



2026

I-GUIDE FORUM AND NSF HARNESSING THE DATA REVOLUTION ECOSYSTEM CONFERENCE

AI & Science: From Geospatial to Convergence

Student Center West, University of Illinois Chicago
Chicago, Illinois, USA
August 3-7, 2026



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Introduction

Welcome to the I-GUIDE Forum 2026 & Harnessing the Data Revolution (HDR) Ecosystem Conference: AI & Science — From Geospatial to Convergence, held August 3–7, 2026 on the campus of the University of Illinois Chicago. This year for the first time, the annual I-GUIDE Forum comes together with the HDR Ecosystem Conference as a single, joint gathering. Funded by the National Science Foundation, I-GUIDE (the Institute for Geospatial Understanding through an Integrative Discovery Environment), along with A3D3, iHARP, Imageomics, and ID4, constitute the core of the HDR Ecosystem. Though each Institute works in a different scientific context, we share a common vision that the biggest advances in data-intensive science happen at the intersections between fields, tools, and communities of practice.

The joint program unfolds across five days. The Forum opens Monday with a full day of I-GUIDE workshops and tutorials. Programming on Tuesday includes a keynote on the state of I-GUIDE, paper sessions on spatial AI and cyberinfrastructure, a showcase of the winners from I-GUIDE's annual Spatial AI Challenge, and a panel on becoming a convergence scientist. Collaborative sessions from the two communities begin on Wednesday with a joint keynote on data challenges and impact, back-to-back panels on the frontiers of spatial AI and data science and on industry and partnership, a joint paper and discussion session on AI literacy and workforce development, and a shared poster session and reception. Thursday and Friday are focused fully on the HDR Ecosystem Conference, with plenary talks from the other four HDR Institutes and discussion sessions on responsible and trustworthy AI, convergence science for disaster resilience, and AI-ready data infrastructure, closing Friday with a panel of all five Institute directors on the future of the HDR Ecosystem.

Our goal for this joint Forum and Conference is to create and support the welcoming venue in which the I-GUIDE community connects directly with our fellow HDR Institutes and the wider community of researchers, AI and data scientists, cyberinfrastructure experts, educators, and practitioners from academia, government, and industry. We believe this shared space will accelerate discovery, spark new collaborations, and strengthen the HDR Ecosystem as a whole in ways that would not be possible meeting apart.

We look forward to an inspiring and engaging week in Chicago!

General Chair

Shaowen Wang, University of Illinois Urbana-Champaign

Program Chairs

Anand Padmanabhan, University of Illinois Urbana-Champaign

Diana Sinton, University Consortium for Geographic Information Science

Keynote Speakers



Luc Anselin

University of Chicago

Luc Anselin is Stein-Freiler Distinguished Service Professor of Spatial Data Science in the Social Science Division of the University of Chicago, where he founded and directs the Center for Spatial Data Science. His research deals with the development of methods and software for the analysis of spatial data, including spatial econometrics, local indicators of spatial association and exploratory spatial data analysis. He is an elected member of the US National Academy of Sciences and American Academy of Arts and Sciences.

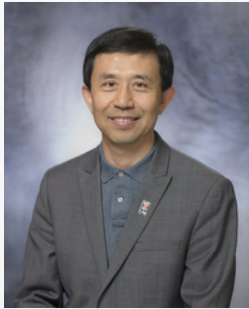


Chaitan Baru

National Science Foundation

Chaitan Baru is Section Head for Emerging Technologies in the Technology, Innovation, and Partnerships (TIP) Directorate at the National Science Foundation (NSF). The TIP Directorate focuses on translating and accelerating critical technologies into practice to drive economic growth, workforce development, and the creation of high-quality, high-wage jobs. The TIP Emerging Technologies portfolio includes programs in artificial intelligence, quantum information science and applications, biotechnology, semiconductors, advanced communications, data security, advanced materials, and disaster response and management. Prior to beginning his assignments at NSF in 2014, Dr. Baru spent 20 years at the San Diego Supercomputer Center, University of California, San Diego.

Keynote Speakers



Shaowen Wang

University of Illinois Urbana-Champaign

Shaowen Wang is a Professor of Geography and Geographic Information Science and of Computing and Data Science at the University of Illinois Urbana-Champaign (UIUC). He serves as Associate Dean for Natural and Mathematical Sciences in the College of Liberal Arts and Sciences and as a Senior Faculty Fellow in the Office of the Vice Chancellor for Research and Innovation at UIUC. He is the founding director of UIUC's CyberGIS Center for Advanced Digital and Spatial Studies and leads the National Science Foundation-funded Institute for Geospatial Understanding through an Integrative Discovery Environment (I-GUIDE). His research focuses on advancing cyberGIS, geospatial data science, and spatial artificial intelligence (AI) to develop scalable solutions for complex geospatial problems and sustainability challenges. He is a Fellow of the American Association for the Advancement of Science, the American Association of Geographers, and the University Consortium for Geographic Information Science.

I-GUIDE Forum 2026

Organizing Committee

General Chair

Shaowen Wang

University of Illinois Urbana-Champaign

Program Chairs

Anand Padmanabhan

University of Illinois Urbana-Champaign

Diana Sinton

University Consortium for Geographic Information Science

Publication Chair

X. Carol Song

Purdue University

Sponsorship Chair

Aaron Addison

World Geospatial Industry Council



I-GUIDE Forum 2026

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Clark University

Samantha T. Arundel

U.S. Geological Survey

Leonardo Bobadilla

Florida International University

Dan Brown

University of Washington

Barbara Battenfield

University of Colorado Boulder

Peter Craigmile

Hunter College, CUNY

Peter Darch

University of Illinois Urbana-Champaign

Chen-Chieh Feng

National University of Singapore

Courtney Flint

Utah State University

Jing Gao

University of Delaware

Song Gao

University of Wisconsin-Madison

Michael F. Goodchild

UC Santa Barbara

Jiawei Han

University of Illinois Urbana-Champaign

Jeffrey Hamerlinck

University of Wyoming

Deanna Henc

University of Illinois Urbana-Champaign

Bo Huang

The University of Hong Kong

Yingjie Hu

University at Buffalo

David Johnson

Purdue University

Yubin Jiang

University of Hawaii at Manoa

Jeon-Young Kang

University at Buffalo, The State University of New York

Nina Lam

Louisiana State University

Xiaojiang Li

University of Pennsylvania

Zhenlong Li

Penn State

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Virginia Tech

Steven Manson

University of Minnesota

Alexander Michels

University of Texas at Dallas

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University of California, Merced

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Kyung Hee University

Eric Shook

University of Minnesota

Yongze Song

Curtin University, School of Design and the Built Environment

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University of Illinois Urbana-Champaign

Larry Stanislawski

USGS – Center for Excellence for Geospatial Information Science

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Utah State University

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University of South Florida

Andres Vina

Michigan State University

Jianwu Wang

University of Maryland, Baltimore County

Zhaonan Wang

New York University Shanghai

John Wilson

University of Southern California

Ningchuan Xiao

The Ohio State University

Yiqun Xie

University of Maryland

Phil Yang

George Mason University

Greg Yetman

Columbia University

Bo Zhao

University of Washington

Lan Zhao

Purdue University

HDR Ecosystem Conference

Organizing Committee

Tanya Berger-Wolf

The Ohio State University

Diane Boghrat

The Ohio State University

Emily Freed

Colorado School of Mines

Shih-Chieh Hsu

University of Washington

Vandana Janeja

University of Maryland, Baltimore County

Josephine Namayanja

University of Maryland Baltimore County

Mark Neubauer

University of Illinois at Urbana-Champaign

Anand Padmanabhan

University of Illinois at Urbana-Champaign

Diana Sinton

University Consortium for Geographic Information Science

Eric Toberer

Colorado School of Mines

Jianwu Wang

University of Maryland, Baltimore County

Shaowen Wang

University of Illinois at Urbana-Champaign

Schedule

I-GUIDE Forum 2026

MONDAY, AUGUST 3, 2026

9:00 AM

Student Center West (SCW), 2nd Floor Lobby
Registration and Check-in

10:00 AM - 12:00 PM

Workshops (2-hr)

