Haiyan Hao

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Research Interests: Urban Resilience; Crisis Informatics; Urban Analytics; Social Sensing

Google Scholar; ResearchGate

WORKING EXPERIENCE

Chinese University of Hong Kong, Shenzhen   Shenzhen, China
Assistant Professor (Tenure-track)   August 2023 – present

Virginia Tech Transportation Institute   Virginia, United States
Research Assistant   July 2017 – July 2019

EDUCATION

2019 – 2023.05: Ph.D. Degree in Urban and Regional Planning, University of Florida, FL, USA.
- Advisor/Committee Chair: Dr. Yan Wang; Co-Chari: Dr. Chimay Anumba
- Dissertation Title: "*Deep Community Resilience Assessment Integrating Hazards, Human, and the Built Environment*"
- Committee Members: Dr. Zhong-ren Peng (Urban Planning); Dr. Corene Matyas (Geography); Dr. José AB Fortes (Electrical and Computer Engineering)

2016 – 2018: Master's Degree in Civil Engineering, Virginia Polytechnic Institute and State University, VA, USA.

2012 – 2016: Bachelor's Degree in Civil Engineering, Shandong University, Ji'nan, China.

PEER-REVIEW JOURNAL PUBLICATION (*: corresponding author)

1. **Hao, H.***, Lin, J., Qiu, S., Liu, L., & Dai, J. (2025). Comparing public willingness-to-pay for different low-carbon measures: A case study of Shenzhen, China. *PloS ONE*, *20*(3), e0319687.

2. **Hao, H.***, Wang, Y., & Chen, J. (2024). Empowering Scenario Planning with Artificial Intelligence: A Perspective on Building Smart and Resilient Cities. *Engineering*, *43*, 272-283.

3. **Hao, H.**, & Wang, Y.* (2024). The emerging "evident" role of climatic risk on migration: a study of four US metropolitans. *Climatic Change*, *177*(3), 1-21.

4. **Hao, H.**, & Wang, Y.* (2023). Modeling Dynamics of Community Resilience to Extreme Events with Explainable Deep Learning. *Natural Hazards Review*, *24*(2), 04023013.

5. **Hao, H.**, Wang, Y.*, Du, L., & Chen, S. (2023). Enabling smart curb management with spatiotemporal deep learning. *Computers, Environment and Urban Systems*, *99*, 101914.

6. **Hao, H.**, & Wang, Y.* (2022). Disentangling relations between urban form and urban accessibility for resilience to extreme weather and climate events. *Landscape and Urban Planning*, *220*, 104352.

7. **Hao, H.**, Wang, Y.*, & Kang, S. (2022). Examining "digital" vulnerability to flooding among subsidized housing residents in Florida. *International Journal of Disaster Risk Reduction*, *82*, 103302.

8. **Hao, H.**, & Wang, Y.* (2021). Assessing Disaster Impact in Real Time: Data-Driven System Integrating Humans, Hazards, and the Built Environment. *Journal of Computing in Civil Engineering*, *35*(5), 04021010.

9. **Hao, H.**, & Wang, Y.* (2020). Leveraging multimodal social media data for rapid disaster damage assessment. *International Journal of Disaster Risk Reduction*, *51*, 101760

10. Wang, Y.*, **Hao, H**., & Platt, L. S. (2021). Examining risk and crisis communications of government agencies and stakeholders during early-stages of COVID-19 on Twitter. *Computers in human behavior*, *114*, 106568.

11. Wang, Y.*, **Hao, H.,** Wang, C. (2022). Preparing Urban Curbside for Increasing Mobility-on-Demand using Data-Driven Agent-Based Simulation: Case Study of City of Gainesville, Florida. *Journal of Management in Engineering*.

12. **Hao, H.,** Li, Y. E.*, Medina, A., Gibbons, R.B., & Wang, L. (2020). Understanding crashes involving roadway objects with SHRP 2 naturalistic driving study data. *Journal of safety research*, *73*, 199-209.

13. Li, Y.*, **Hao, H.,** Gibbons, R.B., & Medina, A. (2021). Understanding Gap Acceptance Behavior at Unsignalized Intersections using Naturalistic Driving Study Data. *Transportation Research Record*, *2675*(9) 1345–1358.

14. Li, Y.*, **Hao, H.,** Gibbons, R.B., & Medina, A. (2020). Implications of crashes involving roadway objects for machine vision-based driving systems. *Transportation research record*, *2674*(12), 291-302.

PEER-REVIEW CONFERENCE PUBLICATION (*: corresponding author)

1. Chen, X., & **Hao, H.*** (2025). A Self-Improving, RAG-Enhanced Framework for Automatic Knowledge Graph Construction from Climate Event News. In *Proceedings of the International ISCRAM Conference*. https://doi.org/10.59297/wjmsp389

2. Liu, Z., & **Hao, H.*** (2025). Optimizing Shelter Site Locations in Residential Community: A GeoSimulation and Genetic Algorithm Approach. In *Proceedings of the International ISCRAM Conference*. https://doi.org/10.59297/p7p13y73

3. **Hao, H.**, & Wang, Y*. (2022). Smart Curb Digital Twin: Inventorying Curb Environments using Computer Vision and Street Imagery. *2nd Annual International Conference on Digital Twins and Parallel Intelligence (IEEE DTPI 2022)*. Boston, U.S.

