

31st International Conference on Geoinformatics

14-16 August 2024

Toronto, Canada

PROGRAMME

Co-organized By



Toronto
Metropolitan
University

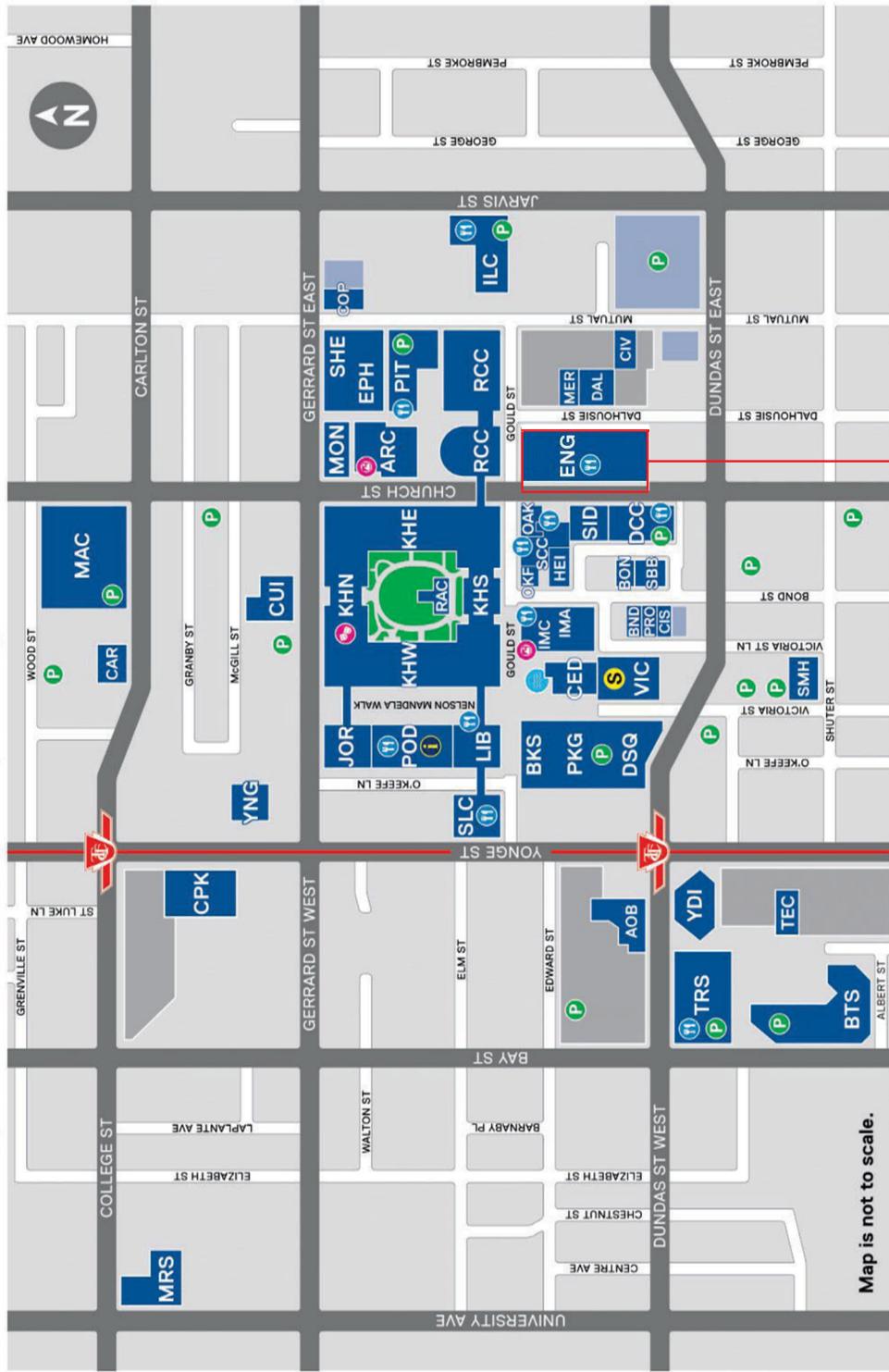


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Toronto Metropolitan University Campus Map