Chair: Carol Song, Purdue University

Hands-on Exploration of the I-GUIDE Platform - Session 1 (Room 206 AB)

- Anand Padmanabhan, University of Illinois Urbana-Champaign
- Erick Li, University of Illinois Urbana-Champaign
- Yunfan Kang, University of Illinois Urbana-Champaign
- Wen Zhou, University of Illinois Urbana-Champaign
- Daniel Kiv, University of Illinois Urbana-Champaign
- Shaowen Wang, University of Illinois Urbana-Champaign

Any Model, Any Place, Any Time: A Hands-on Tutorial for Obtaining Remote Sensing Foundation Model Embeddings with rs-embed (Room 213 AB)

- Dingqi Ye, University of Illinois Urbana-Champaign
- Daniel Kiv, University of Illinois Urbana-Champaign
- Wei Hu, University of Illinois Urbana-Champaign

12:00 PM

SCW 2nd Floor Lobby

Lunch (provided for workshop registrants & instructors)

1:00 PM - 3:00 PM

Workshops (2-hr)

From Compliance to Confidence: Applying the I-GUIDE Data Ethics Toolkit for Effective, Responsible, and Reproducible Geospatial Research (Room 218)

- Peter Darch, University of Illinois Urbana-Champaign

Schedule

I-GUIDE Forum 2026

MONDAY, AUGUST 3, 2026

1:00 PM - 3:00 PM (cont.)

Workshop (2-hr)

From Dam Risk Metrics to Interactive Maps: A Hands-on Jupyter Tutorial for Open Geospatial REST APIs (Room 213 AB)

- Jungha Woo, Purdue University
- Xiao Liu, Purdue University
- Erick Li, University of Illinois Urbana-Champaign
- Michael Englert, Utah State University

1:00 PM - 5:00 PM

Workshop (4-hr)

Hands-on with Data to Science (D2S): An Open-Source Platform for Managing, Sharing, and Analyzing UAV Geospatial Data (Room 219)

- Jinha Jung, Purdue University
- Minyoung Jung, Purdue University
- Benjamin G. Hancock, Purdue University

3:00 PM - 5:00 PM

Workshop (2-hr)

Hands-on Exploration of the I-GUIDE Platform - Session 2 (Room 206 AB)

- Anand Padmanabhan, University of Illinois Urbana-Champaign
- Erick Li, University of Illinois Urbana-Champaign
- Yunfan Kang, University of Illinois Urbana-Champaign
- Wen Zhou, University of Illinois Urbana-Champaign
- Daniel Kiv, University of Illinois Urbana-Champaign
- Shaowen Wang, University of Illinois Urbana-Champaign

Schedule

I-GUIDE Forum 2026

TUESDAY, AUGUST 4, 2026

8:00 AM

SCW 2nd Floor Lobby

Registration and Check-in

Continental breakfast provided

8:45 AM

MM Thompson AB

I-GUIDE Forum Welcome, Greetings and Opening Remarks

Joseph Whitmeyer, National Science Foundation

9:00 AM

MM Thompson AB

Keynote: *The State of I-GUIDE*

Chair: Michael Goodchild, University of California Santa Barbara

Presenter: Shaowen Wang, University of Illinois Urbana-Champaign

10:10 AM

Break

Schedule

I-GUIDE Forum 2026

TUESDAY, AUGUST 4, 2026

10:30 AM

MM Thompson AB

Paper Session: Spatial AI, Cyberinfrastructure & Geospatial Applications

Chair: Mohan Ramamurthy, Unidata/UCAR

- **From Manual GIS Workflows to Reproducible Dam-Failure Risk Analytics: a PostGIS REST API and Dashboard Reference Implementation.** *Jungha Woo (Purdue University), Xiao Liu (Purdue University), Erick Li (University of Illinois Urbana-Champaign), Michael Englert (Utah State University), Furqan Baig (University of Illinois Urbana-Champaign), Carol Song (Purdue University), Anand Padmanabhan (University of Illinois Urbana-Champaign), and Courtney Flint (Utah State University)*
- **Evaluating Alternative Designs of Land-Based Conservation Targets in a Spatially Explicit Global Economic Model.** *Iman Haqiqi (Purdue University), Jonathan Doelman (PBL Netherlands Environmental Assessment Agency), and Thomas Hertel (Purdue University)*
- **Evaluating Storage and I/O Efficiency of Geospatial Data Formats.** *Fangzheng Lyu (Virginia Tech University)*
- **Data-Driven Neuromodulation Algorithm for Closed-Loop Control of Brain States.** *Hao Fang (University of Washington)*

12:00 PM

2nd Floor Lobby

Lunch (provided)

Schedule

I-GUIDE Forum 2026

TUESDAY, AUGUST 4, 2026

1:00 PM

MM Thompson AB

Spatial AI Challenge 2025-26: Winners Showcase

Chair: Diana Sinton, University Consortium for Geographic Information Science

- **MURD-ViT: Urban Retrofitting Detection with Vision Transformer.** *Raj Bhattarai (Virginia Tech University) and Fangzheng Lyu (Virginia Tech University)*
- **GeoLocate: Spatial Modeling of Market Entry Viability.** *Jaiany Rocha Trindade (Federal University of Rio Grande do Sul, Brazil & Harvard University), Vinicius Andrade Brei (Federal University of Rio Grande do Sul & MIT Media Lab), and Devika Jain (Harvard University)*
- **From Mobility Intensity to Market Infrastructure: A Spatial AI Framework for Recovering Hidden Spatial Regimes and Multiscale Variation.** *Rafael Albuquerque (Federal University of Rio Grande do Sul, Brazil), Jéssica Miranda (Federal University of Rio Grande do Sul, Brazil), Vinicius Andrade Brei (Federal University of Rio Grande do Sul & MIT Media Lab), and Siqin (Sisi) Wang (University of Southern California)*

2:00 PM

MM Thompson AB

Keynote: Spatial Analytic Software: From the Margins to the Mainstream

Chair: Efi Foufoula-Georgiou, University of California Irvine

Presenter: Luc Anselin, Stein-Freiler Distinguished Service Professor of Spatial Data Science, University of Chicago

Schedule

I-GUIDE Forum 2026

TUESDAY, AUGUST 4, 2026

3:00 PM

Break

3:30 PM

MM Thompson AB

Panel: Challenges and Benefits of Becoming a Convergence Scientist

Moderator: Michael Goodchild, University of California Santa Barbara

Panelists:

- Yoonjung Ahn, The University of Kansas
- Kelvin Droegemeier, University of Illinois Urbana-Champaign
- Efi Foufoula-Georgiou, University of California Irvine
- Peter Kedron, University of California, Santa Barbara
- Yue Lin, University of Illinois Urbana-Champaign

5:00 PM

Conclude for the Day

Schedule

I-GUIDE Forum 2026 + HDR Ecosystem Conference

WEDNESDAY, AUGUST 5, 2026

8:00 AM

2nd Floor Lobby

Registration and Check-in

Continental breakfast provided

8:45 AM

MM Thompson AB

HDR Conference Welcome and Greetings

Shaowen Wang, University of Illinois Urbana-Champaign

9:00 AM

MM Thompson AB

Keynote: Data Challenges and Impact

Chair: Shaowen Wang, University of Illinois Urbana-Champaign

Presenter: Chaitan Baru, Emerging Technologies in the Technology, Innovation, and Partnerships (TIP) Directorate, National Science Foundation (NSF)

10:10 AM

Break

Schedule

I-GUIDE Forum 2026 + HDR Ecosystem Conference

WEDNESDAY, AUGUST 5, 2026

10:30 AM

MM Thompson AB

Panel: Exploring Frontiers in Spatial AI and Data Science

Moderator: Mark Neubauer, University of Illinois Urbana-Champaign

Panelists:

- Budhendra L. Bhaduri, Oak Ridge National Laboratory
- Devika Jain, Harvard University
- Yuqin Jiang, University of Hawaii
- Eric Shook, University of Minnesota
- Jianwu Wang, University of Maryland, Baltimore County

11:45 AM

I-GUIDE Forum & HDR Ecosystem Conference Group Photo

12:00 PM

Lunch (provided)

1:00 PM

MM Thompson AB

Panel: Industry and Partnership

Moderator: Aaron Addison, World Geospatial Industry Council (WGIC)

Panelists:

- Samantha T. Arundel, USGS Center of Excellence for Geospatial Information Science
- Peter Herman, NORC at the University of Chicago
- Florence Hudson, Northeast Big Data Innovation Hub & Columbia University
- Elliott Kellner, Taylor Geospatial
- Angela Lee, Esri
- Kumar Navulur, Synspective USA Inc.

