Wednesday– Cedar

2:00 – 2:30p

Presenter: Dr. John Nowlin, et al.

Title: Spatial analysis of crop stubble burning: optimizing zones to prioritize funding for sustainable post-harvest practices in eastern Arkansas

Post-harvest crop burning can cause health and safety concerns under atmospheric conditions where smoke travels close to the surface. This project provides a spatial framework to help make a data driven case for priorities in future federal conservation funding to offset the cost of non-burning post-harvest practices. The goal is to help farmers to reduce post-harvest burning around populated rice and corn growing areas like Jonesboro AR. This analysis will define four rings around the city using 0-0.2, 0.2-5, 5-10, and 10-20 mile buffers. Using Crop Sequence Boundaries (CSBs) as farm field boundaries, we will estimate rice and corn acreages in these zones. We will perform a spatial join on the intersection of the farm fields and buffers and quantify the rice and corn acreages within each ring. Subsequently, seasonal surface wind direction for August through November will be summarized. Using the farm fields, distance buffers and wind direction statistics, we will rank zones by estimated smoke impact on the target city. The ultimate goal is to determine a region of focus for non-burning residue management scenarios. The results will help inform policymakers as they prioritize future conservation funding to help offset the cost for producers of non-burning post-

harvest practices.

Wednesday– Cedar

2:30 – 3:00p

Presenter: Dr. Patrick Hagge

Title: Virtual Reality and GIS: Beyond Education and Entertainment? A Hands-On Demo Showcasing Immersive Geospatial Tools

From the release of Google Earth VR nearly a decade ago, VR geography-related exploration apps have made their mark in education and entertainment. However, VR has often been seen as little more than a novelty in the wider world of GIS, even as these same VR applications may offer real potential for GIS professionals. This hands-on presentation highlights how immersive VR can support analysis and visualization in a variety of sectors, from urban planning to disaster response. The development of simultaneous multi-user VR allows not just for 3D visualization, but also real-time collaboration. VR has the potential to be a valuable contributor to traditional GIS workflows. Attendees are invited to try out some of these VR geospatial apps during the session, to explore how these tools could become part of a geospatial professional's toolkit.

Wednesday– Cedar

3:30 – 4:00p

Presenter: Clayton Sedberry

Title: Streamline Data Editing Using Attribute Rules

This session focuses on Calculation Rules in ArcGIS Pro—an efficient way to automate attribute updates during editing. Learn how the City of Springdale uses Arcade expressions and attribute rules to streamline data entry, enforce consistency, and reduce manual workflows in your geodatabase. Specific examples will focus on address and centerline editing.

Wednesday– Cedar

4:00 – 4:30p

Presenter: Emilio Pinero

Title: New Esri User Types

Using the ArcGIS User type migration to reshape your deployment.

Wednesday– Cedar

4:30 – 5:00p

Presenter: Josh Nilz

Title: Mapping for action: Arkansas's first ecological mapping system models statewide habitat classifications to support decennial wildlife action plan objectives

