

Debayan Mandal

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RESEARCH INTERESTS

- GIScience and Remote Sensing
- Geospatial Digital Twins
- Geospatial Artificial Intelligence (GeoAI)
- Data Mining and Visualization
- Hydrology and Hydraulics
- Cyber GIScience
- Smart Disaster Resilience
- Big Data and Microdata Analytics
- Social Sensing Analytics
- Computational Urban Informatics

TEACHING INTERESTS

- GIS and Remote Sensing
- Data Science
- Hydrology and Hydraulics
- Machine Learning and Artificial Intelligence
- Geospatial Digital Twins
- Cyber GIScience
- Water Resources Engineering
- Programming (Python, MATLAB, JS)

EDUCATION

- 2021 -2024 **Texas A&M University**, College Station
• **Doctor of Philosophy** in *GEOGRAPHY*
Dissertation: “**Toward Smart and Resilient Communities: Advancing Multiscale Disaster Resilience in the Age of CyberGIS and Digital Twins**”
Advisor: Dr. Lei Zou
- 2019 -2020 **Texas A&M University**, College Station
• **Master of Science** in *CIVIL ENGINEERING*
Sub Discipline - *WATER RESOURCES ENGINEERING*
Dissertation: “**Flash Flood Screening Tool**”
Advisor: Dr. Francisco Olivera
- 2013 -2017 **Vellore Institute of Technology**, Vellore
• **Bachelor of Technology** in *CIVIL ENGINEERING*
Dissertation: “**Quantifying Predictive Uncertainty in Stream Flow Using SWAT**”
Advisor: Dr. Roshan Karan Srivastav

APPOINTMENTS

Academic

- **Assistant Teaching Professor**, School of Geographical Sciences and Urban Planning, **Arizona State University**. (January 2025-present)
 Courses Taught –
 1. Advanced Statistics for Geography and Planning (**GIS 470**):
 - a. Spring’25 – Session B – 51 students
 2. Geographic Information Science I (**GIS 205**):
 - a. Spring’25 – Session C – 49 students
 - b. Summer’25 – Session A – 126 students
 - c. Fall’25 – Session A – 69 students
 3. Pro-Seminar (**GIS 498**): [Independent Research Project guidance for each student]
 - a. Spring’25 – Session B – 8 students
 - b. Summer’25 – Session B – 14 students
 - c. Fall’25 – Session B – 9 students
 4. Geographic Information Science II (**GIS 211**):
 - a. Fall’25 – Session A – 31 students

5. Programming Principles GIS I (**GIS 222**): [I designed this course and released it with smaller cap for testing]
 - a. Fall'25 – Session C – 8 students
- **Graduate Research/Teaching Assistant**, Department of Geography, **Texas A&M University**. (January 2021-December 2025)

Projects –

1. National Academies of Sciences, Engineering, and Medicine (**NASEM**) **Gulf Research Program** (GRP), “Climate-LEAD: Climate effects on localized environmental health disparities in overburdened Texas communities along the Gulf Coast.” (PI: Lei Zou, Geography, TAMU)
2. National Science Foundation (**NSF**) Human Networks and Data Science (**HNDS**), “Collaborative Research: HNDS-I: A Cyberinfrastructure for multiscale human dynamics and resilience (HDR) research.” (PI: Nina Lam, Environmental Sciences, LSU)
3. **TAMU Innovation [X]** Program, “Big data fusion for the development of intelligent geospatial digital twin (IGDT).” (PI: Paul Koola, Ocean Engineering, TAMU)
4. **NSF EAGER**, “EAGER: SAI-E: synchronizing decision-support via human- and social centered digital twin infrastructures for coastal communities.” (PI: Xinyue Ye, Architecture, TAMU)
5. **TAMU-T3** Grant, “Community resilience to technological disasters: an analysis of risks, preparedness, and mitigation.” (PI: Lei Zou, Geography, TAMU)
6. **TAMU Innovation [X]** Program, “Integrated disaster citizen science, education, and engagement: A customized resilience inference measurement (CRIM) framework.” (PI: Lei Zou, Geography, TAMU)

Courses Assisted With –

1. WebGIS – **GEOG 478/678** – 2 semesters
 2. Cartography and Visualization – **GEOG 395** – 1 semester
 3. Geodatabases – **GEOG 391** – 1 semester
 4. Environmental Geoscience – **GEOS 405** – 1 semester
 5. GIS Programming – **GEOG 392** – 1 semester
 6. Principles of Geographic Information Systems – **GEOG 390** – 1 semester
 7. Introduction to Human Geography – **GEOG 201** – 1 semester
 8. Economic Geography – **GEOG 304** – 1 semester
- **Student Technician**, Department of Civil Engineering, **Texas Engineering Experiment Station**. (June-July 2021; April-September 2019)