Version: October 2022

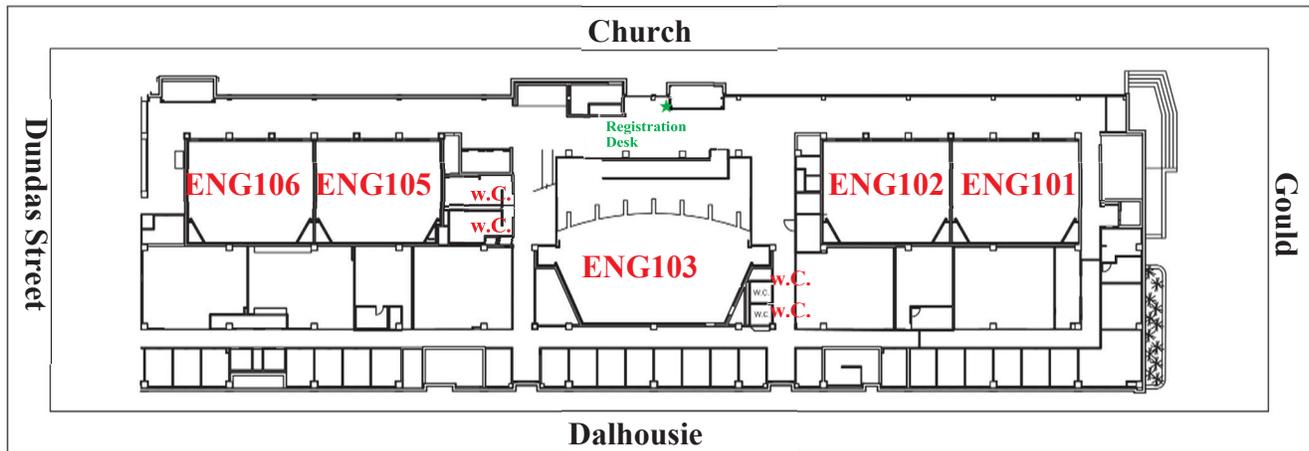


George Vari Engineering and Computing Centre

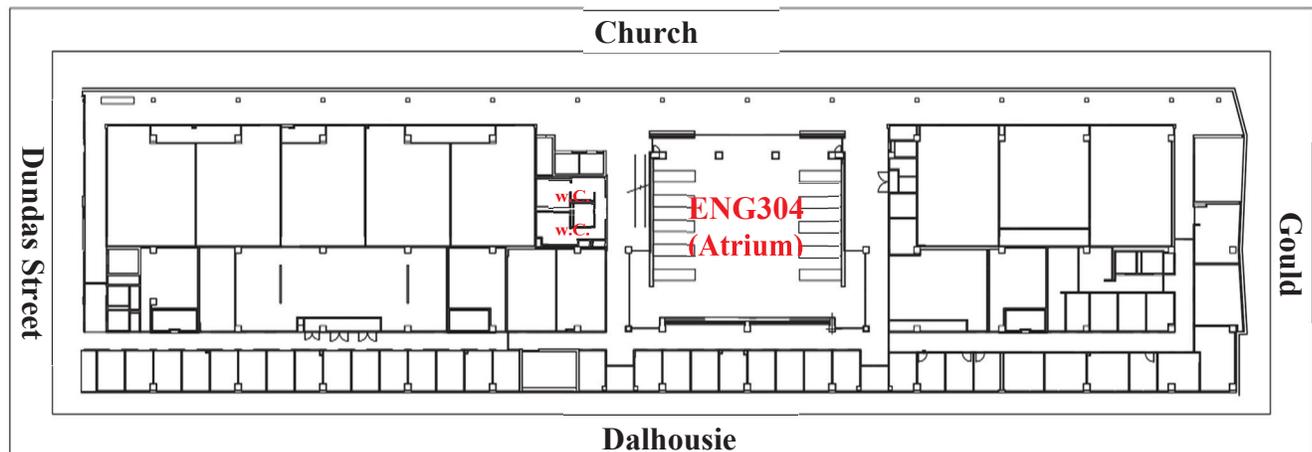


Geoinformatics 2024
August 14-16, 2024
TORONTO, CANADA

Meeting Rooms and Directions



First Floor Layout



Third Floor Layout

- ENG103: Plenary/Closing Sessions
- ENG101: Parallel Sessions
- ENG102: Parallel Sessions
- ENG105: Parallel Sessions
- ENG106: Parallel Sessions



GeolInformatics 2024
August 14-16, 2024
TORONTO, CANADA

Social Events



Conference Reception

Date: Tuesday, 13 August 2024
 Time: 18:00 to 20:00
 Venue: Sears Atrium
 Location: ENG304 at TMU

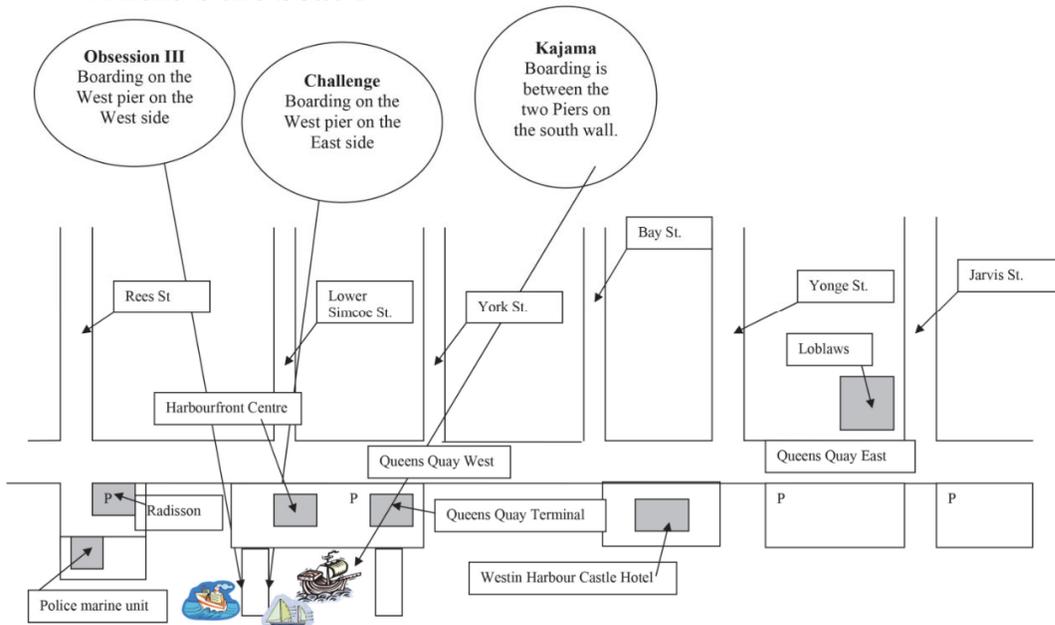


Conference Cruise Dinner

Date: Thursday, 15 August 2024
 Time: 18:00 to 22:00 (boarding closed at 19:00)
 Venue: Toronto Obsession III Cruise
 Location: Unnamed Road
Harbourfront West, Pier,
Toronto, ON M5J 2B8

Google Direction: <https://maps.app.goo.gl/xPNPAzXkeUEGnpAC9>

Where's the boat ?



Great Lakes Schooner Company
 Phone 416-260-6355 Fax 416-260-6377
www.greatlakesschooner.com

Keynote Speakers

Dr. Huadong Guo, Director General of the International Research Center of Big Data for Sustainable Development Goals, and Professor and Academician of Chinese Academy of Sciences



Dr. Guo Huadong is Director General of the International Research Center of Big Data for Sustainable Development Goals, and a Professor and an Academician of Chinese Academy of Sciences. He is a Fellow of the World Academy of Sciences, a Foreign Member of the Russian Academy of Sciences, a Foreign Member of the Finnish Society of Sciences and Letters, and a Fellow of the International Science Council (ISC). He presently serves as the Honorary President of the International Society for Digital Earth (ISDE), Director of the International Center on Space Technologies for Natural and Cultural Heritage under the Auspices of UNESCO, Member of ISC Global Commission on Science Missions for Sustainability, Chair of Digital Belt and Road Program (DBAR), and Editor-in-Chief of s International Journal of Digital Earth and Big Earth Data journal. He served as the Member of UN 10-Member Group to support the Technology Facilitation Mechanism for SDGs, President of ISDE and ISC Committee on Data for Science and Technology. Dr. Guo specializes in remote sensing, radar for Earth observation, and Digital Earth science. He has published more than 500 papers and 24 books, and is the awardee of 20 international and domestic prizes, including ISC Science for Sustainability Award.

Dr. Arzu Çöltekin, Professor of Human-Computer Interaction, Visualization and Extended Reality, the Institute of Interactive Technologies, University of Applied Sciences and Arts Northwestern Switzerland



Dr. Arzu Çöltekin is a Professor of Human-Computer Interaction, Visualization and Extended Reality, and leads the Institute of Interactive Technologies at the University of Applied Sciences and Arts Northwestern Switzerland. She is also a research affiliate at the Seamless Astronomy group in the Harvard-Smithsonian Center for Astrophysics of the Harvard University in Cambridge, USA, collaborating on scientific data analysis and visualization research. She chairs the international Extended Reality and Visual Analytics working group with the ISPRS; co-chairs the Commission on Geovisualization with the ICA, and is a council member with the International Society of Digital Earth (ISDE). Her interdisciplinary work covers topics related to information science, visual analytics, visualization and cartography, virtual/augmented reality, gaze-contingent displays, eye-tracking, vision (perception and cognition), and human-computer interaction.

Dr. Mario Santana Quintero, Professor, Department of Civil and Environmental Engineering and the Azrieli School of Architecture & Urbanism, the Faculty of Engineering and Design, Carleton University



Dr. Santana Quintero has contributed to conserving precious world heritage sites worldwide thanks to his innovative digital documentation methods. He is cross-appointed in the Department of Civil and Environmental Engineering and the Azrieli School of Architecture & Urbanism, both in the Faculty of Engineering and Design at Carleton University. Also, Carleton Immersive Media Studio Lab (CIMS) faculty member. Besides his academic work in Canada, he served as the immediate past Secretary-General of the International Council of Monuments and Sites (ICOMOS), treasurer of ICOMOS Canada, and he is one of the Honorary Presidents of the ICOMOS Scientific Committee on Heritage Documentation (CIPA). He has collaborated on several international projects in heritage documentation for The Getty Conservation Institute and UNESCO, among others. In recent years, he was awarded a Doctorate Honoris Causa from the University of Liege (Belgium) and the Association of Preservation Technology College of Fellows membership.