4. **Hao, H.**, Wang, Y.*, & Wang, Q. (2022). Simulating Urban Population Activities under Extreme Events with Data-Driven Agent-Based Modeling. *2022 ASCE's Construction Institute and Construction Research Council*. Arlington, VA; March 9-12, 2022.

5. **Hao, H.**, Wang, Y.*. (2020). Hurricane Damage Assessment with Multi-, Crowd-Sourced Image Data: A Case Study of Hurricane Irma in the City of Miami. In *17th International Conference on Information Systems for Crisis Response and Management* (pp. 825–837). Blacksburg, VA (USA): Virginia Tech.

6. Xia, C., Hu, Y.*, Chen, J., & **Hao, H** (2024). A Spatial-Temporal Community Vulnerability Assessment Framework Based on Human Mobility Trajectory Simulation. In *Computing in Civil Engineering 2023* (pp. 36-43).

MANUSCRIPTS UNDER REVIEW/PREPARATION

1. **Hao, H.*** et al. (202x) Uncovering Compound Urban Crises with Large Language Model-Assisted Knowledge Graph Construction (Under R&R).

2. **Hao, H.*** et al. (202x) Resident-Centric Urban Village Renovation Assessment: Automated Plan Evaluation Using LLM Agents (In Preparation).

RESEARCH PROJECT

Principal Investigator 2025.01 – 2027.12	Project: NSFC Youth Scholar Program: Investigations on the patterns and spatial resilience of compound urban crises based on social sensing data (Award Number: 72404236, CNY 300,000)
Principal Investigator for the Shenzhen campus 2025.06 – 2027.6	Project: 1+1+1 CUHK-CUHK(SZ)-GDST Joint Collaboration Fund - Urban Intelligence and Analytics Young Scholar Project (Award Number: 4760449, HKD$ 131,000; RMB$ 180,000)
Principal Investigator 2024.04 – 2027.03	University Development Fund (a.k.a start-up fund) of the Chinese University of Hong Kong (Shenzhen) (Award Number: UDF03003228, CNY 1,039,999)
Principal Investigator 2023.09 – 2024.05	Project: Surveying Shenzhen residents' willingness-to-pay for low-carbon strategies funded by the World Resource Institute (CNY 200,000)
Team member 2025.06 – 2028.05	Project: 1+1+1 CUHK-CUHK(SZ)-GDST Joint Collaboration Fund – Laboratory of Geospatial Intelligence (CNY 6,000,000)
Lead Researcher 2021.10-2023.05	Project: NSF SCC-PG: SmartCurb: Building Smart Urban Curb Environment (Award Number: 2124858, Fund: USD 149,999)

Lead Researcher 2021.08-2022.08	Project: Examining Digital Vulnerability to Flooding Among Subsidized Housing Residents in Florida Funded by National Hurricane Center (USD 2,500).
Lead Researcher 2020.07-2022.06	Project: NSF SCC-PG: Coordinated Safety Management Across Smart Communities (Award Number: 1951816, USD 150,000)
Lead Researcher 2020.06-2021.05	Project: NSF RAPID: Dynamic Interactions between Human and Information in Complex Online Environments Responding to SARS-COV-2 (Award Number: 2028012, Fund: USD 82,041).

ACADEMIC ACTIVITIES & PRESENTATION

2025

- 07/03 – 07/06: Attending and presenting at the 19th International Association for China Planning (IACP) conference, Xiamen, China.

- 06/23 – 06/27: Attending and presenting at the 19th International Conference on Computational Urban Planning and Urban Management (CUPUM); Chair the session "*Smart Cities - 2*", London, the U.K.

- 05/18 – 05/21: Attending and presenting at the 22nd Information Systems for Crisis Response and Management Conference (ISCRAM), Halifax, Canada

2024

- 07/05 – 07/08: Attending and presenting at the 18th IACP Annual Conference; Chair the session "*Urban Carbon Emissions and Sustainability*", Hangzhou, China.

- 01/11: Attending and presenting at Urban System Institute's Inangular meeting held at the University of Hong Kong, Hong Kong, China.

2023

- 11/19: Attending and presenting at the 5th Chinese National Forum on Computational Social Science, Shenzhen, China.

- 07/26: Invited job talk at the University of Hong Kong, Hong Kong, China.

- 07/01-07/02: Attending the 17th IACP Annual Conference, Tianjin, China

- 04/27: Invited job talk at the Chinese University of Hong Kong, Shenzhen.

- 03/17: Attending and presenting in the Sub-Forum on Architecture, Urban and Rural Planning, and Landscape Architecture of the 8th Tongji University International Youth Scholars Forum.

- 02/25: Attending and presenting at the Youth Forum of Urban and Rural Planning Frontier held by Chongqing University.

