2025 CGA Conference: The Geography of Digital Twins
&
The 2025 International Symposium on Spatiotemporal Data Science

May 22-24, 2025

1730 Cambridge Street, Cambridge MA 02138

Preliminary Conference Program

Pre-symposium Workshop	**May 22**
On-site Sessions	**May 22-23**
Online Sessions	**May 24**
Open Call for Abstracts	**By Invitation**

Day 1 - Thursday, May 22 (Onsite)	
Room	CGIS S030
9:00-12:00 PM	***Pre-conference Workshop: Spatiotemporal Simulation with GeoAI and GenAI**
Room	CGIS S020
1:00-1:10 PM	**Welcome Address**
1:10-1:35 PM	**Keynote: David Mindell, MIT** *A look at digital twins in context: historical analogues and the evolution of simulation, from antiquity to AI*
1:35-2:00 PM	**Featured talk: Esri (TBD)** *Shaping the world in real-time: exploring the cutting edge of geospatial digital twins*
2:00-2:25 PM	**Keynote: Michael Goodchild, UC Santa Barbara: The Geography of Digital Twins** *Unpacking digital twins to understand their potential, their limitations, and future directions*
2:25-2:50 PM	**Featured talk: Dan Isaacs, Digital Twin Consortium** *From vision to reality: thoughts on building scalable and ethical digital twin ecosystems*
2:50-3:05 PM	**Break**
3:05-4:25 PM	**Lightning Talks: Scientific Digital Twins, Room CGIS 2020**
3:05-4:25 PM	**Lightning Talks: Digital Twin Technologies, Room CGIS S030**
3:05-4:25 PM	**Lightning Talks: Digital Twin Applications, Room CGIS S050**

Day 2 – Friday, May 23 (Onsite)	
Room	CGIS S010
9:00-10:20 AM	**Panel 1: Scaling digital twins from local to global systems**
10:20-10:40 AM	**Keynote 3: TBD**
10:40-10:50 AM	**Break**
10:50-12:10 PM	**Panel 2: Digital twins and cross-disciplinary collaboration: breaking down silos**
12:10-1:40 PM	**Poster Viewing and Fisher Prize Judging**
1:40-2:00 PM	**Keynote 4: Shaowen Wang, UI Urbana-Champaign** *A pedagogy for digital twins: bridging the knowledge gap*
2:00-3:20 PM	**Panel 3: In a digital twin curriculum, what are the core skills, tools, case studies?**
3:20-3:30 PM	**Break**
3:30-4:50 PM	**Panel 4: Engaging the next generation. Why do digital twins matter?**
4:50- 5:00 PM	**Fisher Prize Award**

Day 3 – Saturday, May 24 (Online Only)
Keynote: Daniel Sui, Virginia Tech
Plenary Panel: Challenges and Breakthroughs in Replicable and Reproducible Spatiotemporal Data Science
Sessions (the final session titles are subject to change in the final program)
• Advancements in Spatiotemporal Data Science • Innovations in Geospatial Analysis • New Frontiers in Spatiotemporal Modeling • Opportunities and Challenges in Generative Mapping • Open-Source Science • Geo for AI vs. AI for Geo • Computing and workflow • Image Classification, Labeling and Training data • Applications in Environment • Applications in Social Development • Applications in Health • Applications in Human Development • Applications in Urban Development • Applications and Training in Social Sciences
Closing Remarks

*Pre-conference Workshop: Spatiotemporal Simulation with GeoAI and GenAI

Date: 9:00 AM - 12:00 PM, Thursday, May 22, 2025 (Half day)

Venue: Room S030, 1730 Cambridge Street, Cambridge MA 02138

Sponsored by Spatial Data Lab, this half-day workshop will provide a focused exploration of cutting-edge advancements in GeoAI and spatiotemporal analysis. Participants will gain insights into innovative tools, methods, and applications that integrate artificial intelligence, cloud computing, and geospatial analysis, fostering cross-disciplinary collaboration and problem-solving.

Program Schedule and Topics (3 hours):

- **Geospatial Analytics for KNIME**
  - **Instructor(s)**: Lingbo Liu, Harvard University
  - **Description**: Learn the principles of workflow-based geospatial analysis using KNIME. Topics include various geospatial data tools, GeoAI-powered data analysis, the integration of GeoAI with Google Earth Engine, and case studies on socioeconomic and environmental applications.
- **Healthcare Accessibility: Geospatial Methods and Tools**
  - **Instructor**: Mengxi Zhang, Virginia Tech
  - **Description**: Discover geospatial methods for analyzing healthcare accessibility. Topics include accessibility concepts and advanced methodologies, supported by KNIME workflows. The session will feature a case study showcasing an AI-powered dashboard for analyzing ADA dental care accessibility.
- **AI Reporting for Big Data**
  - **Instructor**(s):Xiao Huang, Emory University and Zifu Wang, Harvard University
  - **Description**: Explore how AI tools enhance reporting and visualization of large-scale spatiotemporal datasets. This session will focus on automation and explainability in geospatial data analysis workflows, leveraging natural language processing and large language models (LLMs) for intuitive and efficient insights.
- **Generative AI in GeoAI Applications**
  - **Instructor**(s): Siqin Wang,USC and Hongxu Ma, Google DSA Experts
  - **Description**: Explore the integration of generative AI tools, such as Google Data Science Agent and other GenAI tools, with GeoAI methods. Participants will get a taste of automated data science and AI-assisted debugging, experiencing how these tools are transforming the way we build and interact with technology.
- **Mapping and Analyzing Organizational Ecosystems with webAI**
  - **Instructor**(s): Jan Kinne, Harvard University & ISTARI.AI and Devika Jain, Harvard University,
  - **Description**: Learn how webAI revolutionizes economic research by transforming unstructured web data into standardized indicators and geospatial insights. Participants will learn how to get started with webAI, including building customized company lists, applying filters for market segmentation, and accessing detailed analytics to identify emerging regional trends.