

Natalie Coleman

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EDUCATION

Texas A&M University (Aug. 2020 – Present , GPR: 4.00)

Doctorate in Civil Engineering under the Department of Construction Management

- Certificate in Environmental Hazard Management

Texas A&M University (Aug. 2016 – Aug. 2020, GPR:3.88, Magna Cum Laude)

Bachelors in Civil Engineering

- Minor in Hispanic Studies, Certificate in International Engineering
- Capstones: Undergraduate Research Scholar and Undergraduate Leadership Scholar

RESEARCH EMPLOYMENT

Urban Resilience. AI at Texas A&M University, Dr. Ali Mostafavi

Graduate Research Assistant

Aug. 2020 – Present

- Current research is to create equitable infrastructure systems by integrating big data into the recovery process and measuring recovery trajectories in different populations
- Handle human mobility, location-intelligence, points-of-interests, and flooding in data analysis
- Knowledge in data science such as unsupervised learning, regression, and spatial statistics
- Experience in collecting perishable outage data and relevant media data for hazard events
- Mentored 20 undergraduate students and supervised 2 masters students in topics of disaster literature as well as technical skills of Python coding

Undergraduate Research Assistant

Mar. 2018 – Aug. 2020

- Computed exploratory analysis, regression modeling, and spatial clustering, on various collected datasets including +2000 survey respondents, national online databases, and human mobility
- Acquired knowledge in creating and distributing quantitative survey for research study
- Received the prestigious Undergraduate Summer Research Grant (2019) to complete a research project on household susceptibility to hazard-induced infrastructure service disruptions
- Awarded Outstanding Undergraduate Thesis about the risk and social inequalities in the power, transportation, communication, and water outages during Hurricane Harvey

Coastal Flood Reduction Program, Dr. Yoonjeong Lee

Feb. 2022 – July. 2022

- Selected in international collaboration with NSF Partnerships for International Research and Education (PIRE) at Texas A&M Galveston and TU Delft, Netherlands
- Developed a user-friendly coding program to calculate the effectiveness of flood proofing given building conditions, flood parameters, and cost

Hydraulics Engineering Department at Pontificia Universidad Catolica de Chile, Dr. Cristian Escauriaza

Undergraduate Research Assistant

Jun. 2018 – Aug. 2018

- Compiled a bilingual information database for a research team investigating tidal energy potential
- Analyzed technical reports and satellite images to refine simulations and maps

RELEVANT LEADERSHIP AND COMMUNITY OUTREACH

Bill Anderson Fund (BAF) Fellow, Secretary

Sept. 2021 – Present

- Develop fellowship and professionalism in hazard and disaster research, practice, and outreach

- Committee Member of the Lightning Talks workshop for the 2022 Natural Hazards Conference

Women in Science and Engineering (WISE), Scholarship Chair and Volunteer Feb. 2021 – Present

- Manage the Ethel Ashworth-Tsutsui and Susan M. Arseven scholarship award processes by coordinating an in-person ceremony and reviewing +200 applications
- Present civil engineering and disaster research to K-12 students and national teacher conferences
- Assist in organizing and leading panel discussions for the annual Susan M. Arseven Conference

Academy of Undergraduate Researchers Across Texas, TAMU Representative Aug. 2019 – Present

- Advocate for undergraduate research through the Council for Undergraduate Research Week
- Represent LAUNCH and Undergraduate Research Ambassadors in an elite partnership between TAMU and UT to promote undergraduate research and professional development

Disaster PRIMR Conference, TAMU Student Representative May. 2020 – Feb. 2021

- Invited to act as a graduate student representative in the steering committee for a conference of 210+ attendees from universities, non-profit organizations, and private entities
- Led panel discussion focused on the next generation for disaster researchers

Undergraduate Research Ambassador, TAMU Representative May. 2019 – Aug. 2020

- Promoted undergraduate research by presenting in workshops, symposiums, and recruitment events
- Advised individual students interested in research opportunities, funding, and fellowships

ASPIRE Living Learning Community, Executive and Mentoring Officer May. 2017 – May. 2020

- Matched and fostered +100 mentor-mentee relationships of Terry and Haynes scholars through trainings, socials, and service events to assist in the transition to the university lifestyle
- Focused on discussing academic and professional topics such as study habits, job searching, money management skills, and mental and physical wellness with students

GRANTS & FELLOWSHIPS

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| • NSF Travel Grant, NHERI Summer Institute | Jun. 2023 |
| • P.E.O. Scholars Award, P.E.O International | Apr. 2023 |
| • NSF Partnerships for International Research and Education (PIRE) | Feb. 2022 |
| • NSF Graduate Research Fellowship Program, NSF | Apr. 2020 |
| • Aviles- Johnson Graduate Fellowship, Texas A&M University | Apr. 2020 |
| • Undergraduate Summer Research Grant, Texas A&M University | May. 2019 |