Dr. Monika Sester, Professor of Cartography and Geoinformatics, Institute of Cartography and Geoinformatics, Leibniz University Hannover, Germany



Dr. Monika Sester is Professor at the Institute of Cartography and Geoinformatics of the Leibniz University Hannover, Germany. Her research interest lies in the automation of spatial data processing – mainly using optimization and Machine Learning techniques. Methods are developed for the analysis and interpretation of vector data, trajectories and LiDAR data, as well as social media data for applications in mobility, autonomous driving, environmental risk analysis and sustainable cities. Dr. Sester has headed various national and international committees. For example, she has been chairperson of the Hannover section of the German Society for Cartography (DGfK) since 2002. From 2004 to 2016, she was Director of various working groups of the International Society for Photogrammetry and Remote Sensing (ISPRS). Since 2015, she is also vice-president of the International Cartographic Association. Monika Sester is a member of a variety of scientific organisations, such as the Braunschweigische Wissenschaftliche Gesellschaft (Brunswick Scientific Society), and the acatech - the German National Academy of Science and Engineering. Since 2016, she is spokesperson of the research centre FZ:GEO along with Professor François Holtz, and, since 2018, chairperson of the DFG Senate Commission on Earth System Research. As from 2017, she was also a permanent member of the Helmholtz Senate Commission for the research field Earth and Environment, before becoming a member of the Helmholtz Association's senate in 2018.

Program Overview

Date: Tuesday, 13/Aug/2024

3:00- 6:00pm **Registration** Location: **ENG 1st Floor Hallway**

6:00-8:00pm **Reception** Location: **Sears Atrium (ENG304)**

Date: Wednesday, 14/Aug/2024

8:00-9:00am **Registration** Location: **ENG 1st Floor Hallway**

9-10:30 am **Opening & Keynote Session 1**, Location: **ENG103**

- Welcome addresses
- Dr. Huadong Guo's Keynote Talk: "Big Earth Data in Support of Sustainable Development Goals"
- Dr. Derek Lichiti: "ISPRS Congress 2026"

10:30-11am **Coffee/Tea Break** Location: **Sears Atrium (ENG304)**

11:00am-12:30pm **Oral 01: Point Cloud Processing**
Location: **ENG101**
Chair: **Derek T Robinson**

Oral 02: Environmental Remote Sensing I
Location: **ENG102**
Chair: **Yuhong He**

Oral 03: Geospatial Methods I
Location: **ENG105**
Chair: **Ran Tao**

Oral 04: GeoHealth I
Location: **ENG106**
Chair: **Benjamin Zhan**

12:30pm-1:30pm **Lunch**
Location: **Sears Atrium (ENG304)**

1:30pm-3:00pm **Oral 05: Smart Transportation**
Location: **ENG101**
Chair: **Xiaobai Angela Yao**

Oral 06: Environmental Remote Sensing II
Location: **ENG102**
Chair: **Dongmei Chen**

Oral 07: Building Modeling & Analysis
Location: **ENG105**
Chair: **Songnian Li**

Oral 08: GeoHealth II
Location: **ENG106**
Chair: **Fahui Wang**

3:00-3:30pm **Coffee/Tea Break**, Location: **Sears Atrium (ENG304)**

3:30pm-5:00pm **Oral 09: Digital Twin**
Location: **ENG101**
Chair: **Shabnam Jabari**

Oral 10: Agriculture
Location: **ENG102**
Chair: **Wanhong Yang**

Oral 11: Geospatial Methods II
Location: **ENG105**
Chair: **Daoye Zhu**

Oral 12: Land Use & Land Cover
Location: **ENG106**
Chair: **Jinfei Wang**

6:00- 8:00pm **CPGIS night** Location: **ENG101**

Date: Thursday, 15/Aug/2024

8:00-9:00am **Registration** Location: **ENG 1st Floor Hallway**

9:00am-10:30am **Keynote Session 2**, Location: **ENG103**

- Dr. Monika Sester's Keynote Talk: "Sustainable Urban Mobility"
- Dr. Arzu Çöltekin's Keynote Talk: "Human and machine intelligence on visual and spatial phenomena"

10:30-11am **Coffee/Tea Break** Location: **ENG 1st Floor Hallway**

11:00am-12:30pm **Oral 13: Weather and Climate**
Location: **ENG101**
Chair: **Xiaoyong Xu**

Oral 14: Environmental Remote Sensing III
Location: **ENG102**
Chair: **Bing Lu**

Oral 15: Geospatial Methods III
Location: **ENG105**
Chair: **Jue Wang**

Oral 16: Watershed & Wetland Analysis
Location: **ENG106**
Chair: **Yongbo Liu**

12:30-1:30pm **Lunch** Location: **ENG 1st Floor Hallway**

1:30pm-3pm **Poster Session** Location: **ENG 1st Floor Hallway**

3:00- 3:30pm **Coffee/Tea Break** Location: **ENG 1st Floor Hallway**

3:30pm-5:00pm **Oral 17: GeoHealth III**
Location: **ENG101**
Chair: **Lu Wang**

Oral 18: Interdisciplinary I
Location: **ENG102**
Chair: **Jane Liu**

Oral 19: Interdisciplinary II
Location: **ENG105**
Chair: **Fang Qiu**

Oral 20: Interdisciplinary III
Location: **ENG106**
Chair: **Jue Wang**

6:00-10pm **Conference Cruise Dinner**, Location: **Toronto Obsession III Cruise (check the social event for location details)**

Date: Friday, 16/Aug/2024

8:00-9:00am **Registration** Location: **ENG 1st Floor Hallway**

9:00am-10:30am **Keynote Session 3**, Location: **ENG103**

- Dr. Mario Santana Quintero's Keynote Talk: "GIScience and Digital Technologies for Conserving Cultural Heritage: Opportunities and Challenges"
- Drs. Jason Wang / Nan Ding: "Sponsor presentation"

10:30-11:00 **Coffee/Tea Break** Location: **ENG 1st Floor Hallway**

11:00am-12:30pm **Oral 21: Geosocial Media Data Analytics**
Location: **ENG101**
Chair: **Xiao Huang**

Oral 22: Carbon and Environment
Location: **ENG102**
Chair: **Jing Chen**

Oral 23: Geospatial Methods IV
Location: **ENG105**
Chair: **Zhenlong Li**

Oral 24: Disaster and Resource Management
Location: **ENG106**
Chair: **Daoye Zhu**

12:30-1:30 **Lunch** Location: **ENG 1st Floor Hallway**

1:30pm-3:00pm **Oral 25: Disaster Mapping & Assessment**
Location: **ENG101**
Chair: **Yongmei Lu,**

Oral 26: Interdisciplinary IV
Location: **ENG102**
Chair: **Temitope Seun Oluwadare**

Oral 27: Geospatial Methods V
Location: **ENG105**
Chair: **A-Xing Zhu**

Oral 28: Trajectory & Mobility
Location: **ENG106**
Chair: **Xintao Liu**

3:10pm-4:30pm **Closing and Award Ceremony** Location: **ENG103**
Summary / Awards Ceremony / Geoinformatics 2025 Presentation