Schedule

I-GUIDE Forum 2026 + HDR Ecosystem Conference

WEDNESDAY, AUGUST 5, 2026

2:15 PM

Room: MM Thompson AB.

Paper & Discussion Session: AI Literacy, Education, and Workforce Development

Chair: Elif Ertekin, University of Illinois Urbana-Champaign

Guiding question: What should AI-era education and workforce development look like for data-intensive discovery and innovation?

Opening Talk (20 minutes)

- **AI Is Changing Geographic Problem Solving; Instruction Must Change Too.** Peter Kedron (University of California Santa Barbara), Sarigai Sarigai (University of California Santa Barbara), Heather Baier (Arizona State University), and Andrew Trgovac (Arizona State University)

Position statements (5 minutes each)

- **Leverage the National Student Data Corps for Multi-domain HDR AI Workforce Development.** Florence Hudson (Columbia University) and Emily Rothenberg (Columbia University)
- **Toward an AI-HPC Skills Inventory: Effectively Assessing Advanced Cyberinfrastructure Upskilling Interventions at Research Institutions.** Roy Prouty (University of Maryland, Baltimore County)
- **Education and Workforce Development for AI-enabled Sciences.** Amin Sahba (University of Texas at San Antonio)

Breakout groups (40 mins):

- **Group A** – Curriculum innovation (Lead: Peter Kedron) **(Room 206 AB)**
- **Group B** – Community & workforce pipelines (Lead: Florence Hudson) **(Room 213 AB)**
- **Group C** – Measuring upskilling impact (Lead: Roy Prouty) **(Room MM Thompson AB)**
- **Group D** – Education for AI-enabled sciences (Lead: Amin Sahba) **(Room MM Thompson AB)**

Report Back (15 mins)

Schedule

I-GUIDE Forum 2026 + HDR Ecosystem Conference

WEDNESDAY, AUGUST 5, 2026

3:45 PM

Break

4:15 PM

MM Thompson AB

Lightning Poster Introductions

Chair: Diana Sinton, University Consortium for Geographic Information Science

5:00 PM

MM Thompson C

Reception & Joint Forum/HDR Poster Session

Chairs: Diane Boghrat, The Ohio State University

Josephine Namayanja, University of Maryland, Baltimore County

7:00 PM

Conclude for the day

Schedule

HDR Ecosystem Conference

THURSDAY, AUGUST 6, 2026

8:00 AM

2nd Floor Lobby

Registration and Check-in

Continental breakfast provided

8:45 AM

MM Thompson AB

Highlights from Day 1 of the Joint Conference

- Tanya Berger-Wolf, The Ohio State University
- Elif Ertekin, University of Illinois Urbana-Champaign

9:00 AM

MM Thompson AB

Plenary Talks: HDR Institute Presentations

Chair: Jianwu Wang, University of Maryland, Baltimore County

- Real-Time Scientific Agents: Ultra-Low-Latency AI at the Extreme Edge. *Shih-Chieh Hsu (University of Washington).*
- HDR Institute for Data Driven Dynamical Design. *Elif Ertikin (University of Illinois Urbana-Champaign).*

10:10 AM

Break

Schedule

HDR Ecosystem Conference

THURSDAY, AUGUST 6, 2026

10:30 AM

MM Thompson AB

Paper & Discussion Session: Responsible and Trustworthy AI for Science

Chair: Shih-Chieh Hsu, University of Washington

Guiding Question: What does trustworthy AI-enabled science require in practice?

Position Statements (5 minutes each)

- **Rethinking Location Privacy: Cross-Modal Inference in Foundation Models.** *Yue Lin (University of Illinois Urbana-Champaign)*
- **Uncertainty Quantification in Heterogeneous Data Environments.** *Jun Wu (Michigan State University)*
- **Compliance by Design: Embedding Responsibility in AI Cyberinfrastructure.** *Peter Darch (University of Illinois Urbana-Champaign)*
- **Reproducibility in Scientific Workflows with Artificial Intelligence: Challenges and a Path Forward.** *Smita Darmora (University of Illinois Chicago & College of DuPage)*
- **Ethical and Responsible AI.** *Ramin Sahba (University of Texas at San Antonio)*

Breakout Group Discussions (45 minutes)

- **Group A** — Privacy & inference risk (Lead: Yue Lin) (**Room 206 AB**)
- **Group B** — Uncertainty & reliability (Lead: Jun Wu) (**Room 213 AB**)
- **Group C** — Accountability & compliance (Leads: Peter Darch, Ramin Sahba) (**Room MM Thompson AB**)
- **Group D** — Reproducibility of AI Workflows (Lead: Smita Darmora) (**Room MM Thompson AB**)

Report Back (20 minutes)

12:00 PM

2nd Floor Lobby

Lunch (provided)

Schedule

HDR Ecosystem Conference

THURSDAY, AUGUST 6, 2026

1:00 PM

MM Thompson AB

Paper & Discussion Session: Convergence Science for Disaster Resilience

Chair: Tanya Berger-Wolf, The Ohio State University

Guiding Question: How do we build AI that generalizes and holds up under real-world scenarios?

Position Statements (5 minutes each)

- **Moving Beyond Correlation: Causal AI for Generalizable Earth Sciences.** *Emam Hossain (University of Maryland, Baltimore County), and Md Osman Gani (University of Maryland, Baltimore County)*
- **Time Critical Mission Support: Opportunities for AI, HPC, Geospatial Digital Twins.** *Budhendra Bhaduri (Oak Ridge National Laboratory)*
- **From Hazard to Opportunity: A Convergence Framework for Wildfire Disaster Prediction and Resilience.** *Janice Coen (NSF NCAR)*
- **Identifying Cryospheric Connectivity: a Graph-Based Framework Linking Sea Ice Retreat to Ice Shelf Melting.** *Molly Balkan (University of Maryland, Baltimore County), Shanmukhi Gundu (University of Maryland, Baltimore County), Sudip Chakraborty (University of Maryland, Baltimore County), and Vandana Janeja (University of Maryland, Baltimore County)*
- **AI for Science and Science for AI: What Happens When the Data Aren't There?** *Elif Ertekin (University of Illinois Urbana-Champaign)*

Breakout Group Discussions (45 minutes)

- **Group A** — Causal & generalizable Earth AI (Leads: Elif Ertekin and Emam Hossain) **(Room 206 AB)**
- **Group B** — Time-critical & disaster support (Lead: Budhendra Bhaduri) **(Room 213 AB)**
- **Group C** — Earth system dynamics (Leads: Janice Coen and Molly Balkan) **(Room MM Thompson AB)**

Report Back (20 minutes)

Schedule

HDR Ecosystem Conference

THURSDAY, AUGUST 6, 2026

3:00 PM

Break

3:30 PM

MM Thompson AB

Paper & Discussion Session: AI-Ready Data Infrastructure

Chair: Vandana Janeja, University of Maryland, Baltimore County

Guiding question: What makes data genuinely AI-ready and who is responsible for making it happen?