Projects –

1. Department of Veterans Affairs Veterans Cemetery Grants Program, “Veteran’s legacy geographic information system: citizen science approach to extended memorialization digitally.” (PI: Stacey Lyle, Civil Engineering, TAMU)
 2. TranSET and City of San Antonio, “Assessing the Impacts of Super Storm Flooding in the Transportation Infrastructure, Case Study: San Antonio, Texas” (PI: Marcio H. Giacomoni, Water Resources Engineering, UTSA and Francisco Olivera, Civil Engineering, TAMU)
 3. NSF Human, Disasters, and Built Environment (HDBE) Program, “Reducing the human impacts of flash floods: development of microdata and causal model to inform mitigation and preparedness” (PI: Nasir Gharaibeh, Civil Engineering, TAMU)
- **Undergraduate Researcher**, iSMART Research Lab, Department of Environmental and Water Resources Engineering, VIT University, (2016– 2018)

Project –

“Quantifying Predictive Uncertainty in Stream Flow Using SWAT” (Advisor: Roshan Karan Srivastav, Civil Engineering, VIT)

Industry

- **Student Intern**, Department of Barrage and Canal Design (North, West, and South), **Central Water Commission**, Ministry of Water resources, Government of India, (June-July 2015)
- Project –**
- “Planning of the Multipurpose Subarnarekha Barrage project.” (Director: Rakesh Kashyap)

Professional

- **Director (student)**, **Academy for Future Faculty**, Texas A&M University, (2019-2023)
- Faculty Director:** Dr. Rasheedah Richardson

- **Founding member and Representative for Water Resources Engineering, Civil and Environmental Engineering Graduate Students Association**, Zachry Department of Civil and Environmental Engineering, Texas A&M University, (2019-2020)

Department Head: Dr. Yunlong Zhang

- **Departmental Senator, Graduate & Professional Student Government**, Texas A&M University, (2022-2023)

Director: Dr. Stefanie Baker

- **Departmental Senator, Association of Geography Graduate Students**, Geography Department, Texas A&M University, (2022-2023)

Department Head: Dr. David Cairns

- **Coordinator**, Organizing Committee, **Odessey'15 and '16**, VIT University, Vellore (2015-2016)

Chancellor: Dr. Govindasamy Viswanathan

- **Senior Editor, Hindu Education Plus Club (Newspaper)**, School of Social Sciences and Languages, VIT University, Vellore (2015-2016)

Director: Dr. Arati Kumari

RESEARCH EXPERIENCE:

Graduate Student

- | | |
|-----------|---|
| 2024 | <ul style="list-style-type: none"> ○ <i>Strengthening Resilience in 4D: Geospatial Digital Twins for Navigating Urban Flood Dynamics</i>
GEAR Lab, Texas A&M University, Texas, USA <ul style="list-style-type: none"> • Developing a hyperlocal digital twin for informing local stakeholders of the cascading effects of fluvial and pluvial flooding in Galveston City, Texas, for varied rainfall scenarios, for evaluating infrastructural interventions (Sponge City) and real-time flood forecasting. Guide – Dr. Lei Zou, Department of Geography, Texas A&M University (TAMU) |
| 2022-2023 | <ul style="list-style-type: none"> ○ <i>PRIME: A CyberGIS Platform for Resilience Inference Measurement and Enhancement</i>
GEAR Lab, Texas A&M University, Texas, USA <ul style="list-style-type: none"> • Developing an empirically validated disaster resilience model designed for multi-scale community resilience assessment and the identification of influential socioeconomic factors and implementing it in the high-performance computing platform Guide – Dr. Lei Zou, Department of Geography, TAMU |
| 2023 | <ul style="list-style-type: none"> ○ <i>Characterizing the Spatiotemporal Changes of Wildland Urban Interface in the United States</i>
University Consortium for Atmospheric Research, Colorado, USA <ul style="list-style-type: none"> • Creating a cyberinfrastructure for a high spatiotemporal resolution mapping of Wildland Urban Interface throughout the CONUS. (Published Notebook in I-GUIDE) Guide – Dr. Eric Jensen, Division of Hydrological Sciences, Desert Research Institute (DRI) |
| 2021 | <ul style="list-style-type: none"> ○ <i>Veteran's legacy geographic information system: citizen science approach to extended memorialization digitally</i>
Texas A&M University, Texas, USA <ul style="list-style-type: none"> • Developing VR-based headstone environment and experience/history sharing platform for the purpose of memorialization of American Veterans Guide – Dr. Stacey Lyle, Zachry Department of Civil and Environmental Engineering, TAMU |
| 2021-2022 | <ul style="list-style-type: none"> ○ <i>Algorithmic Uncertainties in Geolocating Social Media Data for Disaster Management</i>
GEAR Lab, Texas A&M University, Texas, USA <ul style="list-style-type: none"> • Discerning algorithmic uncertainties that occur if the three geolocating methods of social media data are used interchangeably in various formats. (Paper published) Guide – Dr. Lei Zou, Department of Geography, TAMU |
| 2019-2020 | <ul style="list-style-type: none"> ○ <i>Flash Flood Screening Tool</i>
Texas A&M University, Texas, USA <ul style="list-style-type: none"> • Developing screening GIS Tool for outlet points which would be more prone to flash flood. Guide – Dr. Francisco Olivera, Zachry Department of Civil and Environmental Engineering, TAMU |