Detailed Conference Agenda

Date: Tuesday, 13/Aug/2024

3:00pm-6:00pm Registration
Location: **ENG 1st Floor Hallway**

6:00pm-8:00pm Reception
Location: **Sears Atrium (ENG304)**

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Dr. Huadong Guo's Keynote Talk: "Big Earth Data in Support of Sustainable Development Goals"
Dr. Derek Lichiti: "ISPRS Congress 2026"

10:30am-11:00am **Coffee/Tea Break**
Location: **Sears Atrium (ENG304)**

11:00am-12:30pm **Oral 01: Point Cloud Processing**
Location: **ENG101**
Chair: **Derek T Robinson**, University of Waterloo

HD-LIO: A Robust LiDAR-Inertial Odometry for High-Definition Mapping in High-Dynamic Environments
Shida Wang, Hangbin Wu, Kewen Lu, Xiaolu Liu

Forest Monitoring Tool (FMT): A Novel Approach to Point Cloud Processing for Urban Forest Management
Christopher Scarpone Scarpone, Andrew A. Millward, Anders Knudby, Stephanie Melles

Efforts to Quantify Individual Tree Carbon Stocks Using Remotely Piloted Aircraft Systems
Derek T Robinson, Chenxi Liu, Brandon Giura

Mangrove Tree Height Growth Monitoring from Multi-Temporal UAV-LiDAR
Dameng Yin, Le Wang, Ying Lu, Chen Shi

Oral 02: Environmental Remote Sensing I
Location: **ENG102**
Chair: **Yuhong He**, University of Toronto Mississauga

Design of a Novel NDVI Camera Linking Ground-to-Satellite Vegetation Observation
Yonghua Qu, Qi Zhao

Mapping Changes in Vegetative Ecosystems Using Remote Sensing
Yuhong He

Monitoring Woody Plant Encroachment with Remote Sensing
Xulin Guo

The Impact of Different Grazing Intensity and Management Measure on Temporal and Spatial Distribution of Grassland Soil Organic Carbon Density in Zhangye, China
Meiling Zhang, Xinjing Wang, Chen Wang

Oral 03: Geospatial Methods I
Location: **ENG105**
Chair: **Ran Tao**, University of South Florida

Machine Learning and Multicriteria Evaluation for Spatial Suitability Analysis
Lan Qing Zhao, Suzana Dragičević, Alysha van Duynhoven

Locating and Orienting Facilities with Anisotropic Coverage
Enbo Zhou, Alan Murray, Jiwon Baik, Jing Xu

Identifying Arbitrarily Shaped Hotspots with Tightened Scanning Window
Xiaorui Yan, Zhuoting Fu, Tao Pei, Zidong Fang

Mind the "Forgotten Middle": A New Statistic to Measure Bivariate Spatial Association
Ran Tao, Jean-Claude Thill

Oral 04: GeoHealth I
Location: **ENG106**
Chair: **F. Benjamin Zhan**, Texas State University

Radon and Lung Cancer: Current Status and Future Prospects
Yan Liu, **Yanqing Xu**

An Improved Deep Learning Pulmonary Tuberculosis Prediction Model
Hong Fan, Fei Xiao

Genetic Risk Factor Associated with Early-Onset Colorectal Cancer and its Geographic Variations Based on Data from The UK Biobank
F. Benjamin Zhan, Mei Yang

Analysis of Factors Influencing the incidence of Pulmonary Tuberculosis in the Beijing Tianjin Hebei Region of China
Sirui Li, Hong Fan

12:30pm-1:30pm Lunch
Location: **Sears Atrium (ENG304)**

1:30pm-
3:00pm

Oral 05: Smart Transportation

Location: **ENG101**

Chair: **Xiaobai Angela Yao**,
University of Georgia

How Shareable Is Your Trip? A Path-based Analysis Of Ridesplitting Trip Shareability

Guan Huang, Zhan Zhao,
A.G.O Yeh

Analyzing Daily Travel Patterns within Spatial-social Network Communities

Xiaobai Angela Yao

Monitoring, Inspection And Early Warning System In Electrical Distribution Networks Using Satellite Images

Erick Armando Sedeño Bueno, **José Luis Capote Fernández**, René González Rodríguez, Nelson Ivan Escalona Macides

Exploring Distance-decay And Spatial Differentiation Of Railway Trips: A Case Study In Guangdong, China

Yongqi Deng, Jue Wang,
Jiaorong Wu, Zili Tian

Oral 06: Environmental Remote Sensing II

Location: **ENG102**

Chair: **Dongmei Chen**, Queen's University

Learnable Weight Graph Neural Network for River Ice Classification

Yifan Qu, Armina Soleymani,
Denise Sodom, Andrea Scott

Multi-source Remote Sensing Image Classification Based on Multi-modal Fusion Transformer

Fan Yang, Wenmei Li,
Yuhong He

Exploring the Potential of Advanced Deep Learning Algorithms for Missing Data Reconstruction of Historical Landsat Time-Series (1984-Present)

Masoud Babadi Ataabadi, Dingmei Chen, Darren Pouliot, Temitope Seun Oluwadare

Automated Urban Tree Root Detection Using Ground Penetrating Radar (GPR) And Artificial Neural Networks

Justin Miron, Andrew Allan Millward

Oral 07: Building Modeling & Analysis

Location: **ENG105**

Chair: **Songnian Li**, Toronto Metropolitan University

UAV-Based Multi-Sensor Data Fusion for 3D Building Detection

Mohsen Shahraki, Ahmed El-Rabbany, Ahmed El-Amin

Data Quality Evaluation of Multiple Building Footprint Datasets in Toronto: A Comparative Study

Peyman Azari, Songnian Li,
Ahmed Shaker AbdElrahman

Structural Stability Assessment of Ancient Buildings Based on Multi-Level BIM

Ruiling Zhang, Miaole Hou,
Youqiang Dong, Shuqiang Lyv

Automatic Assessment Of Window View Distance For High-rise, High-density Areas Using 3D Semantic Segmentation And OpenGL Rendering Of City Information Models

Maosu Li, Fan Xue, Anthony Gar-On Yeh

Solar PV Potential Assessment on 3D buildings Based on Multi-Source RS Data

Zhe Chen, Bisheng Yang, Rui Zhu, Fuxun Liang, Peiling Tong, Zhen Dong

Oral 08: GeoHealth II

Location: **ENG106**

Chair: **Fahui Wang**, Louisiana State University

Disparities in Physical and Virtual Accessibility of Oncologists in the U.S.

Fahui Wang, Hanqi Li,
Lingbo Liu, Tracy Onega

User Experience Matters: Inequality in Spatial Accessibility of Highly-Rated Healthcare Services in Major U.S. Cities

Binbin Lin, Lei Zou

Investigating the Impacts of Social Deprivation on Preterm Birth in Georgia, USA Using Bayesian Multilevel Models

Wei Tu

Exploring the path to One Health: Insights on synergies, trade-offs, and priority targets for Global and National Progress

Ya Tian, Junze Zhang, Hui Lin, Min Chen

Is Green Space a Public Health Issue and How to Measure "Vitamin G"?