The Arkansas Wildlife Action Plan (AWAP) frames cooperative conservation strategies for native species and habitats by identifying then prioritizing the most at-risk species and key conservation actions. The plan details all native wildlife species, with a focus on species of greatest conservation need, and their associated habitat requirements, statuses, and trends. Revised on a decennial cycle, the previous AWAP iteration relied on limited-resolution land cover models to estimate habitat extents. Natural resource agencies, environmental professionals, and the informed public identified a need for habitat mapping that captures the diverse physical and biogeochemical conditions sustaining Arkansas's wildlife. Notably, loss of habitat is one of two leading drivers of global biodiversity decline. In line with other states, agencies collaborated to develop a repeatable methodology to estimate statewide habitat presence and quantity. Now published, the Ecological Mapping System (EMS) of Arkansas from the Missouri Resource Assessment Partnership is an 8-bit integer, 10-meter resolution imagery classification model, derived from Sentinel-2 aerial photography, other pertinent datasets, and ground-truth observations. The Arkansas EMS identifies 123 unique habitat classes: one cropland, one open water, five developed or urban types, nine wetland or marsh types, 14 herbaceous grassland types, 16 classes of varying silviculture practice, 22 classes of glades, and 55 types of forests and woodlands. For interoperability, each habitat class follows NatureServe's standardized ecosystem classifications. This newly available resource is a valuable tool for an ecologist's toolbox, and it offers both superior spatial and spectral resolution and regional context when compared to coarse, nationwide land-cover datasets. Pursuant to the 2025 Arkansas Wildlife Action Plan, we then transposed each EMS value into congruent AWAP habitat definitions using various tools, including Spatial Analyst geoprocessing, raster algebra, and collaboration via ArcGIS Online Experience Builder. The result is a statewide habitat classification system that aligns to and supports the next decade of conservation.

Wednesday– Redbud

10:30 – 10:45a

Presenter: Caleb Lambert

Title: Bridging the Gap: LiDAR and GIS Applications in Bridge Inspection

As transportation infrastructure ages and safety standards evolve, the need for efficient, accurate, and data-driven bridge management has never been more critical. This presentation explores how the Arkansas Department of Transportation is using LiDAR (Light Detection and Ranging) technology, integrated with Geographic Information Systems, to transform the way they assess, monitor, and maintain bridge assets. We will examine practical use cases where LiDAR's high-resolution 3D data provides detailed structural insights, enabling precise modeling, clearance analysis, and deformation detection. Coupled with GIS, these datasets become powerful tools for spatial analysis, asset inventory, and decision support—allowing engineers and inspectors to visualize conditions, prioritize interventions, and communicate findings with clarity.

Wednesday– Redbud

10:45 – 11:15a

Presenter: Robert Kacir

Title: Introduction to Linear Referencing

This presentation introduces linear referencing—a method for locating features along a route using IDs and distances. It explains how ARDOT uses the ARNOLD system, compares linear referencing to geocoding, and highlights key concepts like route overlays, data manipulation, and common challenges.

Wednesday– Redbud

11:15 – 11:45a

Presenter: Sharon Hawkins

Title: There's a MAP for that! ARDOT's County & City Maps

Since the 1930's ARDOT has been creating detailed county and city maps for internal and external use across the state and beyond. This presentation will walk through the past to show you how it all started and will also show ARDOT's latest map series available. In this world of BIG data, using basemap backgrounds, and navigation applications, we invite you to rediscover and appreciate the world of cartography surrounding these maps. You'll also learn how you can use these maps in various ways as well.

Wednesday– Redbud

1:30 – 2:00p

Presenter: Robert Kacir

Title: One Desk to Another: Making GIS Job knowledge Stick

Ever wish your predecessor had made your job just a little easier? Or started a new GIS role only to discover new maps, tools, and responsibilities months after onboarding? In this session, I'll share my experiences both receiving and creating job documentation across various GIS roles within the US. We'll explore what worked well, what didn't, and the often-overlooked challenges of knowledge transfer. From manuals to metadata, from video tutorials to detective work, I'll highlight the expectations—met and missed—when passing the torch to the next GIS professional.

Wednesday– Redbud

2:00 – 2:30p

Presenter: Kelsey Hess

Title: Streamlining the Business License Workflow: From Application to Approval with ArcGIS Survey-Embedded Dashboards

Transitioning from traditional paper systems to digital solutions plays a key role in optimizing administrative efficiency and productivity. In the context of business license applications, ensuring transparency and real-time tracking is crucial for both staff and applicants. By integrating ArcGIS Dashboards with Survey123, organizations can streamline the application workflow. This solution enables centralized data collection, real-time progress tracking, and seamless communication across departments, resulting in faster approvals. It also fosters better internal collaboration and provides applicants with clear insights into their application status, ultimately improving operational efficiency and applicant satisfaction.