Position Statements (5 minutes each)

- **Rethinking AI Readiness for Multi-Source Geoscience Data Workflows.** *Chhaya Kulkarni (Towson University)*
- **FAIR4AI-Bio: AI-Ready Data Infrastructure for Ecology and Biodiversity.** *Eric Sokol (NEON, Battelle), Elizabeth Campolongo (The Ohio State University), Matthew Thompson (The Ohio State University), Robert Guralnick (University of Florida), Christine Laney (Battelle), Hilmar Lapp (Neuromatch), Max Tarjan (NatureServe), Alexander White (Smithsonian Institution), and Tanya Berger-Wolf (The Ohio State University)*
- **Legibility as Infrastructure: RAG Pipelines for Public Flood Decision Making.** *Jawwad Shadman Siddique (Oregon State University)*
- **Media-Derived Knowledge Graphs for Geospatial Mapping of Illicit Wildlife Trade as Analysis-Ready Convergence Infrastructure.** *Hashir Tanveer (Worcester Polytechnic Institute), Ashleigh Price (University of Maryland), Kyumin Lee (Worcester Polytechnic Institute), Renata Konrad (Worcester Polytechnic Institute), Meredith Gore (University of Maryland), and Diego Cardeñosa (Florida International University)*

Schedule

HDR Ecosystem Conference

THURSDAY, AUGUST 6, 2026

(continued)

Breakout Groups (45 minutes)

- **Group A** – Readiness & usability of source data (Lead: Chhaya Kulkarni) (**Room 206 AB**)
- **Group B** – FAIR & bidirectional data infrastructure (Lead: Eric Sokol) (**Room 213 AB**)
- **Group C** – Knowledge graphs, event extraction & decision support (Leads: Hashir Tanveer and Jawwad Shadman Siddique) (**MM Thompson AB**)

Report Back (20 minutes)

5:00 PM

Conclude for the day

Schedule

HDR Ecosystem Conference

FRIDAY, AUGUST 7, 2026

8:00 AM

2nd Floor Lobby

Registration and Check-in

Continental breakfast provided

8:45 AM

MM Thompson AB

Highlights from Day 2 of the Joint Conference

- Vandana Janeja, University of Maryland, Baltimore County
- Shih-Chieh Hsu, University of Washington

9:00 AM

MM Thompson AB

Plenary Talks: HDR Institute Presentations

Chair: Anand Padmanabhan, University of Illinois Urbana-Champaign

- **AI for Nature: From Science to Impact.** Tanya Berger-Wolf (Ohio State University)
- **AI-for-Science Toolbox : the Highs, the Lows and the Horizon!** Vandana Janeja (University of Maryland, Baltimore County)

10:10 AM

Break

Schedule

HDR Ecosystem Conference

FRIDAY, AUGUST 7, 2026

10:30 AM

MM Thompson AB

Panel: The Future Directions of the HDR Ecosystem for Science

Moderator: Clifford Jacobs, Clifford A. Jacobs Consulting, LLC

Panelists:

- Tanya Berger-Wolf, Imageomics & The Ohio State University
- Elif Ertekin, ID4 & University of Illinois Urbana-Champaign
- Shih-Chieh Hsu, A3D3 & University of Washington
- Vandana Janeja, iHARP & University of Maryland, Baltimore County
- Shaowen Wang, I-GUIDE & University of Illinois Urbana-Champaign

12:00 PM

Lunch (provided)

1:00 PM

HDR Ecosystem Conference concludes

WORKSHOPS AND TUTORIALS

A Hands-on Exploration of the I-GUIDE Platform - Session 1

Monday August 3, 2026

10:00 AM - 12:00 PM

Room: 206 AB

The I-GUIDE Platform is designed to enable geospatial data-intensive convergence research and education by providing a scalable and easy-access user environment for knowledge sharing and discovery. Its tools and resources support collaboration among researchers, educators, and learners.

In this tutorial, we will cover the fundamentals of the Platform, including how to create an account, log in, and search and contribute knowledge elements. We will also introduce the I-GUIDE Platform's JupyterHub, allowing users to conduct computationally reproducible geospatial analytics. Our focus will be on helping users get started, addressing questions, and solving real-world problems. Specifically, the tutorial will demonstrate how to leverage the I-GUIDE AI capabilities, which integrate OpenSearch, Large Language Models (LLMs), and spatial search to create intuitive, multimodal search experiences for researchers and educators. Through hands-on activities, participants will learn how the Platform supports geospatial data-intensive knowledge discovery. This workshop is supported by the NSF Institute for Geospatial Understanding through an Integrative Discovery Environment (I-GUIDE) (#2118329).

Instructors:

Anand Padmanabhan, University of Illinois Urbana-Champaign

Erick Li, University of Illinois Urbana-Champaign

Yunfan Kang, University of Illinois Urbana-Champaign

Wen Zhou, University of Illinois Urbana-Champaign

Daniel Kiv, University of Illinois Urbana-Champaign

Shaowen Wang, University of Illinois Urbana-Champaign

Skills and Background:

General interest in geospatial platforms. No technical background needed.

Requirements:

Participants should bring their own laptops.

Any Model, Any Place, Any Time: A Hands-on Tutorial for Obtaining Remote Sensing Foundation Model Embeddings with rs-embed

Monday August 3, 2026

10:00 AM - 12:00 PM

Room 213 AB

Remote sensing foundation models (RSFMs) have shown strong potential for geospatial analysis, but their practical use remains difficult because existing models rely on different platforms, input data, preprocessing pipelines, and output formats. These differences create barriers to obtaining, comparing, and reusing RSFM embeddings in reproducible workflows. This two-hour tutorial introduces rs-embed, a Python library that provides a unified, region-of-interest-centric interface for obtaining RSFM embeddings using location, time, and model specifications. Participants will learn the motivation and main features of rs-embed, access its repository and documentation, and follow hands-on demonstrations on the I-GUIDE Platform. The tutorial will cover core API usage, embedding visualization, batch embedding generation, and a downstream geospatial task, illustrating how standardized RSFM embeddings may support participants' future research and applications.

Instructors:

- Dingqi Ye, University of Illinois Urbana-Champaign
- Daniel Kiv, University of Illinois Urbana-Champaign
- Wei Hu, University of Illinois Urbana-Champaign

Skills and Background:

Participants are expected to have basic familiarity with Python programming and Jupyter notebooks. A general understanding of geospatial concepts, such as coordinates, bounding boxes, spatial resolution, and regions of interest, will be helpful. Basic knowledge of remote sensing imagery, spectral bands, temporal ranges, and introductory machine learning concepts such as embeddings and feature vectors is recommended but not required. No prior experience with remote sensing foundation models is assumed.

Requirements:

Participants should bring their own laptops.

From Dam Risk Metrics to Interactive Maps: A Hands-on Jupyter Tutorial for Open Geospatial REST APIs

Monday August 3, 2026

1:00 PM - 3:00 PM

Room 213 AB

This tutorial takes participants on a journey from web-based data discovery to advanced spatial database validation. We begin with the “finished product”—the High Hazard Dam Dashboard—to establish a research context for dam-failure vulnerability. Participants will then “peek behind the curtain” at the Swagger API documentation to discover the endpoints that power the service. Moving into Jupyter Notebooks, we transition to a programmatic workflow: mastering the “functional plumbing” of REST APIs to query risk metrics, constructing complex ordinal filters, and rendering interactive GeoJSON maps. The session culminates in a “Trust but Verify” challenge. Using The Littlest JupyterHub (TLJH), each participant will access a private PostGIS sandbox to push API-sourced geometries into a database and run their own spatial joins (`$ST_Intersects$`). This “round-trip” teaches a vital lesson in data provenance: how to verify precomputed web results against raw spatial logic computationally. Attendees will leave with a complete, reusable toolbox of notebooks for bridging the gap between high-level web services and robust spatial data science.