Lan Mu, Jue Yang, Nemin Wu, Jieliu Zhang,
Mohammed Almusidi

3:00pm-
3:30pm

Coffee/Tea Break

Location: **Sears Atrium (ENG304)**

3:30pm-
5:00pm

Oral 09: Digital Twin

Location: **ENG101**

Chair: **Shabnam Jabari**, University of New Brunswick

Development Of Digital Twin For Managing Building Water Distribution Systems On University Campuses

Gopika Rajan, Songnian Li

The Digital Twins of Convective Weather

Mingyue Lu

Urban Digital Twin for Climate Resilience: A Review of Generation, Data Challenges, and Climate Responsive Applications

Shabnam Jabari, McGrath Heather

Environmental Modeling of Poyang Lake Wetland Under the Background of Digital Twin

Hao Chen, Changyang Fang, Hui Lin

Modelling Potential Solar Panel Glare On Pilot Arrival And Departures Using Unreal Engine

Hongliang Lyu, Derek T. Robinson

Oral 10: Agriculture

Location: **ENG102**

Chair: **Wanhong Yang**, University of Guelph

CropSight - Towards a National-scale Operational Framework for Object-based Crop Type Ground Truth Retrieval Using Street View and PlanetScope Satellite Imagery

Zhijie Zhou, Yin Liu, Chunyuan Diao

Analysis Of Cultivated Land Fragmentation And Its Influencing Factors In Northern China

Qianyu Nie, **Shuang Zhao**, Zhiheng Wang, Dingyang Zhang

Field-level Crop Yield Estimation through Integration of Crop Model and Deep Learning

Tianci Guo, Chunyuan Diao

A WebGIS Tool for Evaluating Ecosystem Services on Agricultural Landscapes

Wanhong Yang, Shawn Shao, Yongbo Liu, Zhiqiang Yu

Oral 11: Geospatial Methods II

Location: **ENG105**

Chair: **Daoye Zhu**, University of Toronto

Idle Occupancy and Dead Piles: New Challenges in Public Charging Station Promotion

Mushu Zhao, Dawei Wang, Weifeng Li

Enhancing Youbike Redistribution System: A Study on Station Recommendation Using Genetic Algorithm

Yang-Chou Juan, Yi-Chung Chen, Wei-Ting Chen, Chieh Yang, Chia-Tzu Liu, Yi-Ci Hou, Yi-Hsuan Tsai

GIS-based Platform for Resilience Assessment of a Power Grid Subjected to Natural Hazards

Daoye Zhu, Yuhong He, Oh-Sung Kwon, Taeyong Kim, Qiujin Ma, Sahand Najafizadegan

Skyscrapers And Their Impact On Urban Tree Solar Exposure: A 3D Geospatial Analysis

Andrew Allan Millward, Christopher Scarpone, Justin Miron

Oral 12: Land Use & Land Cover

Location: **ENG106**

Chair: **Jinfei Wang**, The University of Western Ontario

Fusion of Google Street View, LiDAR, and Orthophoto classifications based on a Ranking method for Building Land-Use Type Detection

Nafiseh Ghasemian Sorboni, Jinfei Wang, Mohammad Reza Najafi

Exploitation of Class Activation Map to Improve Land Cover and Land Use Classification Using Deep Learning

Taewoong Ham, Baoxin Hu

Examining the Impact of Various Green Area Coverage on Air Pollution Using Remote Sensing Data and Google Earth Engine

Amin Naboureh, Ainong Li

Use of Microwave and Optical Images for National and Global Forest Resources Assessment: Annual Forest Maps of the Contiguous United States

Xiangming Xiao, Jie Wang, Yuan Yao, Yuanwei Qin

6:00pm-
8:00pm

CPGIS night

Location: **ENG101**

Date: Thursday, 15/Aug/2024

8:00am-9:00am	Registration Location: ENG 1st Floor Hallway			
9:00am-10:30am	Keynote Session 2 Location: ENG103 Dr. Monika Sester's Keynote Talk: "Sustainable Urban Mobility" Dr. Arzu Çöltekin's Keynote Talk: "Human and machine intelligence on visual and spatial phenomena"			
10:30am-11:00am	Coffee/Tea Break Location: ENG 1st Floor Hallway			
11:00am-12:30pm	Oral 13: Weather and Climate Location: ENG101 Chair: Xiaoyong Xu, University of Toronto "The Thirstiest Crop" in the U.S. Southwest: Mapping the Impact of Alfalfa Cultivation on Water Security and Ecological Functioning in the Lower Colorado River Basin <u>Yuntian Bi</u> , Zhijie Zhou Urbanization Exacerbated Extreme Meteorological Drought: Analysis Over Five Urban Agglomerations in the Yangtze River Basin, China <u>Shuzhe Huang</u> , Chao Wang, Nengcheng Chen A Generative Adversarial Network-based Downscaling Framework for Reconstructing the High-resolution Precipitation <u>Honglin Zhu</u> , Qiming Zhou GIS-Enabled Site Investigation for the Mekong River in Thailand <u>Netsai Wiboonwipa</u> , Georgia Fotopoulos	Oral 14: Environmental Remote Sensing III Location: ENG102 Chair: Bing Lu , Simon Fraser University Investigating a Flooding Disaster in British Columbia and its Damages on Agriculture using Remote Sensing and GIS <u>Bing Lu</u> , Ian McDonald Monitoring Restoration Efforts in Pits and Quarries in Southern Ontario Using Drone and Field Surveys <u>Sana Hashim</u> , Yuhong He, Daniel Nelson, Matthew Noonan Understanding Remote Sensing Imagery Like Reading a Text Document: What Can Remote Sensing Image Captioning Offer? <u>Xiao Huang</u> Development and Practices of Innovative Cultivation Modes for Training Talents in Surveying and Mapping <u>Jianghong Zhao</u> , Xueqing Zhang, Ailin Xu, Yihong Zhang	Oral 15: Geospatial Methods III Location: ENG105 Chair: Jue Wang , University of Toronto Integrating Low-Cost Sensor Monitoring, Satellite Mapping, and Geospatial Modeling for Intra-Urban Air Pollution Predictions <u>Lu Liang</u> Spatial Modeling of Urban Environmental Noise Using Geospatial Big Data and Geo-AI Techniques <u>Jue Wang</u> , Yongzhao Wu Artificial Intelligence and Human Geography <u>Song Gao</u> Mapping The Landscape And Roadmap of GeoAI in Human Geography: an Extensive Systematic Review <u>Sigin {Sisi} Wang</u> A Bionic Encoding Method Of Geospatial Location For Htm Systems <u>Zugang Chen</u> , Guoqing Li, Shaohua Wang	Oral 16: Watershed & Wetland Analysis Location: ENG106 Chair: Yongbo Liu , ECCC Characterization of Lake Catchments Leveraging Remote Sensing Data <u>Junzhi Liu</u> Development Of A GIS-Based Modeling Tool For Watershed Evaluation Of Best Management Practices <u>Yongbo Liu</u> , Wanhong Yang, Shawn Shao, Zhiqiang Yu From Lake to Lakeplace: A Case Study of Lake-Related Human Activities in the Twin Cities <u>Meicheng Xiong</u> , Di Zhu Evolution Analysis of the Yellow River Delta Wetland Supported by Remote Sensing Data <u>Xin Zhang</u>
12:30pm-1:30pm	Lunch Location: ENG 1st Floor Hallway			