Wednesday– Redbud

2:30 – 3:00p

Presenter: Jennifer Wheeler

Title: Preparing Spatial Data for a Non-Spatial Computerized Maintenance Management System (CMMS)

Using the Arkansas Game and Fish Commission's (AGFC) ongoing CMMS implementation as a case study, this presentation examines the common yet complex challenge of integrating spatial data into non-spatial databases. While a GIS specialist can easily determine location, many CMMS databases are not designed to be spatially aware, often interpreting location as little more than a text field. This challenge is further compounded when fundamental data structures diverge. For example, AGFC's single, unified GIS layer for all buildings must be reconciled with the CMMS's requirement to split these assets into several distinct layers using a classification scheme foreign to the original GIS schema. The disconnect becomes particularly problematic when managing assets with complex spatial relationships, such as a fish hatchery that is also part of a larger river system. This session will detail the data transformation strategies AGFC employed to translate these relationships and reconcile the differing data models, ensuring assets are accurately located and managed within the new system.

Wednesday– Redbud

3:30 – 4:00p

Presenter: Shawn Barbie

Title: Unlocking the Power of AI Assistants in ArcGIS

What if you could ask your GIS to guide you, automate your workflows, and help you create insights in minutes instead of hours? ArcGIS is a geospatial AI platform designed to do exactly that—empowering teams to turn location data into smarter, faster decisions. At the center of this technology are AI assistants—intelligent, built-in guides that help users navigate workflows, boost productivity, and make GIS easier and more accessible than ever. In this session, we'll explore how AI assistants are transforming the user experience across ArcGIS Business Analyst, Survey123, and Map Viewer. Attendees will have the opportunity to see AI assistants in action and will leave with ideas of how to harness AI assistants in their own work.

Wednesday– Redbud

4:00 – 4:30p

Presenter: Shawn Barbie

Title: ArcGIS Field Operations: Best Practices for Enabling Mobile Workflows

In this session we will provide an overview of field operations and highlight Esri's suite of mobile applications designed to optimize field workflows. Attendees will delve into the various mobile tools offered by Esri, learning about their capabilities and advantages and will view a live demonstration of the configuration of one application, gaining practical insights into enhancing field operations efficiency.

Wednesday– Redbud

4:30 – 5:00p

Presenter: Jonathan Duran

Title: LiDAR Update

In partnership with the NRCS and USGS, during the winters of 2024 and 2025, Quality Level 1 (QL1) lidar was collected over all of Arkansas as a part of the 3D Elevation Program (3DEP). Arkansas was among the first states to receive a statewide QL1 data refresh over previously collected Quality Level 2 (QL2) data. This presentation will give a brief background of the 3DEP program and it's history in Arkansas, as well as giving an update on the current status of Arkansas' QL1 data and how to retrieve it.

Wednesday – Magnolia/Dogwood

10:30 – 10:45a

Presenter: Yanan Wu

Title: Automatic Reconstruction of Historical Buildings through Deep Learning and Map Analysis

Historical maps are invaluable resources for understanding how cities and communities have evolved over time. They capture the built environment, land use, and social landscapes of earlier eras, providing essential evidence for research in urban history, heritage preservation, and spatial analysis. Yet, despite their importance, extracting detailed information such as building footprints, boundaries, and attributes from these maps remains a time-consuming and labor-intensive process. To address this challenge, this study introduces a deep learning–based framework that leverages Mask R-CNN for the automated extraction and reconstruction of building features from historical fire insurance maps. The approach is designed to perform two key tasks: (1) delineating building footprints and boundaries, and (2) identifying critical attributes such as the number of floors. By combining image segmentation with text recognition, the framework transforms static archival maps into machine-readable geospatial data, laying the foundation for scalable analysis of historical urban environments.