AWARDS

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| • League of Legends LBJ High School Alumni Award, UISD District | Mar. 2023 |
| • Catalyzing Advocacy in Science and Engineering Workshop, Texas A&M University | Feb. 2023 |
| • Hispanic Scholarship Fund Fellow, | June. 2022 |
| • SEC Emerging Scholars Program, Texas A&M University | Sept. 2021 |
| • 1 st Place in Poster Presentation, Resilience Rising Symposium | Sept. 2019 |
| • 3 rd Place in Poster Session A, Undergraduate Summer Research Grant | Aug. 2019 |
| • Maroon & White Leadership Fellow, Inducted Fellow | May. 2019 |
| • Outstanding Thesis Award in STEM, Undergraduate Research Scholars | Apr. 2019 |
| • Sigma Xi Interdisciplinary Award, Student Research Week | Mar. 2019 |
| • Terry Foundation Traditional Scholar, Terry Foundation | Aug. 2016 |
| • Engineering Honors Program, Texas A&M University | Aug. 2016 |

ADDITIONAL EMPLOYMENT

- Hullabaloo-U First Year Experience at Texas A&M University, Peer Mentor Aug. 2019 – May. 2020
- University Writing Center at Texas A&M University, Writing Consultant Aug. 2017 – May. 2018

MENTORING CERTIFICATES AND PROGRAMMING SKILLS

- Academy of Future Faculty, Completed
- G.R.A.D. Aggies Professional Development Certificate, Intermediate Level
- Graduate Mentoring Academy, Fellow and Facilitator
- Advanced Mentor Learning Certification Level III, CRLA International Tutoring Level I
- Proficient knowledge in Python, RStudio, ArcMap, GeoDa, AutoCAD Civil 3D
- Analysis with data companies such as SafeGraph, Streetlight, Mapbox, Cuebiq/ Spectus, Waze, Empirical Survey Data, and open-source data such as US Census, FEMA, 311-Calls, Land Use
- Bilingual in English and Spanish

ACCEPTED AND PUBLISHED PAPERS

- **N. Coleman**, C. Liu, Y. Zhao, A. Mostafavi (2022) “Lifestyle Pattern Analysis Unveils Recovery Trajectories of Communities Impacted by Disasters,” *Humanities and Social Sciences Communication*, Accepted
- **N. Coleman**, A. Esmalian, C. Lee, E. Gonzales, P. Koirala, A. Mostafavi (2022), “Energy Inequality in Climate Hazards: Empirical Evidence of Social and Spatial Disparities in Managed and Hazard-Induced Power Outages,” *Sustainable Cities and Society*, Published
- A. Esmalian, **N. Coleman**, F. Yuan, X. Xiao, A. Mostafavi (2022) “Equitable Access to Grocery Stores During Disasters Using Location-based Data,” *Scientific Reports*, Published
- F. Yuan, C. Fan, H. Farahmand, **N. Coleman**, A. Esmalian, C. Lee, F. Patrascu, C. Zhang, S. Dong, A. Mostafavi (2022) “Smart Flood Resilience: Harnessing Community-Scale Big Data for Predictive Flood Risk Monitoring, Rapid Impact Assessment, and Situational Awareness,” *Environmental Research: Infrastructure and Sustainability*, Published
- **N. Coleman**, X. Gao, J. DeLeon (2022) “Human Activity and Mobility Data Reveal Disparities in Exposure Risk Reduction Indicators among Socially Vulnerable Populations during COVID-19 ,” *Scientific Reports*, Published
- A. Esmalian, **N. Coleman**, S. Yu, M. Koceich, M. Esparza, A. Mostafavi (2021) “Disruption Tolerance Index: An Integrated Index for Determining the Susceptibility to Infrastructure Service Disruptions,” *International Journal of Risk Assessment and Management*, Published
- A. Esmalian, S. Dong, **N. Coleman**, A. Mostafavi (2021) “Determinants of Risk Disparity due to Infrastructure Service Losses in Disasters: A Household Service Gap Model,” *Risk Analysis*, Published
- C. Podesta, **N. Coleman**, A. Esmalian, F. Yuan, A. Mostafavi (2021) “Quantifying Community Resilience Based on Fluctuations in Visits to Point-of-Interest from Digital Trace Data,” *Royal Society Interface*, Published
- L. Qingchun, Z. Tang, **N. Coleman**, A. Mostafavi (2021) “Detecting Early-warning signals in Time Series of Visits to Points of Interest to Examine Population Response to COVID-19 Pandemic,” *IEEE Access*, Published
- **N. Coleman**, A. Esmalian, A. Mostafavi (2020) “Anatomy of Susceptibility for Shelter-in-Place Households Facing Infrastructure Service Disruptions Caused by Natural Hazards,” *International Journal of Risk Assessment and Management*, Published
- **N. Coleman**, A. Esmalian, A. Mostafavi (2020) “Equitable Resilience in Infrastructure Systems: Empirical Assessment of Disparities in Hardship Experiences of Vulnerable Populations during Service

Disruptions,” *Undergraduate Thesis*, Archived; *Natural Hazards Review*, Published