1:30pm-
3:00pm

Poster Session

Location: **ENG 1st Floor
Hallway**

"Modeling the Spatio-temporal Land-cover Change in Cities: Integrating Green Infrastructure Improvement and Urban Sprawl"
Marina Ribeiro, Kaline de Mello, Dongmei Chen, Roberta Valente

A Combined EEG and Eye Tracking Research for Visual Attention of Remote Sensing Images
Bing He, Weihua Dong

Automatic UAV Fire Segmentation based on Attention Mechanism and Multi-scale Feature Fusion
Haigang Suj, WeiCheng Jiang, Peng Cheng, Han Li, Jianxun Wang, Junyi Liu, Yong Zeng

Combining Deep Learning and Street View Images for Urban Building Color Research
Wenjing Li, Qian Ma, Zhiyong Lin

Delineating the Polycentric Urban Regions in Multimodal Transport Networks: A Conceptual Development Using the Case of Yangtze River Delta
Yueer Zhou, Linbo Li, Yahua Zhang

Mapping China's Annual Forest Age at 30-m Spatial Resolution from 1986 to 2022
Rong Shang, Xudong Lin, Jing M. Chen, Yunjian Liang

Poster Session

Location: **ENG 1st Floor
Hallway**

The Design of Mobile Sensing Framework for Road Surface based on Multi-modal Sensors
Haiyang Lyu, Yu Huang, Jianchun Hua, Wenmei Li, Tianju Wu, Hanru Zhang, Wangta Ma

Understanding the Disparate Impacts of the 2021 Texas Winter Storm and Power Outages Through Mobile Phone Location Data and Nighttime Light Images
Ryan Zhenqi Zhou, Yingjie Hu, Lei Zou, Heng Cai, Bing Zhou

Unsupervised Domain Adaptive Transfer Learning for Urban Built-up Area Extraction
Feifei Peng, Shuai Yao, Yixiang Chen, Wenmei Li

Winter Wheat Canopy Height Extraction and Biomass Prediction from UAV-Based LiDAR Point Cloud Data
Pai Du, Jinfei Wang, Bo Shan

A Framework for the Representation and Composition of Wetland Computing Services Using Knowledge Graphs
Xin Xiao, Hui Lin

A Reasoning Method for Urban Waterlogging Cases Considering The Characteristics Of Knowledge Graph Subgraphs
Yaqin Sun, Yutong Liu, Tongfei Yang

Poster Session

Location: **ENG 1st Floor
Hallway**

Methane Dynamics in Inner Mongolia: Unveiling Spatial, Temporal Variations, and Driving Factors
Yan Sirui, Xie Yichun, Han Ge, Meng Xiaoliang, Li Ziwei

Point Cloud Simplification Algorithm Based On Neighborhood Normal Vectors And FCM Clustering Feature Extraction
Hongxiao Xu, Donglai Jiao, Wenmei Li

Study on Automated Three-Dimensional Modeling Methods for Underground Pipelines
Wangqiang Xu

The Influence of Vegetation Cover and Climatic on the Maximum Freezing Depth of Seasonally Frozen Ground in the Three River Source Region
Bo Wen, Tingbin Zhang, Guihua Yi, Dongmei Chen, Jiao Hu, Xian Liu

Spatial-temporal Evolution of Land Desertification Sensitivity in Mu Us Sandy Land Ecological Function Reserve
Yahao Wu, Xianglei Liu, Runjie Wang, Yuhang Liu, Ming Huang, Liang Huo

The Response of Discharge Water to Production-Living-Ecological Space Changes by Using SWAT Model: A Case Study in Fenhe River Basin, China
Junzhe Zhang, Azhar Ali Laghari, Qingxia Guo, Jiyao Liang, Zhenghao Liu, Yongheng Shen, Yuehan Wei

Poster Session

Location: **ENG 1st Floor
Hallway**

Assessment and Prediction of Ecosystem Service Value based on landuse/landcover: A case study of Enugu, Nigeria
Peter Nweze Ekwe, Dorcas Dabo Hamza, Michael Chibuike Ekwe, Caleb Akoji Odiji

Mongolia Gobi Fine Extraction Based On Deep Learning And Its Resource And Environment Effect Analysis
Mengmeng Hong, Juanle Wang

Estimating rainfed groundnut's leaf area index using Sentinel-2 based on Machine Learning Regression Algorithms and Empirical Models
Michael Chibuike Ekwe, Oluseun Adeluyi, Jochem Verrelst, Angela Kross, Caleb Akoji Odiji

Using Geographically Weighted Regression to Explore County Subdivision Level Predictors of Drug Overdose Death in Connecticut, U.S.
Yunliang Meng

Utilizing CYGNSS Data for Flood Monitoring and Analysis of Influencing Factors
Yan Jia, Quan Liu, Dawei Zhu, Heng Yu, Yuting Jiang, Junjie Wang

Risk Assessment of Global Serious Flood Disasters Based on Historical Data and Machine Learning

Xiuqin Fang, Yu Yang, Wen Zhu, [Qian Zhu](#)

Spatially Seamless Downscaling of SMAP Soil Moisture Product through a CNN-Based Approach with Integrated Multi-Source Remote Sensing Data

[Yan Jin](#), Haoyu Fan, Zeshuo Li, Yaojie Liu

Subtropical Tree Species Identification Based On Domain Generalization With Hyperspectral Images

[Xu Wang](#), Wenmei Li, Yuhong He

Sustainable Urbanization in the Yangtze River Basin through Built-Up Area Extraction

[Zeshuo Li](#), Haoyu Fan, Yan Jin

The Advertisement and Rental Price An Exploratory Analysis from Zoopla in Scotland, 2010—2020

[Zhiya Xu](#), Mingshu Wang, Ziqi Li

Within-season Crop Classification Based on Key Phenological Period Features Prediction with a Multi-task Learning Network

[Tianyu Liu](#), Jin Chen, Qiang Li

Developing a Tool for Watershed Planning Implementation Tracking and Reporting in the Toronto Region

[Andrew T.M. Chin](#), Melanie Randolph, Namrata Shrestha

Constructing Rasterized Covariates from LiDAR Point Cloud Data via Structured Query Language

[Rory Clifford Pittman](#), Baoxin Hu

Design and Implementation of Geographic Scene Visualization System Based on GIS

[Yunlong Feng](#), Changfeng Jing, Jianing Li, Tao Liang

Detecting Polder Water Surface Dynamics Using Multi-Source Remote Sensing Data

[Heng Yu](#), Dawei Zhu, Yan Li, Chao Lu, Rui Zhang, Junjie Wang, Yan Jia

Development of a Natural Disaster Information System (NDIS) for RPAS Monitoring of Environmental Hazards, and Disasters

[Robiah Al Wardah](#), Alexander Braun

Early-season Crop Mapping Using Historical Labels and Multi-source Remote Sensing Data on the Google Earth Engine

[Xin Zhou](#), Jinfei Wang, Du Pai

Geographical Spatial Characteristics and Low-carbon Sustainable Paths of Resource-exhausted Cities

[Xiaotong Feng](#), Min Tan, Jihong Dong, Thomas Kienberger

Urban Functional Zone Mapping by Integrating Multi-Source Data and Spatial Relationship Characteristics

[Daoyou Zhu](#), Xu Dang, Wenjia Shi, Yixiang Chen, Wenmei Li

Research on Spatial Interpolation Methods of Temperature Data Based on GIS—Taking Jiangxi Province as an Example

