

MADUSHA SAMMANI MAHA GAMAGE

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 [LinkedIn](#) |  [GitHub](#) |  [Google Scholar](#) |  [Website](#)

I am a Ph.D. Candidate who specializes in geographic information systems (GIS), transportation, disaster response, and spatial data science. My background covers programming, Web-GIS development, spatial analysis, machine learning, and modeling. I combine these techniques to address a single, overarching research objective.


EDUCATION

- **The University of Alabama** May 2026 (expected)
PhD in Geography, GPA: 3.88/4.00 Tuscaloosa, Alabama, USA
 - Dissertation: Simulating wildfire evacuation in wildland-urban interface communities with transient populations
- **SUNY College of Environmental Science and Forestry** 2021
MPS in Geospatial Information Science and Engineering, GPA: 3.86/4.00 Syracuse, New York, USA
 - Capstone project: Crime data analysis around schools in the USA
- **Sabaragamuwa University of Sri Lanka** 2016
BSc in Surveying Sciences, GPA: 3.61/4.00 Ratnapura, Sri Lanka
 - Thesis: Building Detection Using a Combined Fuzzy C-Mean and Morphological Filtering from Landsat-8 Satellite Image

RESEARCH INTEREST

- **Methods:** GIS, remote sensing, systems modeling and integration, spatial analysis, machine learning
- **Focus:** Hazards and transportation



PROFESSIONAL EXPERIENCE

- **The University of Alabama**  May 2024 - Present
Research Assistant Tuscaloosa, Alabama



Project 1: Advancing Understanding of Data-driven Wildfire Evacuation Planning for Communities with Transient Populations in the Wildland-Urban Interface (NSF)

 - Used Java and MATSim to develop wildfire evacuation models for wildland-urban interface communities with transient populations
 - Used FARSITE, MATSim, and Java to integrate fire spread and traffic simulation models to simulate wildfire evacuation
 - Used FARSITE, MATSim, Java, and relevant open OGC standards to develop a Web GIS application for running fire spread and traffic simulation models

Project 2: Geospatial analyses and Web GIS portal (NIH)

 - Used Python and GeoNode to create a geoportal for neighborhood characteristic mapping
- **The University of Alabama**  August 2023 - May 2024
Teaching Assistant Tuscaloosa, Alabama
- **South Dakota State University**  August 2022 - August 2023
Research Assistant Brookings, South Dakota

Project: Advancing Understanding of Data-driven Wildfire Evacuation Planning for Communities with Transient Populations in the Wildland-Urban Interface (NSF)

 - Used ArcGIS Online to develop a research questionnaire to collect data on primary and secondary homeowners behaviors and logistics during wildfires
- **Sabaragamuwa University of Sri Lanka**  April 2016 - September 2021
Assistant Lecturer (Land Surveying & General) Ratnapura, Sri Lanka
 - Provided instruction in Land Surveying and related geospatial subjects (Feb 2021 - Sep 2021).
 - Delivered general academic instruction to undergraduate students (Apr 2016 - May 2018).
- **Survey Department of Sri Lanka**  February 2016 - April 2016
GIS Intern Colombo, Sri Lanka

TEACHING EXPERIENCE

- **The University of Alabama** [🇺🇸]
Teaching Assistant August 2023 - May 2024
Tuscaloosa, Alabama
 - GY 101: Atmospheric Processes and Patterns.
 - Graded assignments and provided constructive feedback to over 90 undergraduate students.
 - Maintained records of student attendance and performance.

- **Sabaragamuwa University of Sri Lanka (in English medium)** [🇱🇰]
Assistant Lecturer in Land Surveying February 2021 - September 2021
Ratnapura, Sri Lanka
 - FC 11544: Land Surveying Practical I (in English)
 - FC 12545: Land Surveying Practical II (in English)
 - FC 21546: Land Surveying Practical III (in English)
 - FC 22547: Land Surveying Practical IV (in English)

- **Sabaragamuwa University of Sri Lanka (in English medium)** [🇱🇰]
Assistant Lecturer April 2016 - May 2018
Ratnapura, Sri Lanka
 - RS 32243: Digital Elevation Modelling (in English)
 - FC 31337: Fundamentals of Photogrammetry (in English)
 - FC 22351: Optical Remote Sensing (in English)
 - Led hands-on classes with ERDAS Imaging Software, ENVI image analysis software, ArcGIS Pro, and MATLAB

- **Center for Open and Distance Learning, Sabaragamuwa University of Sri Lanka** [🇱🇰]
Visiting Instructor November 2017 - June 2018
Ratnapura, Sri Lanka
 - Designed and led hands-on classes on AutoCAD 3D Drawing with Applications
 - Managed a mixed class of high school graduate students and graduate students