Instructors:

- Jungha Woo, Purdue University
- Xiao Liu, Purdue University
- Erick Li, University of Illinois Urbana-Champaign
- Michael Englert, Utah State University

Skills and Background:

No programming experience required. The tutorial utilizes The Littlest JupyterHub (TLJH) to provide a zero-install environment. Each participant is provisioned with an isolated container with a pre-configured PostGIS sidecar. This infrastructure allows participants to focus on spatial logic and SQL rather than database administration, ensuring even those new to databases can complete the validation challenge.

Requirements:

Participants should bring their own laptops.

From Compliance to Confidence: Applying the I-GUIDE Data Ethics Toolkit for Effective, Responsible, and Reproducible Geospatial Research

Monday August 3, 2026
1:00 PM - 3:00 PM
Room 218

This interactive workshop introduces participants to the I-GUIDE Data Ethics Toolkit (I-GUIDE DET), designed to support responsible, reproducible, and policy-compliant research across the full geospatial data science lifecycle. Drawing on long-term research of I-GUIDE Platform leaders, and this suite of lightweight tools was developed specifically for the needs of the I-GUIDE Platform. Participants will learn how to integrate the toolkit into their projects from the outset, and update it iteratively throughout. Each component of the toolkit is designed for manual use or future automation and supports compliance with policies such as GDPR, the EU AI Act, and major funding agency requirements for data management and open science principles.

Instructors:

Peter Darch, University of Illinois Urbana-Champaign

Skills and Background:

No prior experience required. This topic is well-suited for geospatial data scientists and researchers interested in data and AI ethics.

Requirements:

Participants should bring their own laptops.

A Hands-on Exploration of the I-GUIDE Platform - Session 2

Monday August 3, 2026

3:00 PM - 5:00 PM

Room: 206 AB

The I-GUIDE Platform is designed to enable geospatial data-intensive convergence research and education by providing a scalable and easy-access user environment for knowledge sharing and discovery. Its tools and resources support collaboration among researchers, educators, and learners.

In this tutorial, we will cover the fundamentals of the Platform, including how to create an account, log in, and search and contribute knowledge elements. We will also introduce the I-GUIDE Platform's JupyterHub, allowing users to conduct computationally reproducible geospatial analytics. Our focus will be on helping users get started, addressing questions, and solving real-world problems. Specifically, the tutorial will demonstrate how to leverage the I-GUIDE AI capabilities, which integrate OpenSearch, Large Language Models (LLMs), and spatial search to create intuitive, multimodal search experiences for researchers and educators. Through hands-on activities, participants will learn how the Platform supports geospatial data-intensive knowledge discovery. This workshop is supported by the NSF Institute for Geospatial Understanding through an Integrative Discovery Environment (I-GUIDE) (#2118329).

Instructors:

Anand Padmanabhan, University of Illinois Urbana-Champaign

Erick Li, University of Illinois Urbana-Champaign

Yunfan Kang, University of Illinois Urbana-Champaign

Wen Zhao, University of Illinois Urbana-Champaign

Daniel Kiv, University of Illinois Urbana-Champaign

Shaowen Wang, University of Illinois Urbana-Champaign

Skills and Background:

General interest in geospatial platforms. No technical background needed.

Requirements:

Participants should bring their own laptops.

Hands-on with Data to Science (D2S): An Open-Source Platform for Managing, Sharing, and Analyzing UAV Geospatial Data

Monday August 3, 2026

1:00 PM - 5:00 PM (with a break)

Room 219

Data to Science (D2S) is an open-source ecosystem developed to address a wide range of practical challenges in processing and managing high-quality geospatial data, particularly voluminous Uncrewed Aerial Vehicle (UAV) data. Since the release of its first official version in 2024, D2S has been continuously expanded and refined. To enhance user accessibility, D2S centers around a web application with a modern, intuitive interface that connects users and their data through a common API, supporting companion tools such as the Python library (d2spy), QGIS plugin (D2S Browser), and centralized open data repository (D2S STAC repository). This integrated ecosystem has been actively applied to a variety of multidisciplinary research projects, supporting data-driven analysis and collaboration. In this workshop, participants will learn, together with the D2S development team, how to effectively utilize the components of the D2S ecosystem in real-world applications. Using our user-friendly tools, you will explore and visualize data within the D2S ecosystem.

Instructors:

- Jinha Jung, Purdue University
- Minyoung Jung, Purdue University
- Benjamin G. Hancock, Purdue University

Skills and Background:

Accessible to all user levels and completely beginner-friendly, with no prior technical or programming experience required.

Requirements:

Participants must bring their own laptops and have installed both an Internet browser and the latest stable version of QGIS. Participants are encouraged to bring their own UAV datasets, though sample data will be provided if needed.

PANELS AND PLENARY TALKS

Panel: Challenges and Benefits of Becoming a Convergence Scientist

Tuesday August 4, 2026

3:30 PM

MM Thompson AB

MODERATOR



Michael Goodchild

University of California, Santa Barbara

Michael F. Goodchild (Chair) is Emeritus Professor of Geography at UCSB where he also holds the title of Research Professor. He was elected member of the National Academy of Sciences and Foreign Member of the Royal Society of Canada in 2002, member of the American Academy of Arts and Sciences in 2006, and Foreign Member of the Royal Society and Corresponding Fellow of the British Academy in 2010. He was Chair of the National Research Council's Mapping Science Committee from 1997 to 1999, and of the Advisory Committee on Social, Behavioral, and Economic Sciences of NSF from 2008 to 2010. His research interests center on geographic information science, spatial analysis, and uncertainty in geographic data.

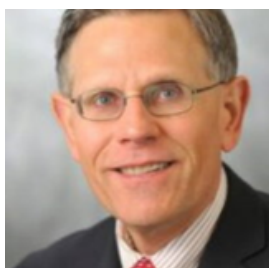
PANELISTS



Yoonjung Ahn

University of Kansas

Yoonjung Ahn is an Assistant Professor in the Department of Geography & Atmospheric Science at the University of Kansas. Her research examines how climate hazards, built environments, and social vulnerability intersect to shape human health and well-being. Trained as a health and medical geographer and geospatial information scientist, she uses spatial modeling, big data, and quantitative methods to study extreme heat, access to air conditioning, indoor environmental conditions, power outages, air pollution, and climate-related health disparities.



Kelvin Droegemeier

University of Illinois Urbana-Champaign

Dr. Kelvin K. Droegemeier is Professor of Climate, Meteorology & Atmospheric Sciences and Special Advisor to the Chancellor for Science and Policy at the University of Illinois Urbana-Champaign. He previously spent 38 years on the faculty at the University of Oklahoma, where he served for nearly a decade as Vice President for Research. He co-founded and directed one of the first 11 NSF Science and Technology Centers and served as Oklahoma Cabinet Secretary for Science and Technology as well as two terms on the National Science Board, the last four years as Vice-Chairman. Most recently, he served as Director of The White House Office of Science and Technology Policy (OSTP), Science Advisor to the President, and Acting Director of NSF. He is a Fellow of the American Meteorological Society and AAAS. In 2026, he was appointed by the Secretary of War to the Science, Technology, and Innovation Board.

Panel: Challenges and Benefits of Becoming a Convergence Scientist

Tuesday August 4, 2026

3:30 PM

MM Thompson AB



Efi Foufoula-Georgiou

University of California, Irvine

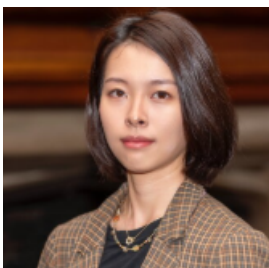
Efi Foufoula-Georgiou is a Distinguished Professor and the Henry Samueli Endowed Chair in the Department of Civil and Environmental Engineering at the University of California Irvine. She has served as the Assistant Dean for Research and Innovation in the Samueli School of Engineering at UC Irvine, and as Director of the NSF Science and Technology Center “National Center for Earth Surface Dynamics” at the University of Minnesota, where she spent 30 years before moving to California. Her research is on hydrology and geomorphology with emphasis on global precipitation estimation from satellites and modeling of complex landforms, such as river networks and river deltas.