Zihao Feng, [Runjie Wang](#), Xianglei Liu, Ming Huang, Liang Huo

Vital Natural Habitats And Environmental Factors For Overwinter Waterbirds Population Distributions In Natural Wet China's Largest Freshwater Lake

Yirong Wan, [Linling Tang](#), Zihui Huang, Qiangqiang Xu, Xiongyu Chen

A DID based Unsupervised Method for Change Detection of Season-varying Images

[Yuheng Yuan](#), Jin Chen, Xuehong Chen, Qiang Li

A Fast Fusion Modeling Method For Disaster Scenes Within Mobile Virtual Reality Enhanced by Multi-source Data Perception

[Jigang You](#), Jun Zhu, Pei Dang, Jinbin Zhang

Analysis of Building Daylighting Based on Bim and Numerical Simulation Technique

Baihui Yu, Xianglei Liu, Runjie Wang, [Ming Huang](#), Liang Huo

Urban Intensification Using Remote Sensing and Machine Learning in Toronto: A Spatiotemporal Approach

[Yat Ho Cheung](#), Jinfei Wang, Diana Mok

Spatiotemporal Analysis of Carbon Emissions and Uptake Changes from Land-use in the Yangtze River Delta Region

[Cuiheng Ye](#), Jie Jiang, Yan Jin

Construction and Application of an Ecological Quality Evaluation System Based on PIE-Engine

[Pengdu Li](#), Cuiheng Ye, Lei Li, Jie Jiang

Rendering 2D Map Vector Symbols in 3D Geographic Scene

[Jiangfeng SHE](#)

3:00pm-
3:30pm

Coffee/Tea Break
Location: ENG 1st Floor Hallway

3:30pm-
5:00pm

Oral 17: GeoHealth III

Location: **ENG101**
Chair: **Lu Wang**, Toronto
Metropolitan University

Geospatial Analytics to Support District Efficiency, Fairness and Equity

Jiwon Baik, Alan Murray,
Enbo Zhou, Jing Xu

Gender Imbalance and its Spatial Mechanism of Interprovincial Migration in China during the 21st Century

Zivina Sheng, Yingxia Pu,
Yuting Zhang, Jonah Peng

Scale Effects-aware Bottom-up Population Estimation Using Weakly Supervised Learning

Jing Xia, Rui Li

Typology of Downtown Recovery at the Granular Scale

Byeonghwa Jeong, Karen
Chapple, Jeff Allen

Measuring Human Activities Resilience Patterns Under Emergencies Events Using Multi-source Location-based Service Data

Xuehua Han, Liang Wang,
Dandan Xu, Min Zhang,
Xiaodong Zhang

6:00pm-
10:00pm

Conference Cruise Dinner
Location: **Toronto Obsession III Cruise**

Oral 18: Interdisciplinary I

Location: **ENG102**
Chair: **Jane Liu**, University of
Toronto

Research on Economic Value Estimation and Spatial-temporal Variation of Natural Resource Element Based on City Scale

Yuqi Tang, Anni Wang, Qi
Zhang, Penglin Zhang

Evaluation of Urban Eco-Environmental Quality Change by the Downscale Remote Sensing Ecological Index (DS-RSEI) in Beijing from 2001 to 2021

Sijia Zhao, Qiang Chen, Hui
Han, Shisong Cao, Yuning
Feng, Wen Song

A Multi-Source Data Fusion Framework for Urban Science Research Tasks

Yuan Lai, Mingyi Ma

Estimation of Monthly Gross Value of Industrial Output using improved Spatiotemporal-CNN with NPP-VIIRS composite data and multi-source geospatial data

Wenkang Gong, Bailang Yu

Unlocking Urban Environments: A Comprehensive Framework for Enhanced CityGML 3D Models Development Using Point Cloud Data

Mohamed Ismail, Ahmed
Shaker, Songnian Li

Oral 19: Interdisciplinary II

Location: **ENG105**
Chair: **Fang Qiu**, University of
Texas at Dallas

Automatic Detection of Deer from UAV Thermal Imagery Using A You-Look-Twice (YLT) Deep Learning Model

Fang Qiu, Lyu Haitao

Event/Visual/IMU Integration For UAV-Based Indoor Navigation

Ahmed Elamin, Ahmed El-
Rabbany

Geo-Regions Make Impacts on Asiatic Black Bears' Behaviors

Xuehua Liu, Ao Cui, Babar
Zahoor

Enhancement of Forest Road Construction Year Accuracy Through Geometric Connectivity

Kirsten Noltie, Dongmei
Chen, Marc Ouellette, Tarmo
Rommel

Individual Tree Crown Detection and Delineation Using Mask R-CNN with LiDAR Data in a Mixed-Wood Forest

Qian Li, Baoxin Hu

Oral 20: Interdisciplinary III

Location: **ENG106**
Chair: **Jue Wang**, University of
Toronto

Spatial Distribution and Influencing Factors of Digital Creative Industry from the Perspective of Spatial Production: A Case Study of Shenzhen

Zhiyi Gan, Yan Zhang,
Nengjun Chen, Ruipeng Li

Utilizing Remote Sensing and Geospatial Data for Temporal and Spatial Dynamic Evaluation in Rural Revitalization

Shuyang Hou

Spatial Distribution of Traditional Villages and Influencing Factors in Rural China

Yajie Zeng, Shaolin Wu,
Baofeng Di

Unravelling Spatiotemporally Heterogenous Life-cycle Carbon Mitigation of Existing Rooftop Photovoltaics: GIS and Remote Sensing Data Modelling

Rui Zhu, Zheng Qin, Linlin
You

How to Understand Carbon Intensity? A Comparative Study of China and Europe from Relationship between Rural Development Forms and Carbon Emission Intensity