PUBLICATIONS

Published Peer-reviewed Journal Articles

- [1] Li, D., **Maha Gamage, M.**, Cao, J., Jiang, Y., Li, Y., Zhang, L., Nguyen, Q. C., Nguyen, T. T., & Siebeneck, L. K. (2025). Mapping the Completeness and Positional Accuracy of OpenStreetMap Road Data at the County Level in the Contiguous United States. *Transactions in GIS*, 29(4), e70077. <https://doi.org/10.1111/tgis.70077>
- [2] **Maha Gamage, M.**, Li, D., Shao, W., Curtin, K. M., Cohen, S., Liu, J., Cao, J., & Li, Y. (2025). A staged wildfire evacuation model for wildlandurban interface communities with transient populations. *International Journal of Disaster Risk Reduction*, 126, 105625. <https://doi.org/10.1016/j.ijdrr.2025.105625>
- [3] **Maha Gamage, M.**, & Welikanna, D. (2016). Building Detection Using a Combined Fuzzy C-Mean and Morphological Filtering from Landsat-8 Satellite Image. *Asian Journal of Geoinformatics*, 16(4).

Article in Progress

- [1] **Maha Gamage, M.**, Li, D., Shao, W., Curtin, K. M., Liu, J., & Li, Y. (2025). An egress assignment algorithm for staged wildfire evacuation in wildland-urban interface communities with transient populations. *Natural Hazards*. [under review]
- [2] **Maha Gamage, M.**, & Li, D. Wildfire evacuation simulation toolkit (WEST): A Web-based platform for modeling wildfire evacuation in communities with transient populations. *Environmental Modeling and Software*. [in preparation]

CONFERENCE PRESENTATIONS

- [1] Li, D., **Maha Gamage, M.**, Cao, J., & Khan, S. N. (2025, March 24-28). Modeling wildfire evacuation travel demand in the big data era: Challenges and opportunities Association of American Geographers Annual Meeting (AAG), Detroit, Michigan, USA.
- [2] **Maha Gamage, M. G.**, & Li, D. (2024, November 23-25). A staged wildfire evacuation model for communities with transient populations in wildland-urban interface in the United States Southeastern Division of the American Association of Geographers (SEDAAG), Greenville, South Carolina, USA.
- [3] **Maha Gamage, M.**, & Welikanna, D. (2016, October 17-21). Building detection using a combined fuzzy c-mean and morphological filtering from Landsat-8 satellite image 37th Asian Conference on Remote Sensing (ACRS), Colombo, Sri Lanka.

HONORS AND AWARDS

- **Fulbright Scholarship**
U.S. Department of State

 - Awarded for academic excellence and leadership potential, enabling graduate study in the United States.
 - A prestigious and highly competitive scholarship funded by the U.S. government.

2018 - 2020

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- **Innovation Award**
Asian Association on Remote Sensing (AARS) Foundation

 - Awarded to young scientists for applying innovative ideas in remote sensing technology and applications.
 - Recognized for the paper titled "Building detection using a combined fuzzy c-mean and morphological filtering from Landsat-8 satellite image."

2016

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- **Mahapola Scholarship**
Mahapola Higher Education Scholarship Trust Fund, Sri Lanka

 - Merit-based scholarship awarded for outstanding results on the G.C.E. Advanced Level examination.
 - Received throughout the entire duration of undergraduate studies.

2011 - 2016

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SKILLS

Programming Languages: Python, R, Java, MATLAB, SQL

Web Technologies: HTML, CSS, JavaScript; Apache HTTP/Tomcat; GeoDjango, GeoNode

Database Systems: PostgreSQL/PostGIS, MySQL

GIS & Remote Sensing: ArcGIS/ArcPy, QGIS, ENVI, ERDAS IMAGINE, Google Earth Engine, machine learning

Agent-Based Modeling: MATSim (traffic simulation)

Fire Spread Modeling: FlamMap, FARSITE

PROFESSIONAL MEMBERSHIPS

- **Southeastern Geographer**, Student membership 2024 - Present
- **American Association of Geographers**, Student membership 2025 - Present

REFERENCES

1. **Dr. Dapeng Li**
Assistant Professor, Department of Geography and the Environment
The University of Alabama
Email: dapeng.li@ua.edu
Phone: (205) 348-2731
Relationship: Dissertation Committee Chair
2. **Dr. Wanyun Shao**
Assistant Professor, Department of Geography and the Environment
The University of Alabama
Email: wshao1@ua.edu
Phone: (205) 348-5047
Relationship: Dissertation committee member
3. **Dr. Quynh Nguyen**
Intramural Investigator, National Institute of Nursing Research (NINR)
National Institutes of Health (NIH)
Email: quynh.nguyen3@nih.gov; quynh.ct@gmail.com
Phone: (503)-309-1098
Relationship: External dissertation committee member