



The Association of American Geographers Cyberinfrastructure Specialty Group (CISG) Newsletter Fall 2019

MESSAGE FROM THE CHAIR

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CISG on social media:

[Twitter](#)

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[Website](#)

ISSUE 2
FALL 2019

EDITOR: A.H.

Dear CISG Members:

Welcome to the 2019 newsletter of the Cyberinfrastructure Specialty Group (CISG) of the American Association of Geographers! Following our successful [inaugural newsletter](#) published in Fall 2018, the CISG board has decided to continue our effort in publishing the newsletter on an annual basis to further foster information sharing and collaborations within the cyberinfrastructure and relevant communities. We thank you for your participation by contributing news items and commentaries and sharing the newsletter with those who might be interested in.



I wanted to take this opportunity to thank all CISG Board members for their excellent services to the group and the community! Dr. Alexander Hohl from the University of Utah serves as the vice-Chair and will assume the Chair role for the term 2020-2021. Dr. Hohl has also been serving as the Newsletter Editor. Dr. Ran Tao from the University of South Florida serves as the Secretary/Treasurer and Dr. Zhaoya Gong from the University of Birmingham serves as the Director since 2018. Patricia Carbajales-Dale from Clemson University and Dr. Guiming Zhang from the University of Denver are newly elected board directors in 2019. Our student directors Jingchao Yang (George Mason University) and Yuqin Jiang (University of South Carolina) have been working diligently to keep our website updated and promote CISG via social media and other channels. I also want to thank our past team members for their efforts serving on the CISG Board.

Meanwhile, I would like to express my gratitude to all CISG members for your generous support and contribution which makes the annual

CISG Robert Raskin Student Competition possible and successful. The numerous high-quality competition submissions we have received this year and over the past years demonstrate the dedication to excellence of our students' research in this field. I invite you to attend the 2020 student competition session at AAG Denver to see the excellent research projects on a variety of topics such as big data analytics, GeoAI, and CyberGIS.

We strive to better serve all CISG members. If you have any suggestions (e.g., approaches to better promoting CISG) or questions, please do not hesitate to let us know. Special thanks to Dr. Alexander Hohl for preparing the newsletter.

Best regards,
Zhenlong Li
Chair, Cyberinfrastructure Specialty Group (CISG) of the American Association of Geographers
Director, Geoinformation and Big Data Research Lab (GIBD)
Assistant Professor, Department of Geography
University of South Carolina

ANNOUNCEMENTS/NEWS

New Research in Cyberinfrastructure

Recent progress in Artificial Intelligence (AI) techniques, the large-scale availability of high-quality data, as well as advances in both hardware and software to efficiently process these data, are transforming a range of fields from computer vision and natural language processing to autonomous driving and healthcare.

<https://www.tandfonline.com/doi/full/10.1080/13658816.2019.1684500>

Recent progress in Artificial Intelligence (AI) techniques, the large-scale availability of high-quality data, as well as advances in both hardware and software to efficiently process these data, are transforming a range of fields from computer vision and natural language processing to autonomous driving and healthcare.

The recently published GeoAI SI in IJGIS is the first SI about this emerging topic:

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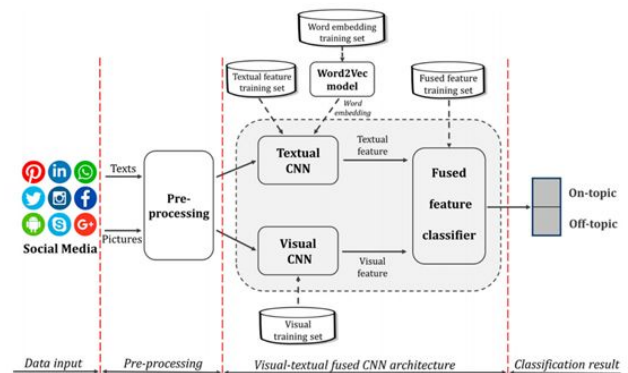
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In recent years, social media platforms have played a critical role in mitigation for a wide range of disasters. The highly up-to-date social responses and vast spatial coverage from millions of citizen sensors enable a timely and comprehensive disaster investigation. However, automatic retrieval of on-topic social media posts, especially considering both of their visual and textual information, remains a challenge. A team from University of South Carolina, consisting of Xiao Huang (Ph.D. candidate), Dr. Zhenlong Li and Dr. Cuizhen Wang, designed an automatic approach to labeling on-topic social media posts using visual-textual fused features. Their work, published in International Journal of Digital Earth, utilized two convolutional neural networks (CNNs), Inception-V3 CNN and word embedded CNN, to extract visual and textual features respectively from social media posts. Well-trained on developed training sets, the extracted visual and textual features were further concatenated to form a fused feature to feed the final classification process. Their results suggest that both CNNs perform remarkably well in