Undergraduate Student

- 2017
 - ***Quantifying Predictive Uncertainty in Stream Flow Using SWAT***
iSMART Research Lab, VIT University, Vellore, India
 - Designed watershed models to calculate outflow and measure uncertainties in a comparative format.**Guide** – Dr. Roshan Karan Srivastav, Department of Environmental and Water Resources Engineering, Vellore Institute of Technology (VIT)
- 2015
 - ***Calculation of return period of rainfall and subsequent floods in Burhi Gandak river, Bihar***
VIT University, Vellore, India
 - Calculated the return period of rainfall and predicted floods due to it using last 10 years data.**Guide** – Dr. Jagdeesh P, Department of Environmental and Water Resources Engineering, VIT
- 2014-2016
 - ***Vernacular Architecture as an Idiom for Promoting Cultural Continuity in South Asia***
VIT University, Vellore, India
 - Comparative study of ancient city structure of different topographical locations and application of their architecture in modern day cities. (Paper published)**Guide** – Dr. Satyajit Ghosh, Department of Thermal and Energy Engineering, VIT

AWARDS

- **CaGIS International Travel Grant**, to participate in the **2025 International Cartographic Conference** from August 18-22 in **Vancouver, British Columbia**.
- **Mr. and Mrs. Kenneth P. Pipes Endowed Scholarship** in Geosciences, College of Art & Sciences, Texas A&M University.
- **Rising Geospatial Data Scientist Award, I-GUIDE 2024 Virtual Poster Competition**, Data-Intensive Convergence Science: FAIR Geospatial Data for Sustainability Research.
- **Jeanne X. Kasperson Award, Hazards, Risk, and Disasters Specialty Group, American Association of Geographers 2024** conference.
- **CHI Educational Grant, 2023**, Computational Hydraulics International, Ontario, Canada. **(\$2400)**
- Selected for **I-GUIDE (Institute for Geospatial Understanding through an Integrative Discovery Environment) Summer School, Convergence Science in Action, August 2023, UCAR (University Consortium for Atmospheric Research), Boulder, Colorado**. (*It is an NSF-funded inter-institutional research organization dedicated to fostering development and innovation in geospatial convergence science. Beginning in 2023, I-GUIDE has hosted the I-GUIDE Summer School which brings together graduate students and early career scholars from across the United States for a week-long intensive team project-based training and personal development course focused on engaging and empowering the next generation of leaders in geospatial data science and convergent problem solving. Acceptance into summer school is a highly competitive and selective process.*)
- **Research and Presentation Travel Award, 2023**, Graduate & Professional School, Texas A&M University
- **Second Position in Texas GIS Day 2023**, Texas A&M University
- **Travel Grant**, Department of Geography, Academic Year **2022-2023**.
- **Student Assistantship, AutoCarto 2022** conference
- **Travel Funding (USNC)** to participate in the **30th International Cartographic Conference, Italy**, December 14-18, 2021.
- **Departmental Fellowship for Civil Engineering**, Texas A&M University, for Spring **2021**.
- **Texas Public Education Grant**, Academic Year **2019-2020**.
- **Departmental Fellowship for Civil Engineering**, Texas A&M University, for the Year **2019**.
- **Featured in a book** about inspiring story for budding engineers, **Shape-IT** (Dr. Subramani R, Ms. Vijayanthi S), **2017** (ISBN: - 978-1-946869-16-6)
- **Second Position for Quiz** during Water Conservation Week, VIT University, **2017**.
- **Undergraduate Mentoring Program** mentee, **American Geophysical Union**, December **2016**. (*Fifty Undergraduate Students, among those who attended the meeting, were given the opportunity to be mentored by the senior presenters from a similar field.*)

