

NSF Spatiotemporal Innovation Center



November 2022 Monthly Newsletter

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November 28th, 2022

November IAB Meeting Update

On November 9, 2022, the Center for Intelligent Spatial Computing virtually had its 18th annual IAB Meeting. This meeting proved another year of successful collaboration and discovery. 13 projects/proposals were presented to 59 participants from agency, industry and academia with the results and next steps for each project. In addition to project updates and proposal presentations, productive discussions were conducted on the projects and emerging topics, such as digital twins and spatiotemporal data analytics. The feedback from the meeting shows that many of the attendees have a high-interest level in each project. The agenda was very packed, and each project presented has a significant impact. Project feedback and response will continue into December to inform the selection of proposals.

For presentations and documents

https://www.stcenter.net/?page_id=3322

Start	End	Agenda	Speakers	Moderator
11:00 AM	11:05 AM	Welcome	S. Chakraborty & P. Gollwitzer	Phil Yang
11:05 AM	11:20 PM	Roundtable Introductions		Phil Yang
11:20 AM	12:15 PM	Center Status Update and Discussion		Phil Yang
11:20 AM	11:30 AM	NSF I/O/DC Update	Dr. Kumar, Arjun	
11:30 AM	12:05 PM	STC-19-02: Center Status Update and Discussion, Meeting Overview	Phil Yang	
12:05 PM	12:15 PM	IAB View and Project Evaluation Protocol	David Duffy	
12:15 PM	12:45 PM	Project Reports		Wendy Guan
12:15 PM	12:25 PM	STC-20-01: Innovating a Computing Infrastructure for Spatiotemporal Studies	Matt Rios, Zifu Wang	
12:25 PM	12:35 PM	WHD-21-01: Enabling replicable spatiotemporal research with virtual spatial data lab	Wendy Guan	
12:35 PM	12:45 PM	WHD-21-01: Developing Workbench for Spatial Data Science	Lingbo Liu	
12:45 PM	1:10 PM	Project Reports		David Pearce
1:10 PM	1:40 PM	STC-19-02: Spatiotemporal Innovation Testbed & STC-21-01: Optimizing GPU system for Earth sciences	Zifu Wang and Yuli Li	
1:40 PM	1:50 PM	GMU-22-02: A Formal Study of AI/ML for Air Quality data analysis	Qian Liu, Anusha Srinivasanathan, Alex Fouraker	
1:50 PM	2:00 PM	WHD-22-04: Enabling Geo-Invent Research	Jayanta Kishor	
2:00 PM	2:10 PM	GMU-22-01: Automating Training Datasets Labeling for Image Applications	Anusha Srinivasanathan	
2:10 PM	2:20 PM	GMU-22-01: Integration and Applications of Geo-PIF Based Detection	Denghan Sun	
2:20 PM	2:30 PM	WHD-22-01: Enhancing Real Data with a Workflow-based Spatiotemporal Exploration Portal	Lingbo Liu	
2:30 PM	2:40 PM	WHD-22-02: Building a Resilient Data Life and another	Ben Lewis	
2:40 PM	2:50 PM	WHD-22-03: Transformational Adaptation for Climate Change using Geospatial Approaches	Arminia Lohrert	
2:50 PM	3:00 PM	GMU-21-06: USDA Climate Impact on Agricultural Output	Naresh Thang, Qian Liu	
3:00 PM	3:10 PM	Center Related Projects (Dr. Associate Degree Students START training)	Wenying Ji, Ba Liu, Yingying Cai, Seren Smith	
3:10 PM	3:25 PM	Break & Computer Evaluation Form		
3:25 PM	3:50 PM	Spatiotemporal Computing Workshop Report and Activities	Michael Goodchild, Dan Brown	Wendy Guan
3:50 PM	4:10 PM	Review Evaluation Form	David Duffy	
4:10 PM	4:30 PM	Board Member Meeting (MEMBERS ONLY)		David Duffy
4:30 PM	5:00 PM	Next Steps (Non-members)		Michael Goodchild
5:00 PM	5:30 PM	Summary and Closure		Wendy Guan, Phil Yang

STC is co-sponsoring the CGA annual conference “From Geospatial Research to Health Solutions” on March 20-21 in 2023. This event was originally planned for the spring of 2020 but postponed due to the COVID-19 pandemic. It will be an in-person event on Harvard campus. Registration is free and open to the public.