learning visual and textual features. The fused feature proves that additional visual feature leads to more robustness compared with the situation where only textual feature is used. The on-topic posts, classified by their texts and pictures automatically, represent timely disaster documentation during an event. Coupling with rich spatial contexts when geotagged, extracted on-topic social media could greatly aid in a variety of disaster mitigation approaches.



Title:
 Identifying disaster related social media for rapid response: a visual-textual fused CNN architecture

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 Link:
<https://www.tandfonline.com/doi/full/10.1080/17538947.2019.1633425>

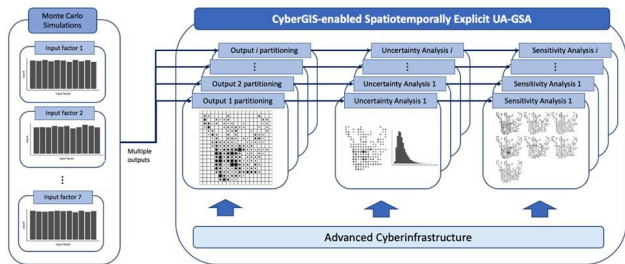
Contributors:
 Xiao Huang (Ph.D. candidate), Dr. Zhenlong Li and Dr. Cuizhen Wang

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In this study, Jeon-Young Kang and his colleagues leverage cyberinfrastructure for multiple scale space-time investigations to advance the current knowledge of dengue virus transmission. This is an interdisciplinary collaboration between researchers at the University of Illinois at Urbana-Champaign and the University at Buffalo, State University of New York.



Title:
 A cyberGIS approach to spatiotemporally explicit uncertainty and global sensitivity analysis for agent-based modeling of vector-borne disease transmission

Contributor:
 Jeon-Wang Kang

Affiliation:
 CyberGIS Center for Advanced Digital and Spatial Studies
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**Funded Ph.D. Student Position:
 Geospatial Big Data Analytics for Health**

The Geoinformation and Big Data Research Laboratory ([GIBD](#)) at the Department of Geography, University of South Carolina (USC) is looking for a highly motivated Ph.D. student with a great passion for big data research, starting from the Fall semester, 2020. GIBD is a collaborative effort of a group of faculty and students, conducting interdisciplinary research on geospatial big data analytics, spatiotemporal analysis/modeling, high-performance computing and CyberGIS within the area of data and computational intensive GIScience. By synthesizing advanced computing technologies, geospatial methods and spatiotemporal principles, GIBD aims to advance knowledge discovery and decision making to support domain applications including disaster management, human mobilities, public health, and climate change.

Health is intrinsically linked to geospatial context—where and how people interact with natural, built, social, economic and cultural environments directly influences human health experience, decision, outcome, policy-making and planning. Analyzing big health data with location information (e.g., electronic health records and social media data) offers an invaluable opportunity to improve the quality and efficiency of healthcare. The Ph.D. student will be expected to work with an interdisciplinary team to conduct cutting-edge research on geospatial big data analytics (e.g., analyzing massive social media data and healthcare records)

by leveraging and/or developing advanced spatiotemporal analysis methods and computing algorithms/tools in the context of health science.

This is a fully funded position. The student will be supervised by Dr. Zhenlong Li and will also join the Big Data Health Science Center at USC, a campus-wide interdisciplinary enterprise that conducts cutting-edge health research and discovery, offers professional development and academic training, and provides service to the community and industry.

If interested, please submit your application online at the USC Graduate School's online admissions portal by **January 15, 2020** (<https://www.applyweb.com/cgi-bin/app?s=uscgrad>). More information about the Admission Requirements can be found at https://www.sc.edu/study/colleges_schools/artsandsciences/geography/apply/graduate_admissions/index.php. For further questions about the position, please contact Dr. Zhenlong Li (zhenlong@sc.edu).