PUBLICATIONS

Notes:

- IF indicates the latest impact factor of the journal
- Total Publications:
 - o Journal Articles – published & accepted: 10, in review/preparation: 2
 - o Book Chapters & Reports – published & accepted: 2, in preparation: 1
- Citations (according to Google Scholar Profile):
 - o Total: 106
 - o h-Index: 4
 - o i10-Index: 3

Published and Accepted

- **Mandal, Debayan**, Lei Zou, Joynal Abedin, Bing Zhou, Mingzheng Yang, Binbin Lin, and Heng Cai. 2023. "Algorithmic Uncertainties in Geolocating Social Media Data for Disaster Management." *Cartography and Geographic Information Science*. (IF: 2.6) <https://doi.org/10.1080/15230406.2023.2286385>.
- **Mandal, Debayan**, Lei Zou, Rohan Singh Wilkho, Joynal Abedin, Bing Zhou, Heng Cai, Furqan Baig, Nasir Gharaibeh, Nina Lam. 2024. "PRIME: A CyberGIS platform for resilience inference measurement and enhancement." *Computers, Environment and Urban Systems*. (IF: 8.3) <https://doi.org/10.1016/j.compenvurbsys.2024.102197>
- Binbin Lin, Lei Zou, Mingzheng Yang, Bing Zhou, **Debayan Mandal**, Joynal Abedin, Heng Cai, Nina Lam. "Understanding human-COVID-19 dynamics using geospatial big data: a systematic literature review." *Annals of GIS*. (IF: 3.9) <https://doi.org/10.1080/19475683.2024.2418584>
- Bing Zhou, Lei Zou, Mingzheng Yang, Binbin Lin, **Debayan Mandal**, Joynal Abedin, Heng Cai, Shuiwang Ji, Andrew Klein, Nasir Gharaibeh. "Rapid Disaster Response and Damage Estimation with Social Media and Pretrained Large Language Models: Insights from Multiple Hurricanes." *Annals of the American Association of Geographers*. (IF: 4.4) **(Accepted for Publication)**
- Abedin, Joynal, Lei Zou, Mingzheng Yang, Robert Rohli, **Debayan Mandal**, Yi Qiang, Humaira Akter, Bing Zhou, Binbin Lin, B., Cai, H. "Deciphering spatial-temporal dynamics of flood exposure in the United States." *Sustainable Cities and Society*. (IF: 11.7) <https://doi.org/10.1016/j.scs.2024.105444>
- Zhou, Bing, Lei Zou, Mingzheng Yang, Binbin Lin, **Debayan Mandal**, Joynal Abedin. "Overlooked voices under lockdown: mapping humanitarian needs in 2022 Shanghai COVID-19 outbreak." *Cartography and Geographic Information Science*. (IF: 2.5) <https://doi.org/10.1080/15230406.2024.2314547>
- Zhou, Bing, Lei Zou, Ali Mostafavi, Binbin Lin, Mingzheng Yang, Nasir Gharaibeh, Heng Cai, Joynal Abedin, and **Debayan Mandal**. 2022. "VictimFinder: Harvesting Rescue Requests in Disaster Response from Social Media with BERT." *Computers, Environment and Urban Systems* (IF: 6.8) <https://doi.org/10.1016/j.compenvurbsys.2022.101824>.
- Lin, Binbin, Lei Zou, Nick Duffield, Ali Mostafavi, Heng Cai, Bing Zhou, Jian Tao, Mingzheng Yang, **Debayan Mandal**, and Joynal Abedin. 2022. "Revealing the Linguistic and Geographical Disparities of Public Awareness to Covid-19 Outbreak through Social Media." *International Journal of Digital Earth*. (IF: 5.1) <https://doi.org/10.1080/17538947.2022.2070677>.
- Yang, Mingzheng, Lei Zou, Heng Cai, Yi Qiang, Binbin Lin, Bing Zhou, Joynal Abedin, and **Debayan Mandal**. 2022. "Spatial-Temporal Land Loss Modeling and Simulation in a Vulnerable Coast: A Case Study in Coastal Louisiana." *Remote Sensing*. (IF: 5.0) <https://doi.org/10.3390/rs14040896>.
- Ghosh, Satyajit, Akash Goenka, Manish Deo, and **Debayan Mandal**. 2017. "Vernacular Architecture as an Idiom for Promoting Cultural Continuity in South Asia." *AI & Society Journal*. (IF: 3.0) <https://doi.org/10.1007/s00146-017-0754-z>.