- 02/06: Attending and presenting in the Sub-Forum on College of Architecture and Art of Xinghai Forum held by Dalian University of Technology.

<div align="center">2022</div>

- 12/21-22: Attending the 1st IACP Planning Research & Career Development Symposium and presenting research poster, Gainesville, FL, USA

- 12/15: Attending NSF-funded AI in Transportation workshop and presenting research posters, Gainesville, FL, USA

- 11/30: Holding a training webinar: "Collecting Disaster Debris Data with Social Media and Crowdsourcing" for the SUMMEER community.

- 09/15 – 09/16: Attending NSF-funded SUMMEER workshop, San Luis Obispo, CA, USA.

- 03/09 – 03/12: Attending and presenting at the Construction Research Congress (CRC) 2022 Conference, Washington, DC.

<div align="center">2021</div>

- 07/10 – 08/10: Attending and presenting at the 61st Associate of Collegiate Schools of Planning (ACSP) conference (virtual).

- 06/09 – 06/11: Attending and presenting at the 17th International Conference on Computational Urban Planning and Urban Management (CUPUM) (virtual).

- 05/23 – 05/26: Attending and presenting at the 17th Information Systems for Crisis Response And Management Conference (ISCRAM) (virtual).

<div align="center">2018</div>

- 08/28 – 08/29: Attending and presenting at the International Symposium on Future Active Safety Technology Toward Zero Traffic Accidents (FAST-zero'18) conference. Blacksburg, VA, USA.

TEACHING

The Chinese University of HongKong, Shenzhen		
CSS 5220 Computational Thinking in Social Science Application	2024 Aut (CTE: 6.0)	Instructor
URM 2040 Principles and Application of Geographic Information System (GIS)	2024 Aut (CTE: 5.8)	Instructor
GEC 3202 Urban Resilience, Navigating Challenges in Modern City	2024 Sum (CTE: 5.9)	Instructor
URB 5430 Urban Spatial Analysis and Planning	2025 Spr 2024 Spr (CTE: 6.0)	Instructor

URB 5420 Digitalizing Urban Environment for Sustainable and Resilient Cities	2025 Spr 2023 Aut (CTE: 6.0)	Instructor

University of Florida		
URP 6223 Introduction to Urban Analytics	2023 Spr	Co-developer
URP 6270 Introduction to Planning Information Systems	2023 Spr	Co-Instructor
URP 6270 Introduction to Planning Information Systems	2022 Aut	Co-Instructor Teaching Assistant
EDG6931 Teach Adult Learners	2022 Spr	Student

Virginia Polytechnic Institute and State University		
CEE4664 Pavement Design	2017 Aut	Teaching Assistant
GTA Training Workshop	2017 Aut	Workshop Attendee

AWARDS AND HONOR

2023   **Paul and Malea Zwick Graduate Student Award** awarded by the Department of Urband and Regional Planning at the University of Florida ($1,000)

2022   **Certificate of Outstanding Merit** awarded by the International Center of the University of Florida.

2019-23   **Graduate School Funding Award** awarded by the Graduate School of the University of Florida ($34,000/year)

2021   **Research Promotion Initiative** awarded by the University of Florida's Office of Strategic Communications and Marketing ($2,000).

2020-22   **Travel Funds** awarded by the Department of Construction and Planning, the University of Florida (for registering and participating in conferences).

2017   **Teaching Assistantship** awarded by the Charles Edward Via, Jr. Department of Civil and Environmental Engineering, Virginia Tech.

ACADEMIC SERVICE

University/School/College services:
- HSS faculty search committee member for:
  - Computational Social Science division (2024.08 – 2025.07)
  - Digital Translation division (2024.08 – 2025.07)
- University Institutional Review Board (IRB) member (2024.07 – 2025.06)
- Interviewing graduate students for
  - Urban Studies Master program (~20 per year)
  - Computational Social Science Master & Ph.D. program (~40 per year)
- HSS Research and Innovation Committee (2023.11 – 2024.10)

Journal ad-hoc reviewer for:
- International Journal of Disaster Risk Reduction (4);
- Computers, Environment, and Urban System (2);
- Nature Communication (1);
- Advanced Engineering Informatics (1);
- Cities (1);
- Journal of Management in Engineering (1);
- Urban Climate (1);
- Scientific Report (1);
- Disasters (1);
- Architectural Engineering and Design Management (1);
- IEEE Transactions on Computational Social Systems (1);
- International Journal of Disaster Risk Science (1);
- Journal of Computing in Civil Engineering (1);
- World Development Sustainability (1);
- Journal of Aging & Social Policy (1);
- Travel Behavior & Society (1);
- International Conference on Computer Science and Application Engineering (ICCSAE conference) (1).

Professional members at:
- Information Systems in Crisis Response and Management (ISCRAM) Community
- International Association for China Planning (IACP)
- American Society of Civil Engineers (ASCE)

TECHNICAL SKILL

- **Programming**: Python, MATLAB, PyTorch, Apache Kafka & Spark
- **Software**: ArcGIS suites, SAS, CityEngine, AutoCAD, Microsoft suites
- **Language**: English, Mandarin