The Spatial Data Lab team presented at the KNIME Fall Summit 2022 at Austin, TX and received numerous positive feedbacks from the KNIME users community, some are waiting to use the new Geospatial Analytics Extension to be released in this December, others interest to learn more about application potentials of Geospatial Analytics tools in their business.



KNIME Fall Summit
Austin, TX

GEOSPATIAL ANALYTICS FOR ALL

Wendy Guan and Linbo Liu,
Center for Geographic Analysis, **Harvard
University**

Tobias Koetter, **KNIME**

 Center for Geographic Analysis
University of Washington

 **KNIME**

 **FBI** Future Data

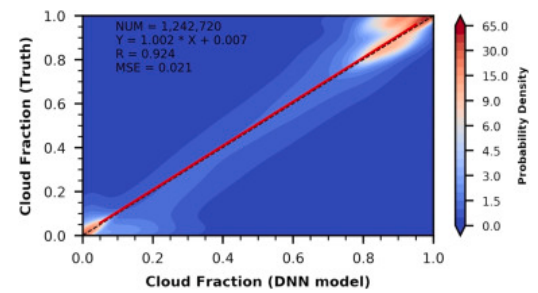
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Cross-track infrared sounder cloud fraction retrieval using a deep neural network

Qian Liu published her latest paper, “Cross-track infrared sounder cloud fraction retrieval using a deep neural network”, in the journal, Computers & Geosciences. This paper uncovers how cloud fractions of satellite hyperspectral sounder are crucial for numerical weather prediction and proposes an AI-based cloud fraction retrieval model for cross-track infrared sounder (CrIS).

For further information and/or inquiries, please email Dr. Qian Liu at qliu6@gmu.edu.

[Read More](#)



Spatiotemporal Computing RoadMap Workshop Held Successfully

The Spatiotemporal computing workshop was successfully held at University of Washington – Seattle to define the research roadmap for spatiotemporal studies in the next 5-10 years. This meeting reviewed the domain’s innovative research and identified new research directions through collaborations among 49 experts from academia, industry, and agencies including, to name a few, NASA, NOAA, Microsoft, Google, Nike, Amazon, City of Seattle, City of Kirkland. All slides and notes are available for download (please email jsmit92@gmu.edu).

You can view the agenda of the 2022 Aug. 18-19 UW-Seattle Workshop on Spatiotemporal Computing Roadmap at [2022 Aug. 18-19 UW-Seattle Workshop on Spatiotemporal Computing Roadmap – stcenter](#).



The Geography of Geography

Harvard site executive director, Wendy Guan, recently published a chapter entitled, “The Geography of Geography”, in the new book, *New Thinking in GIScience*. This chapter illustrates the distribution of global leading higher education institutions and compare that with the distribution of those leading the study of geography. This chapter is a contribution to the visionary book on “New Thinking in GIScience” edited by experts from CPGIS to capture the latest advancements and frontiers in theoretical geography.

For further information and/or inquiries, please email Dr. Wendy Guan at wguan@cga.harvard.edu.

[Read More](#)



Spatial Variations of Village-Level Environmental Variables from Satellite Big Data and Implications for Public Health–Related Sustainable Development Goals

Xue Liu published his latest paper, “Spatial Variations of Village-Level Environmental Variables from Satellite Big Data and Implications for Public Health–Related Sustainable Development Goals”, in the journal, *Sustainability*. This paper assessed child malnutrition in India and accessed several environmental factors that can pinpoint areas with a high rate of child malnutrition by using vegetation indices, land temperature, elevation, and several other variables. This study has the potential to be applied to other similar regions.

For further information and/or inquiries, please email Dr. Xue Liu at xliu@fas.harvard.edu.