In Review/Preprints

- **Mandal, Debayan**, Zou, Lei, Wadhwa, Abhinav, Wilkho, Rohan Singh, Cai, Zhenhang, Zhou, Bing, Ye, Xinyue, Newman, Galen, Gharaibeh, Nasir, & Güneralp, Burak. 2025. "FlowsDT: A Geospatial Digital Twin for Navigating Urban Flood Dynamics". arXiv. <https://doi.org/10.48550/ARXIV.2507.08850>

BOOK CHAPTERS

- Zou, Lei, Ali Mostafavi, Bing Zhou, Binbin Lin, **Debayan Mandal**, Mingzheng Yang, Joynal Abedin, and Heng Cai. 2023. "GeoAI for Disaster Response." In *Handbook of Geospatial Artificial Intelligence*, edited by Song Gao, Yingjie Hu, and Wenwen Li, 1st ed., 287–304. CRC Press. <https://doi.org/10.1201/9781003308423-14>.
- Joseph, Nitu, and **Debayan Mandal**. 2018. "Comparative Study of Predictive Models in Microbial Induced Corrosion." In *Machine Learning and IoT: A Biological Perspective*, 9781138492691. Routledge, Taylor and Francis Group. Publication Date: 19th July 2018. <https://doi.org/10.1201/9781351029940-6>.

MENTORING EXPERIENCE:

Assistant Teaching Professorship

- Geographic Info Science I (GIS 205): - Fall 2025, Summer 2025, Spring 2025.
- Geographic Info Science II (GIS 211): - Fall 2025.
- Programming Principles GIS I (GIS 222): - Fall 2025.
- Pro-Seminar (GIS 498): - Fall 2025, Summer 2025, Spring 2025.
- Adv Stats Geography & Planning (GIS 470): - Spring 2025.

Teaching Assistantships

- WebGIS (Spring 2022)
- WebGIS (Spring 2023)
- GIS Programming (Fall 2023)
- Introduction to Human Geography (Spring 2024)
- Environmental Geoscience (Spring 2024)
- Cartography and Visualization (Fall 2022)
- Geodatabases (Fall 2023)
- WebGIS (Fall 2023)
- Economic Geography (Spring 2024)

Guest Lectures

- **Customized Disaster Risk Assessment**, Frontiers in GIScience, 2021
- **Uses and Misuses of Social Sensing**, AAG Summer Workshop Series - Spatial data science for social media analytics, 2022
- **Introduction to CyberGIS**, Frontiers in GIScience, 2023
- **Introduction to Digital Twin City**, Frontiers in GIScience, 2023
- **Vector Data**, Principles in GIScience, 2023
- **Attribute Query**, Principles in GIScience, 2023
- **Introduction to CyberGIS**, Frontiers in GIScience, 2024
- **Introduction to Digital Twin City**, Frontiers in GIScience, 2024
- **Attribute Query**, Principles in GIScience, 2024

Student Organizations

- Academy for Future Faculty**, Centre for Teaching Excellence
2019-2023 Texas A&M University, Texas, USA
Role – Director (student)
 - Lead a total of 18 team members to facilitate this program for approximately 821 – 1258 participants per year for four years. Arranged over nine events per semester and intrinsically involved in various outreach efforts (*New Graduate Student Orientation, Post-Doctoral Orientation, Life Sciences Symposium, Social media*). Facilitated the graduation of 360 members in this two-year program. Created materials for seamless induction of new committee members and fostered a connected community after completion.**Guide** – Dr. Rasheedah Richardson, Associate Director, CTE
- Civil and Environmental Engineering Graduate Students Association**, Zachry Department of Civil and Environmental Engineering
2019-2020 Texas A&M University, Texas, USA
Role – Water Resource Engineering Representative
 - Founding Member for leading the advocacy efforts for the Civil Engineering students to the department. Organized Professional and Technical Skill development workshop, and social meetings for graduate students. Advocated for increased remunerations for graders and designed outreach websites/media.**Department Head:** Dr. Yunlong Zhang, Associate Department Head, Civil and Environmental Engineering
- Graduate & Professional Student Government**, Student Life
2022-2023 Texas A&M University, Texas, USA
Role – Departmental Senator
 - Advocated to the university President and Interim Dean as departmental representative about student concerns about STEM status, College merger, Grants, and Teaching Assistantships.