Peter Kedron

University of California, Santa Barbara

Dr Peter Kedron is a human geographer working at the intersection of geographic information science, statistics, and social science. He is an Associate Professor of Geography at the University of California Santa Barbara, where he is also an Associate Director of the Center for Spatial Science. Peter’s research program focuses on the development of analytical methods, research approaches, and pedagogical models that enable the discovery of geographic knowledge. His ongoing research program contributes to the fields of geographic epistemology, economic and policy geography, spatial analysis, and spatial ecology.



Yue Lin

University of Illinois Urbana-Champaign

Dr. Yue (pronounced as Yoo-eh) Lin is an Assistant Professor in the Department of Geography & Geographic Information Science at the University of Illinois Urbana-Champaign, where she directs the Geospatial Computing & Society Lab (GeoCompSoc Lab). She is also a Faculty Affiliate at the National Center for Supercomputing Applications and the Center for Social & Behavioral Science.

Panel: Exploring Frontiers in Spatial AI and Data Science

Wednesday August 5, 2026

10:30 AM

MM Thompson AB

MODERATOR



Mark Neubauer

University of Illinois Urbana-Champaign

Mark Neubauer is a Professor at the University of Illinois Urbana-Champaign with a primary appointment in the Department of Physics. He also holds courtesy appointments in the Department of Electrical and Computer Engineering, the National Center for Supercomputing Applications, and the Discovery Partners Institute. He is a Co-PI for the NSF HDR Institute Accelerated AI Algorithms for Data Driven Discovery (A3D3) and serves as A3D3 Community Engagement Coordinator. His research is highly interdisciplinary at the intersection of particle physics, AI/ML, and quantum, aiming to understand the universe at its fundamental level and to accelerate scientific discovery through innovation.

PANELISTS



Budhendra Bhaduri

Oak Ridge National Laboratory

Dr. Budhendra "Budhu" Bhaduri is the Chief Data Officer at Oak Ridge National Laboratory (ORNL), where he leads the laboratory's enterprise-wide data and AI strategy to advance scientific discovery and operational excellence. He oversees data governance, stewardship, ethics, accessibility, and risk management while supporting AI-enabled and autonomous science initiatives. Previously, he led interdisciplinary research and technology programs in geospatial science, artificial intelligence, machine learning, and high-performance computing, supporting energy, environmental, national security, defense, and intelligence missions. He also builds strategic partnerships among academia, industry, government, and philanthropic organizations to accelerate innovation. Dr. Bhaduri is a Fellow of the American Association for the Advancement of Science (AAAS) and the American Association of Geographers (AAG), and is a recipient of the U.S. Department of Energy (DOE) Outstanding Mentor Award.

Panel: Exploring Frontiers in Spatial AI and Data Science

Wednesday August 5, 2026

10:30 AM

MM Thompson AB



Devaika Jain

Harvard University

Devaika Jain leads the GeoAI and Spatial Data Science at the Center for Geographic Analysis (CGA), Harvard University. She also serves as Chair of the Membership Committee of UCGIS and as Vice Chair of the Applied Geography Specialty Group of the AAG. Her research includes GeoAI, Data Science, Big data, High-Performance Computing and Cloud Computing. She has led several projects funded by Harvard University, the National Science Foundation (NSF), and the Gates Foundation. She has received several awards, including the Geospatial World Rising Star Award, the Women in GIS Distinguished Contributions Award, and the AAG Health Data Visualization Award.



Yuqin Jiang

University of Hawaii

Yuqin Jiang is an Assistant Professor in the Department of Geography and Environment at University of Hawai'i at Mānoa (UHM). She completed her Ph.D. at University of South Carolina in 2022. Her research interests focus on using spatial big data and data-driven methods to understand how people interact with their surrounding environment. Her current research focuses on human mobility, disaster management, GeoAI, computational social sciences. She employs spatial big data, cyberinfrastructure-based applications, and geo-visualizations to create a better understanding of human-environment interaction. She is working on projects with hurricane-caused evacuation models, post-disaster recovery, urban transportation, accessibility to healthcare, and tourism in Hawaii.



Eric Shook

University of Minnesota

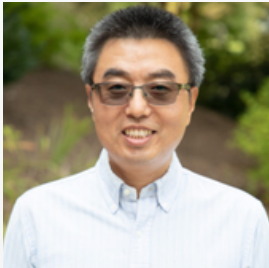
Eric Shook is an Associate Professor at the University of Minnesota, where he works at the intersection of geography and computer science. He serves as Co-Lead for Education and Workforce Development for the NSF-supported I-GUIDE project and is Director of the GeoCommons and Spatial Maker Space, collaborative hubs for geospatial research, education, and public engagement. His research combines geographic information science and computational science to advance the field of geospatial computing. He is also passionate about transforming geospatial education by integrating emerging technologies, including AI, into curriculum design and workforce development practices to shape the future of the geospatial workforce.

Panel: Exploring Frontiers in Spatial AI and Data Science

Wednesday August 5, 2026

10:30 AM

MM Thompson AB



Jianwu Wang

University of Maryland, Baltimore County

Dr. Jianwu Wang is a Professor of Data Science in the Department of Information Systems, University of Maryland, Baltimore County (UMBC). He leads the Center for Scalable Data and Computational Science (ScaleS) and the Big Data Analytics Lab (BDAL) at UMBC. He is a Co-PI for the NSF HDR Institute for Harnessing Data and Model Revolution in the Polar Regions (iHARP). His research interests include Big Data Analytics, Causal AI, Earth Informatics and Distributed Computing. He has published 170+ papers. Since joining UMBC in 2015, he has received multiple external grants as PI, Co-PI or Senior Personnel, funded by ARL, NSF, NASA, DOE, State of Maryland, and Industry. He received Early-Career Faculty Excellence award from UMBC in 2019, NSF CAREER award in 2020 and Mid-Career Faculty Excellence award from UMBC in 2025.

Panel: Industry and Partnership

Wednesday August 5, 2026

1:00 PM

MM Thompson AB

MODERATOR



Aaron Addison

World Geospatial Industry Council (WGIC)

Aaron Addison serves as the Executive Director for the World Geospatial Industry Council (WGIC) Secretariat where his focus is geospatial industry outreach working with companies and organizations around the globe on challenges related to the policy, implementation and communication of geospatial data. His 30 years of international experience includes extensive work in the public and private sectors as well as NGOs and higher education institutions. In addition to leading the Secretariat, Addison currently provides leadership for WGIC activities in education, workforce development, digital twins and recently initiated GeoAction Africa project examining the contributions that geospatial tools and services may provide to countries in Africa. In addition to his operational and project management roles, he also staffs the WGIC Policy and Industry/Academia committees working to bring education and research together with geospatial industry.

PANELISTS



Samantha T. Arundel

USGS Center of Excellence for Geospatial Information Science

Samantha T. Arundel, Ph.D., is Director of the Center of Excellence for Geospatial Information Science and Senior Advisor for Research in the U.S. Geological Survey's National Geospatial Program. Her work focuses on advancing national geospatial infrastructure through artificial intelligence, automation, and large-scale data integration, including efforts to embed AI within The National Map. She chairs the International Cartographic Association Commission on GeoAI and leads the U.S. Federal GeoAI Community of Practice, helping coordinate research and collaboration across government, academia, and industry. Her research connects scientific innovation with operational mapping systems that support natural hazard response, environmental management, and infrastructure planning.