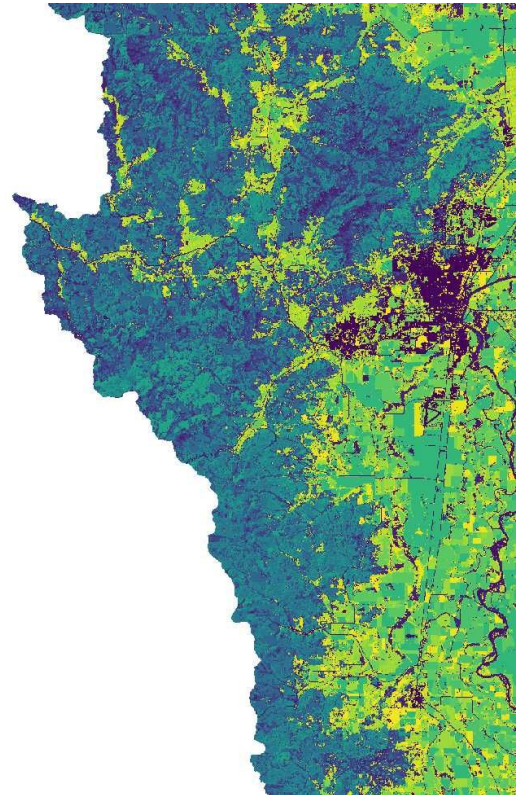
New CISG Board Members

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Patricia Carbajales-Dale

I joined Clemson University 5 years ago as an ACI-REF (advanced cyberinfrastructure research and education facilitator). Clemson was a leader in advanced research and computing, but as many other universities, struggled to attract the geospatial community. And this is how our

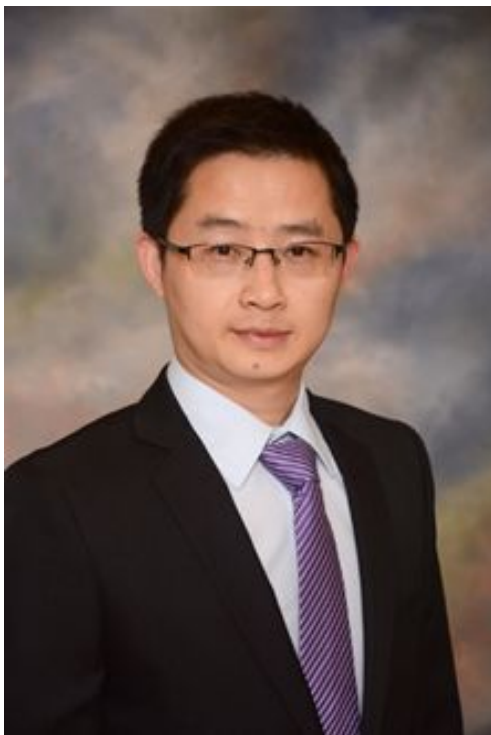
Center for Geospatial Technologies was formed: to support researchers in geospatial technologies and create pathways to high performance computing and high throughput computing.



As an example, we are currently collaborating with researchers at Clemson to run the Stanford University Natural Capital Project's Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST) models (see figure above) on the Palmetto Cluster, Clemson's high-performance computing (HPC) cluster. The researchers are facing long processing times and lack of available disk space while running models on their PC's. We hope to reduce the computational time and expand both the spatial and temporal scope for processing these models by utilizing the powerful computational resources on the Palmetto Cluster. Our team has installed

and tested InVEST with the sample datasets and continues to work with the research team and Clemson HPC support staff to optimize the workflow, manage the TB's of data created, and make the InVEST tools available to all researchers at Clemson

Guimin Zhang



I am an Assistant Professor in the Department of Geography and the Environment at the University of Denver. I received my Ph.D. in Geography from the University of Wisconsin-Madison in 2018.

My research falls in geospatial big data analytics. I am particularly interested in volunteered geographic information (VGI) and its applications. VGI has been an important source of geospatial big data. However, it suffers from certain data quality

issues (e.g., spatial bias). My research focuses on mitigating spatial bias in VGI to improve the quality of inferences made from them. In addition, geospatial big data (e.g., VGI) is often massive, and it is urgent to address the computational challenges facing geospatial big data analysis. I am also interested in developing algorithmic optimizations and utilizing cutting-edge computing technologies (e.g., high-performance computing) to support geospatial big data analytics. To test ideas for my research, I conducted habitat suitability mapping case studies using villager-contributed sightings of the black-and-white snub-nosed monkeys in Yunnan, China. I also use data from the eBird citizen science project to explore various aspects of my research.

I have been an AAG CIGS member since I was a Ph.D. student. Besides attending the annual AAG meetings, I served as a reviewer for the 2019 Jacques May Thesis Prize (AAG Health and Medical Geography Specialty Group). As a CIGS board member (Director) and with my research expertise, I am devoted to serve the CIGS community and increase the visibility and impact of our group both within and outside of AAG.