Served in the Scholarship committee and taken part in multiple bill discussions during the period of service.

Director: Dr. Stefanie Baker, Student Life

2022-2023 **Association of Geography Graduate Students**, Geography Department
Texas A&M University, Texas, USA

Role – Departmental Senator

- Involved in multiple meetings to discuss methods and ways to improve graduate life of geography student body. Voiced confusions and concerns of the students in GPSG meetings that arose due to the creation of College of Art and Sciences.

Department Head: Dr. David Cairns, Department Head, Geography

PRESENTATIONS

Notes:

- Asterisks (*) denote presenter.

- Total:

o Invited Panelists: 1

o Selected Conference Presentations: 35 (Self-presented:19)

- **Mandal, Debayan***, Lei Zou, Abhinav Wadhwa. “Strengthening Resilience in 4D: Geospatial Digital Twins for Navigating Urban Flood Dynamics.” **International Cartographic Conference 2025**, Vancouver, British Columbia, Canada.
- **Mandal, Debayan***, Lei Zou, Rohan Singh Wilkho, Joynal Abedin, Bing Zhou, Heng Cai, Furqan Baig. “Enhancing disaster resilience in the cyberinfrastructure era: CyberGIS for customizable resilience measurement and improvement.” **IGUIDE Forum 2024**, Jackson, Wyoming.
- **Mandal, Debayan***, Rohan Singh Wilkho, Abhinav Wadhwa, Lei Zou. “Strengthening Resilience in 4D: Geospatial Digital Twins for Navigating Urban Flood Dynamics.” **IGUIDE Forum 2024**, Jackson, Wyoming.
- Zou, Lei*, **Debayan Mandal**. “Strengthening Resilience in 4D: Geospatial Digital Twins for Navigating Urban Flood Dynamics.” **AsiaCarto 2024**, Hong Kong.
- Zou, Lei*, **Debayan Mandal**. “Strengthening Resilience in 4D: Geospatial Digital Twins for Navigating Urban Flood Dynamics.” **Joint Meeting of SWAAG & AGX 2024**, San Marco.
- **Mandal, Debayan***, Lei Zou, Rohan Singh Wilkho, Joynal Abedin, Bing Zhou, Heng Cai, Furqan Baig, Nasir Gharaibeh. “PRIME: A CyberGIS Platform for Resilience Inference Measurement and Enhancement.” **IGUIDE 2024 Virtual Poster Competition**. Data-Intensive Convergence Science: FAIR Geospatial Data for Sustainability Research. **Rising Geospatial Data Scientist Award**.
- **Mandal, Debayan***, Lei Zou, Rohan Singh Wilkho, Joynal Abedin, Bing Zhou, Heng Cai, Furqan Baig. “Enhancing disaster resilience in the cyberinfrastructure era: CyberGIS for customizable resilience measurement and improvement.” **AAG 2024 Annual Meeting**, Honolulu, Hawaii. **Jeanne X. Kaspersen Award**.
- **Mandal, Debayan***, Lei Zou. “4D Resilience: Geospatial Digital Twins for Navigating Urban Flood Dynamics.” **AAG 2024 Annual Meeting**, Honolulu, Hawaii.
- Zou, Lei* and **Debayan Mandal**. 2024. “Strengthening Resilience in 4D: Geospatial Digital Twins for Navigating Urban Flood Dynamics.” **AsiaCarto2024**, Hong Kong. (upcoming)
- Lin, Binbin*, Lei Zou, Mingzheng Yang, M., Bing Zhou, **Debayan Mandal**, Joynal Abedin. “Understanding human-COVID-19 dynamics using Geospatial Big Data: a systematic literature review.” **AAG 2024 Annual Meeting**, Honolulu, Hawaii.
- Joynal Abedin*, Lei Zou, **Debayan Mandal**, Mingzheng Yang, Humaira Akter, Bing Zhou, Binbin Lin. Deciphering the dynamics of flood risks: a comprehensive geospatial and temporal assessment in the contiguous United States. **AAG 2024 Annual Meeting**, Honolulu, Hawaii.
- **Mandal, Debayan***, Lei Zou, Rohan Singh Wilkho, Joynal Abedin, Bing Zhou, and Heng Cai. 2023. “Empowering Disaster Resilience through Cyberinfrastructure: A Multi-Scale Approach to Visualization and Management.” **AGU 2023 Fall Meeting**, San Francisco, California. (Lightning Talk and Poster)
- Zou, Lei, Bing Zhou, Binbin Lin, **Debayan Mandal***, Mingzheng Yang, Joynal Abedin, and Heng Cai. 2023. “Smart Disaster Response with GeoAI and Big Data.” **AGU 2023 Fall Meeting**, San Francisco.