Panel: Industry and Partnership

Wednesday August 5, 2026

1:00 PM

MM Thompson AB



Peter Herman

NORC at the University of Chicago

Peter Herman is a Senior Research Methodologist in at NORC at the University of Chicago. Since joining NORC in 2016, Peter has served as an expert in web-based interactive data visualization tools and GIS analysis. In this capacity he has served as the lead programmer for several NORC data visualization web tools, and served as a GIS consultant to the Center for Medicare and Medicaid Services, the Truth Foundation, and the Ukrainian USAID mission among many others. Peter teaches GIS Applications in the Social Sciences at the University of Chicago Harris School of Public Policy.



Florence Hudson

Northeast Big Data Innovation Hub at Columbia University

Florence Hudson is Executive Director of the Northeast Big Data Innovation Hub in the Data Science Institute at Columbia University. She leads over \$30M in projects funded by NSF, NIH, DOT and DARPA and is Founder of the National Student Data Corps, providing free open online data science and AI education across domains including health, environment, transportation, finance and more to 21,000+ individuals worldwide. A former IBM VP & CTO, Internet2 Senior VP & Chief Innovation Officer, NSF Cybersecurity Center of Excellence Special Advisor, NASA aerospace engineer, and Editor and Author for Springer, Elsevier, Wiley, IEEE, and others, she leads development of global standards to increase Trust, Identity, Privacy, Protection, Safety and Security (TIPSS) across cyber-physical systems, and is Vice Chair of the IEEE Engineering Medicine & Biology Society Standards Committee. Her Mechanical and Aerospace Engineering degree is from Princeton University, and her executive education from Harvard Business School and Columbia University.

Panel: Industry and Partnership

Wednesday August 5, 2026

1:00 PM

MM Thompson AB



Elliott Kellner

Taylor Geospatial

Elliott Kellner, PhD, MBA, is President of Taylor Geospatial, a St. Louis-based nonprofit advancing geospatial artificial intelligence (GeoAI) for global public benefit. He leads the organization's mission to translate cutting-edge geospatial AI research into accessible tools, datasets, and shared infrastructure, catalyzing the development and commercialization of novel research into digital public goods that empower innovators and communities worldwide. Kellner brings more than 15 years of experience at the intersection of science, strategy, and partnership development. Trained as a natural resources scientist, he served as a research scientist and faculty member at West Virginia University, working with the USDA's Natural Resources Conservation Service as Chesapeake Bay Science Advisor. He then joined the Donald Danforth Plant Science Center, forging partnerships between research teams and technology companies to accelerate agricultural innovation, before serving as Chief Financial and Operating Officer of the Taylor Geospatial Institute. He holds a PhD in Natural Resources from the University of Missouri and an MBA from Washington University in St. Louis.



Angela Lee

Esri

Angela Lee is the Director of Education Solutions at Esri. She leads outreach to educators, students, and administrators to promote a geographic approach to learning and problem solving and strengthen collaboration between industry and academia. She also manages Esri's product offerings for educational institutions. As a liaison between Esri and educational institutions at all levels, Angela helps these institutions enhance the educational experience, advance scientific research, prepare students for meaningful careers, and operate more efficiently using geospatial data and analysis. Angela holds degrees in Geography from the University of Minnesota and Macalester College.



Kumar Navulur

Synspective USA Inc.

Dr. Navulur is the CEO of Synspective USA Inc. and its parent company Synspective Inc based out of Tokyo operates a constellation of SAR small satellites. He received his PhD from Purdue University and was recognized as 2019 Purdue ABE Distinguished Alumnus. He has over 30 years of experience in the geospatial industry. Dr. Navulur is the author of the book "Multi-Spectral Image Analysis Using Object Oriented Paradigm" and holds several patents in the field of remote sensing and analysis.

HDR Panel: The Future Directions of the HDR Ecosystem for Science

Friday August 7, 2026

10:30 AM

MM Thompson AB

MODERATOR



Clifford Jacobs

Clifford A. Jacobs Consulting, LLC

Clifford A. Jacobs is an independent consultant focusing on synergistically advancing geosciences and cyberinfrastructure. Previously, he served as the NSF program manager for the National Center for Atmospheric Research (NCAR) for a period of two decades and was a driving force behind the continuous modernization and upgrading of the NCAR supercomputer system which has served generations of university researchers. Jacobs also played a leading role to develop the original vision for the UCAR Unidata program, providing leadership community tools to access, visualize and exchange data sets. More recently, Jacobs was a key intellectual leader for NSF's EarthCube program. Jacobs led the design team that created the novel management and funding structure for EarthCube – one that stresses open source, open architecture, and resolutely community-based design.

PANELISTS



Tanya Berger-Wolf

Imageomics & The Ohio State University

Dr. Tanya Berger-Wolf is a Professor of Computer Science Engineering, Electrical and Computer Engineering, and Evolution, Ecology, and Organismal Biology at the Ohio State University, where she is also the Director of the Translational Data Analytics Institute. A pioneer in AI for ecology, biodiversity, and conservation, she leads the NSF-funded Imageomics Institute and the US-Canada co-funded AI and Biodiversity Change (ABC) Global Center.

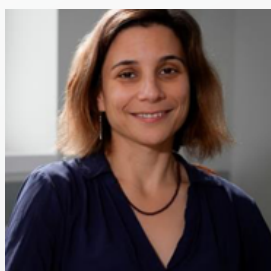
Dr. Berger-Wolf serves on advisory and governance bodies including the US National Academies Board on Life Sciences, the Global Partnership on AI (GPAI)/OECD, National Ecological Observatory Network (NEON), and The Nature Conservancy. She co-led Wild Me (now part of Conservation X Labs), one of the first AI conservation nonprofits, where she co-created Wildbook, recognized by UNESCO for advancing the UN Sustainable Development Goals. Her contributions have earned numerous honors, including recognition as the AI 100 Global Thought Leaders by H2O.ai. She is an elected Fellow of the Association for the Advancement of Artificial Intelligence (AAAI) and the American Association for the Advancement of Science (AAAS).

HDR Panel: The Future Directions of the HDR Ecosystem for Science

Friday August 7, 2026

10:30 AM

MM Thompson AB



Elif Ertekin

ID4 & University of Illinois Urbana-Champaign

Elif Ertekin is currently R. Andersen Faculty Scholar, Associate Professor, and Associate Head for Graduate Programs in the Mechanical Science and Engineering Department at the University of Illinois Urbana-Champaign. She is co-Director and Domain Science lead of the NSF Institute for Data-Driven Dynamical Design (ID4). Her research interests combine first-principles physics with machine learning to develop predictive models for materials, emphasizing the role of symmetry, physical mechanisms, and mathematical structure in the design of data-driven approaches. She holds BS degrees in Math and Engineering Science from Penn State, PhD in Materials Science from UC Berkeley, and did post-doctoral work at Berkeley and MIT.



Shih-Chieh Hsu

A3D3 & University of Washington

Shih-Chieh Hsu earned a MS degree in Physics from National Taiwan University and a PhD in Physics from University of California San Diego. He is currently an Associate Professor in Physics and Adjunct Associate Professor in Electrical and Computer Engineering at University of Washington (UW), and Director of NSF HDR Institute: Accelerated Artificial Intelligence Algorithms for Data-Driven Discovery (A3D3). He is working on experimental particle physics using proton-proton collision data from the Large Hadron Collider. His research interests range from dark matter searches with the ATLAS experiment, neutrino cross-section measurement with the FASER experiment, innovative Artificial Intelligence algorithms for data-intensive discovery and accelerated machine learning with heterogeneous computing. He is a recipient of DOE Early career award and UW Undergraduate research mentor award.