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Yuqin Jiang

I'm Yuqin Jiang, a third year PhD student in Department of Geography, University of South Carolina. My research focuses on understanding human mobility pattern

during disruptive events. In the past years, southeast U.S. has experienced several hurricanes. My research interest was inspired by massive evacuations caused by hurricanes, as I believe better understanding people's evacuation behavior will be helpful for local emergency management.



I attended all the AAG annual meetings since 2016. AAG meetings are excellent chances to meet people working in different research topics and listen to their brilliant ideas. Sessions sponsored by cyberinfrastructure specialty group cover many different areas that not only attract geographers, but also computer scientists, engineers, and social scientists. I'm honored to be elected as the student director of CISG. In the past few years, I have learned a lot from members in CISG. I hope CISG could keep thriving and bringing more connection among students and researchers.

CALLS FOR PARTICIPATION

Autocarto 2020

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CaGIS is proud to present AutoCarto 2020, the 23rd International Research Symposium on Computer-based Cartography. AutoCarto 2020 will take place on the Esri Campus in Redlands, CA, from Wednesday, May 20 through Friday, May 22. Workshops will be held on Tuesday, May 19. For meeting updates, follow us on Facebook and Twitter, or check this main AutoCarto web page.

Important Dates:

- Extended abstracts due: January 10, 2020
- Extended abstracts decisions: February 10, 2020
- Student assistantship applications due: February 14, 2020

The AutoCarto symposium series, started in 1974, has a long history of bringing together people from academia, industry, and government agencies to share research and explore new ideas in cartography and GIScience.

The theme of AutoCarto 2020 is WhereNext. In this symposium, we not only look at where we are and where to go next, we also challenge the ideas of where and next in terms of meaning, communication, visualization, and reasoning in the new age of automation, robotic revolution, and

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Cyberinfrastructure Specialty Group, Spatial Analysis and Modeling Specialty Group

GeoAI Symposium & Geospatial Health Symposium: Advanced Analytical Methods and Sensor Data Analytics for Health ResearchÁ

Type: Paper

Sponsor Groups: Health and Medical Geography Specialty Group, Cyberinfrastructure Specialty Group, Spatial Analysis and Modeling Specialty Group

GeoAI Symposium: AI for Geographic Information Retrieval and Geo-Text AnalysisÁ

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

GeoAI Symposium: Big Data & Image Analysis for Urban EnvironmentÁ

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Cyberinfrastructure Specialty Group, Spatial Analysis and Modeling Specialty Group

GeoAI Symposium: Big Data and GeoAI for Natural HazardsÁ

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group

GeoAI Symposium: Deep Learning of Geospatial Patterns & Applications IÁ

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

GeoAI Symposium: Deep Learning of Geospatial Patterns & Applications IIÁ

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

GeoAI Symposium: Deep Learning of Geospatial Patterns & Applications IIIÁ

Type: Paper

Sponsor Groups: Spatial Analysis and Modeling Specialty Group, Geographic Information Science and Systems Specialty Group, Cyberinfrastructure Specialty Group

GeoAI Symposium: Geospatial Knowledge GraphsÁ

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

GeoAI Symposium: Statistical Methods and Machine Learning for Trajectory Data AnalysisÁ

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

GeoAI Symposium: Whether and How GeoAI will Transform Geospatial Research

Type: Panel

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

Geospatial Health Research Symposium 1: Advances in Computational Approaches for Geospatial Health Applications - Environmental Health

Type: Paper

Sponsor Groups: Health and Medical Geography Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

Geospatial Health Research Symposium 2: Advances in Computational Approaches for Geospatial Health Applications - Accessibility

Type: Paper

Sponsor Groups: Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group, Health and Medical Geography Specialty Group

Geospatial Health Research Symposium 3: Advances in Computational Approaches for Geospatial Health Applications - Epidemiology

Type: Paper

Sponsor Groups: Health and Medical Geography Specialty Group, Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group

Modeling, prediction and mapping with VGI

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

Robert Raskin Student Competition Sponsored by the Cyberinfrastructure Specialty Group(CISG)

Type: Panel

Sponsor Groups: Cyberinfrastructure Specialty Group

Social Media and Big Data I

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

Social Media and Big Data II

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

Symposium of Frontiers in CyberGIS and Geospatial Data Science: Data-Intensive Geography