- **Mandal, Debayan***, Lei Zou, Rohan Singh Wilkho. Empowering disaster resilience through cyberinfrastructure: a CyberGIS for multi-scale visualization and management of urban resilience to climatic hazards. **Urban Climate Solutions Workshop 2023**, College Station, Texas.
- **Mandal, Debayan***, Lei Zou, Stacey Lyle. "Veterans legacy geographic information system: citizen science approach to extended memorialization digitally." **WWII Never Forgotten Conference 2023**. College Station, Texas. (Invited Panelist)
- **Mandal, Debayan***, Lei Zou, Heng Cai, Joynal Abedin, Mingzheng Yang, Bing Zhou, and Binbin Lin. **2023**. "Evolving Geographical Disparities of Community Disaster Resilience in the United States." **AAG 2023 Annual Meeting**, Denver, Colorado.
- Abedin, Joynal*, Lei Zou, Heng Cai, Mingzheng Yang, Humaira Akter, Debayan Mandal, Binbin Lin, Bing Zhou. "Deciphering spatial-temporal dynamics of flood exposure in the United States." **AAG 2023 Annual Meeting**, Denver, Colorado. **Jeanne X. Kaspersen Award**.
- Zhou, Bing*, Lei Zou, Binbin Lin, Mingzheng Yang, **Debayan Mandal**, Joynal Abedin, Heng Cai. "Social media reactions reveal spatial and temporal discrepancies during hurricanes." **AAG 2023 Annual Meeting**, Denver, Colorado.
- Zou, Lei*, Heng Cai, **Debayan Mandal**, Joynal Abedin, Mingzheng Yang, Binbin Lin, and Bing Zhou. **2022**. "Empowering Smart Disaster Response with Social Media and GeoAI." **AGU 2022 Fall Meeting**, Chicago, Illinois. (Poster)
- Abedin, Joynal*, Lei Zou, Heng Cai, Mingzheng Yang*, Humaira Akter, **Debayan Mandal**, Bing Zhou, Binbin Lin. "Spatial-temporal changes of flood exposure in the United States." **AGU 2022 Fall Meeting**, Chicago, Illinois.
- Yang, Mingzheng*, Lei Zou, Binbin Lin, Bing Zhou, Joynal Abedin, **Debayan Mandal**. "Simulating coastal land losses and gains using neighborhood effect optimized convolutional neural networks (NeoCNN) and cellular automata." **AGU 2022 Fall Meeting**, Chicago, Illinois. (Poster)
- **Mandal, Debayan***, Lei Zou, Binbin Lin, Mingzheng Yang, Joynal Abedin, Bing Zhou. "Evolving geographical disparities of community disaster resilience in the United States." **AGU 2022 Fall Meeting**, Chicago, Illinois. (Poster)
- **Mandal, Debayan***, Lei Zou, Heng Cai, Binbin Lin, Bing Zhou, Joynal Abedin, Mingzheng Yang. "Uncertainties in geolocating social media data for disaster management." **AutoCarto 2022**, Redlands, California. **Student Assistantship**.
- Zou, Lei*, Bing Zhou, Binbin Lin, **Debayan Mandal**, Heng Cai, Mingzheng Yang, Joynal Abedin. "Empowering disaster response with social media and GeoAI: Opportunities and Challenges." **AutoCarto 2022**, Redlands, California.
- Zhou, Bing*, Lei Zou, Mingzheng Yang, Binbin Lin, **Debayan Mandal**. "Overlooked voices under strict lockdown: mapping humanitarian needs in 2022 Shanghai COVID-19 Outbreak." **AutoCarto 2022**, Redlands, California. **Student Assistantship**.
- Zou, Lei*, Bing Zhou, Nasir Gharaibeh, Michelle Meyer, Heng Cai, Binbin Lin, **Debayan Mandal**. "VictimFinder: harvesting disaster rescue requests from social media with AI." 2nd Disaster PRIMR Conference, Danton, Texas.
- **Mandal, Debayan***, Binbin Lin, Bing Zhou, Heng Cai, Joynal Abedin, Mingzheng Yang, and Lei Zou. **2022**. "A Modular Machine Learning Platform for Resilience Inference Measurement and Enhancement. (PRIME)" **AAG 2022 Annual Meeting**, Virtual, 26 February 2022.
- Abedin, Joynal*, Lei Zou, Heng Cai, **Debayan Mandal**, Binbin Lin, Mingzheng Yang, Bing Zhou, Tarik Brown. Spatial-temporal changes of flood risk in the United States. **AAG 2022 Annual Meeting**, Virtual.
- Yang, Mingzheng*, Lei Zou, Binbin Lin, Bing Zhou, Joynal Abedin, **Debayan Mandal**. "Simulating land loss and land gain by integrating neighborhood effect and deep learning with cellular automata. **AAG 2022 Annual Meeting**, Virtual.
- Lin, Binbin*, Bing Zou, Heng Cai, Bing Zhou, Mingzheng Yang, **Debayan Mandal**, Joynal Abedin. "Revealing the linguistic and geographic disparities of public awareness to Covid-19 outbreak through social media." **AAG 2022 Annual Meeting**, Virtual.
- Cai, Heng*, Binbin Lin, Lei Zou, **Debayan Mandal**, Bing Zhou. "Community awareness and sentiment inequalities during Winter Storm Uri." **AAG 2022 Annual Meeting**, Virtual.