HDR Panel: The Future Directions of the HDR Ecosystem for Science

Friday August 7, 2026

10:30 AM

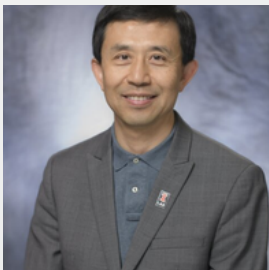
MM Thompson AB



Vandana Janeja

iHARP & University of Maryland, Baltimore County

Vandana Janeja is Associate Dean of Research in the College of Engineering and Information Technology, Professor of Information Systems, at the University of Maryland, Baltimore County (UMBC). She served as Associate Dean for research and faculty development from 2023-2026, chair of Information Systems from 2019 to 2023. She is the director of iHARP, an NSF HDR Institute for Harnessing Data and Model Revolution in the Polar Regions and heads the Multi Data lab at UMBC. She is member of the UMBC ADVANCE Executive committee focusing on diversity in STEM, and a UMBC innovation fellow (2020-2022) advancing the ideas of including ethics in data science. She served as an intermittent expert at NSF supporting data science activities in the CISE directorate (2018-2021). She holds a Ph.D. in Information Technology from Rutgers University.



Shaowen Wang

I-GUIDE & University of Illinois Urbana-Champaign

Shaowen Wang is a Professor of Geography and Geographic Information Science and of Computing and Data Science at the University of Illinois Urbana-Champaign (UIUC). He serves as Associate Dean for Natural and Mathematical Sciences in the College of Liberal Arts and Sciences and as a Senior Faculty Fellow in the Office of the Vice Chancellor for Research and Innovation at UIUC. He is the founding director of UIUC's CyberGIS Center for Advanced Digital and Spatial Studies and leads the National Science Foundation-funded Institute for Geospatial Understanding through an Integrative Discovery Environment (I-GUIDE). His research focuses on advancing cyberGIS, geospatial data science, and spatial artificial intelligence (AI) to develop scalable solutions for complex geospatial problems and sustainability challenges. He is a Fellow of the American Association for the Advancement of Science, the American Association of Geographers, and the University Consortium for Geographic Information Science.

Plenary Talks: HDR Institute Presentations

Thursday August 6, 2026

9:00 AM

MM Thompson AB

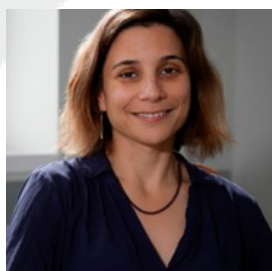


Real-Time Scientific Agents: Ultra-Low-Latency AI at the Extreme Edge

Shih-Chieh Hsu

University of Washington

Shih-Chieh Hsu earned a MS degree in Physics from National Taiwan University and a PhD in Physics from University of California San Diego. He is currently an Associate Professor in Physics and Adjunct Associate Professor in Electrical and Computer Engineering at University of Washington (UW), and Director of NSF HDR Institute: Accelerated Artificial Intelligence Algorithms for Data-Driven Discovery (A3D3). He is working on experimental particle physics using proton-proton collision data from the Large Hadron Collider. His research interests range from dark matter searches with the ATLAS experiment, neutrino cross-section measurement with the FASER experiment, innovative Artificial Intelligence algorithms for data-intensive discovery and accelerated machine learning with heterogeneous computing. He is a recipient of DOE Early career award and UW Undergraduate research mentor award.



HDR Institute for Data Driven Dynamical Design

Elif Ertekin

University of Illinois Urbana-Champaign

Elif Ertekin is currently R. Andersen Faculty Scholar, Associate Professor, and Associate Head for Graduate Programs in the Mechanical Science and Engineering Department at the University of Illinois Urbana-Champaign. She is co-Director and Domain Science lead of the NSF Institute for Data-Driven Dynamical Design (ID4). Her research interests combine first-principles physics with machine learning to develop predictive models for materials, emphasizing the role of symmetry, physical mechanisms, and mathematical structure in the design of data-driven approaches. She holds BS degrees in Math and Engineering Science from Penn State, PhD in Materials Science from UC Berkeley, and did post-doctoral work at Berkeley and MIT.

Plenary Talks: HDR Institute Presentations

Friday August 7, 2026

9:00 AM

MM Thompson AB



AI for Nature: From Science to Impact

Tanya Berger-Wolf

The Ohio State University

Dr. Tanya Berger-Wolf is a Professor of Computer Science Engineering, Electrical and Computer Engineering, and Evolution, Ecology, and Organismal Biology at the Ohio State University, where she is also the Director of the Translational Data Analytics Institute. A pioneer in AI for ecology, biodiversity, and conservation, she leads the NSF-funded Imageomics Institute and the US-Canada co-funded AI and Biodiversity Change (ABC) Global Center.

Dr. Berger-Wolf serves on advisory and governance bodies including the US National Academies Board on Life Sciences, the Global Partnership on AI (GPAI)/OECD, National Ecological Observatory Network (NEON), and The Nature Conservancy. She co-led Wild Me (now part of Conservation X Labs), one of the first AI conservation nonprofits, where she co-created Wildbook, recognized by UNESCO for advancing the UN Sustainable Development Goals. Her contributions have earned numerous honors, including recognition as the AI 100 Global Thought Leaders by H2O.ai. She is an elected Fellow of the Association for the Advancement of Artificial Intelligence (AAAI) and the American Association for the Advancement of Science (AAAS).



AI-for-Science Toolbox : the Highs, the Lows and the Horizon!

Vandana Janeja

University of Maryland, Baltimore County

Vandana Janeja is Associate Dean of Research in the College of Engineering and Information Technology, Professor of Information Systems, at the University of Maryland, Baltimore County (UMBC). She served as Associate Dean for research and faculty development from 2023-2026, chair of Information Systems from 2019 to 2023. She is the director of iHARP, an NSF HDR Institute for Harnessing Data and Model Revolution in the Polar Regions and heads the Multi Data lab at UMBC. She is member of the UMBC ADVANCE Executive committee focusing on diversity in STEM, and a UMBC innovation fellow (2020-2022) advancing the ideas of including ethics in data science. She served as an intermittent expert at NSF supporting data science activities in the CISE directorate (2018-2021). She holds a Ph.D. in Information Technology from Rutgers University.

Posters

Reception & Joint Forum/HDR Poster Session

Wednesday August 6, 2026

5:00 PM

MM Thompson C

1. An Open-Source Deep Learning Framework for Scalable Urban Heat Island Detection Using Geospatial Data

Mercy Akintola and Gresa Neziri Neziri (Space Syntaxs)

2. Site suitability modeling of green stormwater infrastructure and potential effects on future West Nile virus risk in the United States

Caylee Chan, Deanna Hence, Andrew Mackay, Arthur Schmidt, Aiman Soliman, Christopher Stone, Shaowen Wang, and Brian Allan (all from University of Illinois Urbana-Champaign)

3. Any Model, Any Place, Any Time: Get Remote Sensing Foundation Model Embeddings On Demand

Dingqi Ye, Daniel Kiv, Wei Hu, and Shaowen Wang (all from University of Illinois Urbana-Champaign)

4. PCG-VAE: Partial Causal Graph Discovery via Interventional Representation

Emam Hossain and Md Osman Gani (both from University of Maryland, Baltimore County)

5. Where Rain Falls Matters: Spatial Rainfall Variability and Dam Overtopping Risk Across the Eastern U.S.

Hodo Orok (University of Illinois Urbana-Champaign), Carolina Bieri (University Corporation for Atmospheric Research), and Deanna Hence (University of Illinois Urbana-Champaign)

6. Quant-Generative Large Language Model for Sea Ice Prediction: Investigating the Arctic

Shanmukhi Gundu (University of Maryland, Baltimore County)

7. Mosquitoes and Tropical Cyclones: What Do We Know?

Caylee Chan, Sophia Cerda, Isabella Gupta, Laura Hildebrand, Cal Reckamp, Brian Allan, Deanna Hence (all from University of Illinois Urbana-Champaign), Alexander Michels (University of Texas Dallas) and David Johnson (Purdue University)

9. MatSci-SAM (Semantic Alignment Metadata): Human-in-the-Group AI for Consensus Terminology

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