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

[Symposium on Frontiers in CyberGIS and Geospatial Data Science: Applications of CyberGIS and Geospatial Data Science II: Public Health](#)

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

[Symposium on Frontiers in CyberGIS and Geospatial Data Science: Big Data Computing for Geospatial Applications](#)

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group

[Symposium on Frontiers in CyberGIS and Geospatial Data Science: CyberGIS and Geospatial Data Science Curriculum](#)

Type: Panel

Sponsor Groups: Cyberinfrastructure Specialty Group, Spatial Analysis and Modeling Specialty Group, Geographic Information Science and Systems Specialty Group

[Symposium on Frontiers in CyberGIS and Geospatial Data Science: CyberGIS and Geospatial Data Science: Frontiers and Opportunities](#)

Type: Panel

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial

Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

[Symposium on Frontiers in CyberGIS and Geospatial Data Science: CyberGIS-enabled Spatial Modeling and Simulation](#)

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

[Symposium on Frontiers in CyberGIS and Geospatial Data Science: Education Advances and Challenges in CyberGIS and Geospatial Data Science](#)

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

[Symposium on Frontiers in CyberGIS and Geospatial Data Science: Foundations, Principles, and Theories of CyberGIS and Geospatial Data Science](#)

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

[Symposium on Frontiers in CyberGIS and Geospatial Data Science: Spatial Prediction](#)

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group,

Cyberinfrastructure Specialty Group, Spatial Analysis and Modeling Specialty Group

Symposium on Frontiers in CyberGIS and Geospatial Data Science: Synergizing Geospatial Data Science with Domain Applications III: Disaster Management

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

Symposium on Frontiers in CyberGIS and Geospatial Data Science: Synergizing Geospatial Data Science with Human Dimensions of Climate Change

Type: Paper

Sponsor Groups: Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group

Symposium on Frontiers in CyberGIS and Geospatial Data Science: Uncertainty and Bias in Geospatial Data Science

Type: Panel

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

Symposium on Frontiers in CyberGIS and Geospatial Data Science: University Consortium For Geographic Information Science (UCGIS) - CyberGIS and Decision Support Systems

Type: Paper

Theme: Expanding the Community of Geography

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

Symposium on Human Dynamics Research: Human Mobility in Big Data Era

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Transportation Geography Specialty Group

Symposium on Human Dynamics Research: Mining Human Dynamics with Big Data & Spatio-Temporal Analysis

Type: Paper

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

Symposium on Human Dynamics Research: Smart Cities and Urban Computing

Type: Paper

Theme: Expanding the Community of Geography

Sponsor Groups: Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group, Cyberinfrastructure Specialty Group

Symposium on Human Dynamics Research: Social Media Big Data and Uncertainties in Disaster Research

Type: Paper

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

**Symposium on Human Dynamics
Research: Spatial-Social Networks and
Network Science IÁ**

Type: Paper

Theme: Expanding the Community of Geography

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

**Symposium on Human Dynamics
Research: Spatial-Social Networks and
Network Science IIÁ**

Type: Paper

Theme: Expanding the Community of Geography

Sponsor Groups: Digital Geographies Specialty Group, Cyberinfrastructure Specialty Group, Spatial Analysis and Modeling Specialty Group

**Symposium on Human Dynamics
Research: Spatial-Social Networks and
Network Science IIIÁ**

Type: Paper

Theme: Expanding the Community of Geography

Sponsor Groups: Cyberinfrastructure Specialty Group, Geographic Information Science and Systems Specialty Group, Spatial Analysis and Modeling Specialty Group

INFORMATION

Cyberinfrastructure Specialty Group (CISG)

Our objectives: The Cyberinfrastructure Specialty Group (CISG) strives to enhance geographic research and scholarship on matters relating to cyberinfrastructure by: encouraging the exchange of ideas and experience among geographers studying technical, social, economic, policy, and cultural aspects of CI; providing a communication channel between CI funding agencies and geographic practitioners; promoting research and advancement in topics related to CI; encouraging reflection on the roles of geographers in CI.

Dues Information:

Regular Member: \$10

Student Member: \$2

Submissions

This newsletter reaches a large number of readers and is therefore an excellent venue for getting the word out on community news, departmental happenings, research findings, media appearances, and the like. It is also a good place to post calls for proposals, awards, grants, fellowships, and jobs. We also invite you to submit commentaries or features of broad interest to specialty group members.

The newsletter relies on volunteers to submit articles, so please take a moment to send along relevant items when they are solicited.

CISG Board

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