- Chordia, Jay*, Roshan Srivastav, and **Debayan Mandal**. “Quantification of Streamflow Uncertainty in SWAT Models: Role of Hydroclimatic Data Sources.” **AGU 2021 Fall Meeting**, San Francisco, California.
- **Mandal, Debayan***, Binbin Lin, Bing Zhou, Heng Cai, Joynal Abedin, Mingzheng Yang, and Lei Zou. **2021**. “Visualizing and Evaluating the Geocoding Uncertainty in Social Sensing for Disaster Management.” **International Cartographic Conference**, Florence, Italy, 16 December 2021.
- **Mandal, Debayan***, Venkatesh B, and Roshan Srivastav. 2017. “Impact of Climate Variability and Land-use Changes on River Flow Characteristics – A Case Study of the San Jacinto River Basin.” **AOGS 2017 Annual Meeting**, Singapore, 11 August 2017.
- **Mandal, Debayan***, Nikhil Bhatia, and Roshan Srivastav. 2016. “Quantifying the Uncertainty in Streamflow Predictions Using SWAT for Brazos–Colorado Coastal Watershed, Texas.” **AGU Fall Meeting**, San Francisco, 15 December 2016.

TECHNICAL SKILLS

ArcGIS software, STAADPro software, AutoCAD software, Ecotect software, MATLAB software, Python language, ENVImet software, HTML, CSS, JavaScript, Node.js, MongoDB, PCSWMM Software

SERVICE

- **American Association of Geographers:**
 - Session Organizer/Chair:
 - Symposium on Human Dynamics Research: Geospatial Digital Twins (GDT) for Sustainable Planning and Management, 2024.
 - Symposium on Human Dynamics Research: Emerging Disaster Vulnerability, Risk, and Resilience Modeling I & II, 2023
 - Student Volunteer, 2024
 - Student Member, 2021– 2024.
- **Sustainable Cities and Society (IF:11.7):**
 - Invited Review, 2024
- **American Geophysical Union:**
 - Session Organizer/Chair:
 - Big Earth Data for Disaster Risk Reduction (Oral, Online Poster, and Poster), 2022.
 - Student Member, 2016 – present.
- **Geoinformatics (IF:2.2):**
 - Invited Review, 2022
- **Cartographic and Geographic Information Society:**
 - Student Member, 2021– 2022.
- **Asia Oceania Geosciences Society:**
 - Student Member, 2017– 2019.
- **American Society of Civil Engineers**, VIT University branch:
 - Student Member, 2014 – 2017.
- **Juvenile Care**, VIT University branch:
 - Student Volunteer, 2015 – 2016.
- **Asia Oceania Geosciences Society:**
 - Student Volunteer, Singapore, Annual Meeting 2017.
 - Student Member, 2017-2018.
- **Student Research Week**, Texas A&M University, Texas:
 - Student Volunteer, 2019.
- **AutoCarto**, Redlands:
 - Student Assistant, 2022.

LANGUAGES

Bengali (native fluency), Hindi (near-native fluency), English (advanced proficiency), German (beginner level proficiency).