Wednesday – Magnolia/Dogwood

10:45 – 11:15a

Presenter: Kevin Cormier

Title: High Definition (HD) Mapping

Using the latest High Accuracy GNSS combined with 3D data acquisition technologies to improve Mapping from the Ground Up and Ground Down.

Wednesday – Magnolia/Dogwood

11:15 – 11:45a

Presenter: Kevin Eblimit

Title: Transforming Public Works With ArcGIS Solutions

For this presentation, I will be talking about the viability of ArcGIS Solutions and how they can provide an answer to the workflows of state and local government public works agencies. The slides will cover an overview of ArcGIS Solutions, a brief demo of the technology, and some future updates regarding Solutions.

Wednesday – Magnolia/Dogwood

1:30 – 2:00p

Presenter: Kevin Eblimit

Title: ArcGIS Business Analyst

For this presentation, I will be discussing the use cases of ArcGIS Business Analyst and how it can help make smarter market decisions, site selection, and customer decisions. This will encompass an overview of the product and a demo showcasing the technology.

Wednesday – Magnolia/Dogwood

2:00 – 2:30p

Presenter: Shelby Johnson

Title: The Maps Behind the Vote: Arkansas' Election Geography

Accurate election maps are the backbone of a healthy democracy. They guide officeholders in serving their constituents, help candidates who are planning a bid for office, assist citizens in finding their elected representatives, and ensure election administrators place voters in the right precincts. Without a solid foundation of election geography, the system simply doesn't work. In this presentation, we'll peel back the layers of Arkansas' election maps - municipal, county, and state - and take a closer look at how they come together. We'll talk about who plays a role at each level, how and when changes happen, and the latest trends in keeping this vital part of Arkansas' GIS framework accurate and up to date.

Wednesday – Magnolia/Dogwood

2:30 – 3:00p

Presenter: Zurqani Hamdi

Title: Machine Learning-Driven Estimation of Forest Aboveground Biomass Using GEDI LiDAR and Multi-Sensor Earth Observations.

Monitoring forest carbon stocks via biomass assessment is crucial for understanding the carbon cycle. Obtaining timely ground measurements for spatially continuous maps of forest aboveground biomass density (AGB) presents challenges. This study introduces a novel approach combining open-access GEDI LiDAR data with satellite observations to estimate and map AGB, enhancing the accuracy and availability of biomass assessments for improved insights into forest carbon dynamics. The study's primary objectives were to evaluate the potential of combining optical and microwave satellite observations for estimating forest AGB and to compare the performance of Random Forest (RF), Classification and Regression Trees (CART), Gradient Tree Boosting (GTB), and Support Vector Machine (SVM) machine learning algorithms using the Google Earth Engine platform. The GTB model demonstrated the best performance, achieving an R^2 of 0.77, MAE of 22.27 Mg/ha, and RMSE of 37.78 Mg/ha using Sentinel-2 bands and topographic derivatives. The RF model closely followed with an R^2 of 0.74, MAE of 31.34 Mg/ha, and RMSE of 39.93 Mg/ha, utilizing Sentinel-2 bands, vegetation indices, topographic derivatives, and canopy height. The CART model achieved an R^2 of 0.68, an MAE of 33.16 Mg/ha, and an RMSE of 39.97 Mg/ha, incorporating Sentinel-2 and Sentinel-1 bands, vegetation indices, topographic derivatives, and canopy height. The SVM model exhibited the weakest performance, with a maximum R^2 of 0.37, MAE of 55.17 Mg/ha, and RMSE of 73.48 Mg/ha using Sentinel-2 and Sentinel-1 bands and vegetation indices. The results underscore the significant improvement in model performance achieved by integrating Sentinel-2 bands, vegetation indices, topographic data, and canopy height. The study emphasizes the importance of multi-source data for enhancing AGB estimation, suggesting that the GTB model offers the most reliable predictions. These findings can inform future research in forest biomass mapping, utilizing machine learning and remote sensing techniques.