Jiaqi Li, Yishao Shi

Date: Friday, 16/Aug/2024

8:00am-9:00am	Registration Location: ENG 1st Floor Hallway				
9:00am-10:30am	Keynote Session 3 Location: ENG103 Dr. Mario Santana Quintero's Keynote Talk: "GIScience and Digital Technologies for Conserving Cultural Heritage: Opportunities and Challenges" Drs. Jason Wang / Nan Ding: "Sponsor presentation"				
10:30am-11:00am	Coffee/Tea Break Location: ENG 1st Floor Hallway				
11:00am-12:30pm	Oral 21: Geosocial Media Data Analytics Location: ENG101 Chair: Xiao Huang , Emory University Social Network Analysis of Nonprofits in Disaster Response: The Case of Twitter During the COVID-19 Pandemic in the United States <u>Xi Gong</u> , Shuyang Peng, Yujian Lu, Shaohua Wang, Xiao Huang, Xinyue Ye Deep Learning-based Multi-dimensional Twitter Data Analysis for Traffic Event Detection <u>Danya Qutaishat</u> , Songnian Li Towards Real-time Discovery of Disaster Causal Diagrams Using Social Network Text Data <u>Xuanyan Dong</u> , Erick Mas, Bruno Adriano, Shunichi Koshimura Sleepless Cities under Social Isolation: Geographically and Temporally Revealing Circadian Rhythm Disorders through Social Media <u>Lei Zou</u> , Mingzheng Yang, Wanhe Li Trajectory and Hotspot Analysis of Hate Speech on Social Media using Machine Learning and Geo-spatial Technologies Areeba Waseem, <u>Muhammad Shahzad Sarfraz</u> , Francis Palma	Oral 22: Carbon and Environment Location: ENG102 Chair: Jing Chen , University of Toronto An Interoperable and Service-oriented Web Geoprocessing Framework for Carbon Sources and Sinks Analysis <u>Huaqiao Xing</u> , Songnian Li High Spatio-Temporal Resolution Estimation of XCO2 Observations using Spatial Feature Fusion <u>Hui Yang</u> , Liu Cui, Zhaojin Yan, Gefei Feng Hebei Key Laboratory of Resource and Environmental Disaster Mechanism and Risk Monitoring Liu Dongpo, <u>Wang Yanping</u> , Qiao Wensi, Sun Yucheng A Methodology for Predicting the Stability Trend of Ground Collapse Under the Water Flow Qinglun He, Yizhao Wang, Wenfeng Bai, <u>Fei Wang</u> , Xing Min, Zhi Wang, Long Chen, Juncal Jiang, Yuming Qiao	Oral 23: Geospatial Methods IV Location: ENG105 Chair: Zhenlong Li , Penn State Autonomous GIS: the next-generation AI-powered GIS <u>Zhenlong Li</u> , Huan Ning Methods for Quantum Machine Learning and Its Applications <u>TianXiang Yue</u> Sentiment Analysis Based on Geo-tagged Text <u>Daijiang Wang</u> , Min Chen, Yongning Wen Geographic Proximity and Homophily Effects Drive Social Interactions Within VGI Communities: an Example of iNaturalist <u>Guiming Zhang</u> , Xi Gong, Di Zhu Anomaly Detection of Crowd Flow by Using Ensemble Generative Adversarial Networks Yong-Ti Wang, <u>Chun-Lei Lee</u> , Yi-Chung Chen	Oral 24: Disaster and Resource Management Location: ENG106 Chair: Daoye Zhu , University of Toronto Generating Geographic Location Description of Earth's Surface Anomaly with Natural Language Based on Remote Sensing Data Products <u>Fengji Zhang</u> , Yi Long, Ling Zhang Enhanced Early Warning Text Generation for Efficient Disaster Information Delivery based on Expression-adapted Knowledge Graph <u>Yue Wu</u> , Ling Zhang, Yi Long Unveiling Disparate Community Adaptations to Heat Extremes Using Mobile Phone Location Data <u>Heng Cai</u> , Hao Tian GIS-based Analysis on the culture heritage sites in Jiaozuo City, Henan Province, China <u>Shixiong Hu</u> , Yiming Zhang, Mengtian Wu	
	12:30pm-1:30pm	Lunch Location: ENG 1st Floor Hallway			

1:30pm-
3:00pm

Oral 25: Disaster Mapping & Assessment

Location: **ENG101**
Chair: **Yongmei Lu**, Geography and Environmental Studies

Urban Road Collapse Risk Assessment Study Based on InSAR Spatiotemporal Data

Juncai Jiang, **Wenfeng Bai**, **Yizhao Wang**, **Fei Wang**, **Qinglun He**, **Long Chen**, **Yuming Qiao**, **Zhi Wang**, **Haitao Luo**

Urban Flood Risk Assessment and Evacuation Planning: A Two-layer Planning Approach for Sustainable High-Density Cities

Xinyue Gu, **Yan Mao**, **Xintao Liu**

A Landslide Susceptibility Mapping Method Based on GIS and Data Enhancement Techniques: A Case Study of Guangzhou City, China

Long Chen, **Yizhao Wang**, **Wenfeng Bai**, **Fei Wang**, **Shiyang Xu**, **Zhi Wang**, **Qinglun He**, **Juncai Jiang**, **Yuming Qiao**

A Spatial Correlation-Based Slope Stability Assessment Method For Mountain Areas With Limited Landslides Data

Rui Yuan, **Weixi Wang**

Oral 26: Interdisciplinary IV

Location: **ENG102**
Chair: **Temitope Seun Oluwadare**, Queens University, Kingston

Main Outcomes of GIS and Remote Sensing Applications for Marine Environment and Resources in Vietnam

Lan Tran Dinh, **Thao Nguyen Van**, **Huong Do Thi Thu**

Synthetic Aperture RADAR (SAR) Bathymetry Inversion using Swell Waves in Eastern Florida Coastal Waters

Sanduni Disanayaka Mudiyansele, **Amr Abd-Elrahman**, **Benjamin Wilkinson**

Video GIS System For Arable Land Resources Surveillance

Boshen Chang, **Qimin Cheng**, **Xin Shao**

Filling Snow-covered pixels in Sentinel-2 Satellite Imagery: A Generative Adversarial Network (GAN) approach

Temitope Seun Oluwadare, **Dongmei Chen**, **Olawale Oluwafemi**, **Masoud Babadi**, **Mohammad Hossain**

Estimating Rainfall Intensity from Surveillance Audio

Meizhen Wang, **Yuxuan Guo**, **Mingzheng Chen**, **Ziran Wang**

Oral 27: Geospatial Methods V

Location: **ENG105**
Chair: **A-Xing Zhu**, Nanjing Normal University

Overview And Prospect Of Visibility Analysis Approaches

Jianghong Zhao, **Ailin Xu**, **Xueqing Zhang**, **Yunhui Zhang**, **Yihong Zhang**, **Mengtian Cao**, **Ming Huang**

Quantification of Prediction Uncertainty Based on Third Law of Geography

A-Xing Zhu

The Application of CycleGAN Combined with Human Visual Perception in Real-Time Generalization

Haoxuan Chen, **Ling Zhang**, **Yi Long**

Spatio-temporal Prediction Learned Index

Feng Zhang

Is the Generative Method a Solution for Real-time Map Generalization?

Ling Zhang, **Haoxuan Chen**, **Yi Long**

Oral 28: Trajectory & Mobility

Location: **ENG106**
Chair: **Xintao Liu**, The Hong Kong Polytechnic University

A Flexible Detection Method of Periodic Activities in Trajectory Data - A Case of Beijing Using Mobile Phone Signalling Data

Zidong Fang, **Tao Pei**, **Ci Song**, **Xiaorui Yan**, **Le Liu**

Exploration of Human Activity Fragmentation in Cyber and Physical Spaces Using Massive Mobile Phone Data

Minglei Liao, **Xintao Liu**

Unveiling the Inequalities in Exposure, Impacts and Adaptation to Heat Waves through Human Mobility Data

Cong Ma, **Yi Qiang**

Understanding the Inequality of COVID-19 on Mobility Patterns in the Greater Toronto Area: Implications for Public Health Policy and Practice

Jingheng Yan, **Dongmei Chen**, **Lu Wang**, **Lixia Yang**, **Jie Yu**

Dynamic Evacuation Shelter Allocation in Response to Human Mobility: A Taipei City Case Study

Chang-Hung Shih, **Cheng-Yun Wu**, **Shu-Ping Tseng**, **Yi-Lin Huang**, **Rong-Pu Jhuang**, **Yi-Chung Chen**, **Tien-Yi Yang**, **Wei-Ting Chen**

3:10pm-
4:30pm

Closing and Award Ceremony

Location: **ENG103**
Summary
Awards Ceremony
Geoinformatics 2025 Presentation