Wednesday – Magnolia/Dogwood

3:30 – 4:00p

Presenter: Kavya Kompella

Title: I Used to Segment Roads by Hand...Then I Met ArcGIS & k-Means

At ARDOT, highway projects and pavement preservation require dividing the road into manageable sections called job segmentation. This process can be time-consuming, often taking several months, and results can vary among different engineers. To

address this issue, we have developed a GIS-based automated clustering solution that utilizes machine learning techniques, incorporating spatial and pavement condition data.

Using ArcGIS Pro, we preprocessed spatial data that included municipal boundaries, intersections, bridges, soil ratings, surface types, and functional classifications. This preprocessing allowed us to integrate diverse geospatial layers into a cohesive analytical framework.

Our proposed method employs an unsupervised machine learning technique known as k-Means clustering on key pavement condition metrics to generate consistent and logical job segments across the entire network. Compared to traditional methods, this approach offers faster turnaround times, reduces subjectivity, and allows for scalable implementation.

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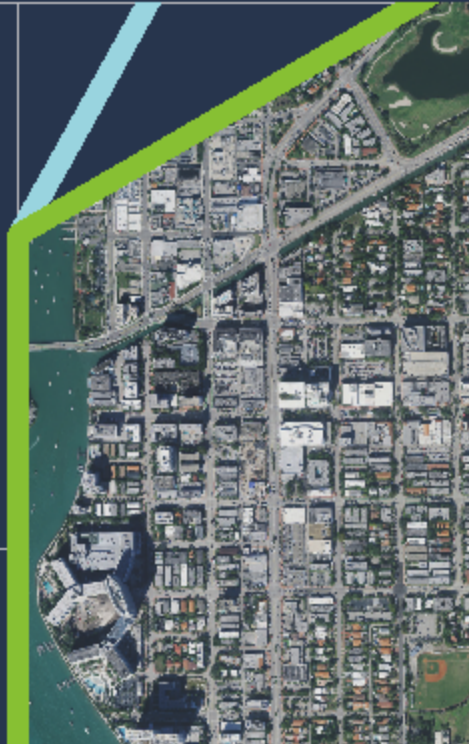
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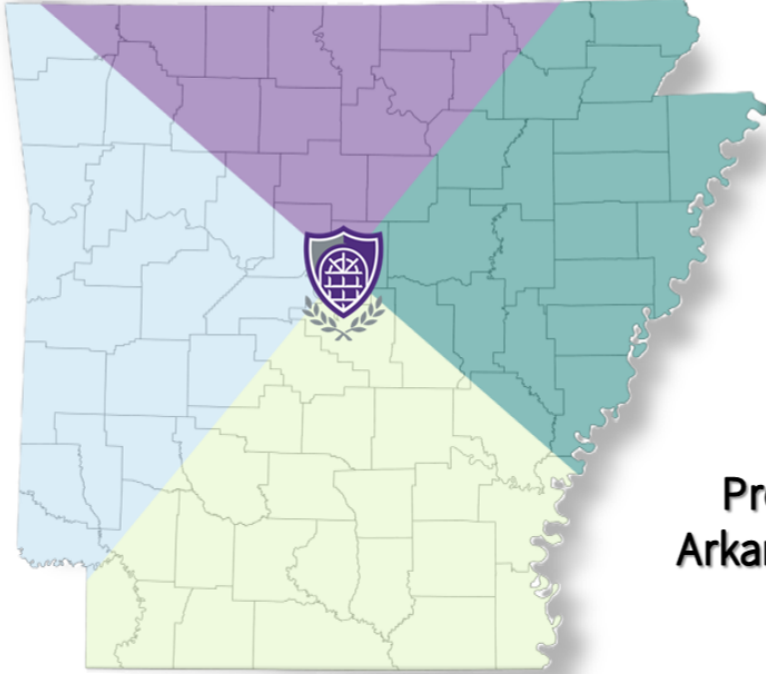
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