CONFERENCE AND PROFESSIONAL PAPERS

- **N. Coleman**, A. Esmalian, A. Mostafavi (2022) “Assessment of Protective Actions and Adjustments Taken by Shelter-in-Place Households Facing Disruptions in Critical Lifeline Services.” Conference Report. *Lifelines 2022*, Published
- **N. Coleman** and M. Esparza (2020) “Integrating the Human Dimension in Infrastructure Resilience: A Case Study of Service Disruptions Caused by Hurricane Harvey.” Technical Report. *Explorations: Texas A&M Undergraduate Journal Vol. 12*, Published
- A. Mostafavi, J. Padgett, L. Duenas-Osorio, S. Leonardo, N. Elaina, T. Norton, H. Lester, H. Wang, S. Dong, M. Sichani, H. Farahmand, E. Jimenez, A. Esmalian, **N. Coleman**, J. Dargin, X. Zhou, C. Lee (2022) “Hurricane Harvey Infrastructure Resilience Investigation.” Technical Report. DesignSafe-CI, Published

RESEARCH PRESENTATIONS

- **N. Coleman**, A. Esmalian, C. Lee, E. Gonzales, P. Koirala, A. Mostafavi, “Energy Inequality in Climate Hazards: Empirical Evidence of Social and Spatial Disparities in Managed and Hazard-Induced Power Outages,” Disaster PRIMR Conference at PVAMU, Presentation (Feb. 2023)
- **N. Coleman**, A. Clark, A. Mostafavi, “Feature Analysis to Detect Hotspots of Vulnerability in Flash-Flooding Events,” Disaster PRIMR Conference at PVAMU, Presentation (Feb. 2023)
- **N. Coleman**, X. Gao, J. DeLeon, A. Mostafavi, “Human Activity and Mobility Data Reveal Disparities in Exposure Risk Reduction Indicators of Socially Vulnerable Populations,”
 - Virtual poster presentation at the Natural Hazards Conference (Jul. 2022)
 - Poster Presentation at Civil Engineering External Advisory Council (Apr. 2022)
- **N. Coleman**, C. Podesta, A. Esmalian, F. Yuan, A. Mostafavi, “Capturing Population Activity Data to Quantify Community Resilience to Disasters” LifeLines Conference, Virtual Presentation (Feb. 2022)
- **N. Coleman**, A. Esmalian, A. Mostafavi, “Assessment of Protective Actions and Adjustments Taken by Shelter-in-Place Households Facing Disruptions in Critical Lifeline Services”
 - Virtual Presentation at LifeLines Conference (Feb. 2022)
 - Virtual Presentation at Disaster PRIMR Conference at TAMU (Feb. 2021)
- J. Dargin, **N. Coleman**, A. Esmalian, A. Mostafavi, “Achieving Social Impact Through Visual Smart Planning”, Virtual Presentation at Joint International Resilience Conference 2020 (Nov. 2020)
- **N. Coleman**, A. Esmalian, A. Mostafavi, “Anatomy of Susceptibility for Shelter-in-Place Households Facing Infrastructure Service Disruptions Caused by Natural Hazards”
 - Poster Presentation, Construction Engineering Management Symposium (Nov. 2021)
 - Poster Presentation, Undergraduate Research Scholars Symposium (Feb. 2020)
- **N. Coleman**, A. Esmalian, A. Mostafavi, “Societal Impacts of Hurricane Harvey Measured through Risk Inequalities from Infrastructure Service Disruptions,” Poster Presentation, Resilience Rising: Research and Practice on Hurricane Harvey and Hazards of the Future at TAMU (Sept. 2019)
- **N. Coleman**, A. Esmalian, A. Mostafavi, “Equitable Resilience in Infrastructure Systems: Integrating Societal Dimensions into the Infrastructure Resilience Framework,” Poster for Natural Hazards Conference (Jul. 2019)
- **N. Coleman**, A. Esmalian, A. Mostafavi, “Determining Which Universal and Situational Factors Contribute to Risk Disparities in Service Losses,” Presentations at TAMU
 - LAUNCH Summer Poster Session (Jul. 2019)
 - Undergraduate Summer Research Grant Poster Session (Aug. 2019)
- **N. Coleman**, A. Esmalian, A. Mostafavi, “Examining the Impacts of Service Interruptions on Social

Groups During Natural Disasters,” Presentations at TAMU

- Poster presentation, Student Research Week (Mar. 2019)
- Oral presentation, RISE Conference (Mar. 2019)
- Oral presentation, Undergraduate Research Scholars Symposium (Feb. 2019)
- **N. Coleman**, “Tidal Energy Potential in the Strait of Magellan,” Poster presentation, Global Programs Summit at TAMU (Nov. 2018)

STEM WORKSHOPS AND PANELS

- **N. Coleman**, Panel Moderator for 31st Annual Susan M. Arseven '75 Conference for Women in Science and Engineering “Session II,” (Feb. 2023)
- **N. Coleman**, Panelist for Undergraduate Research Symposium, “Mentoring Undergraduate Students,” Virtual and In-Person (Oct. 2019, 2020, 2021, 2022)
- **N. Coleman**, Panel Moderator for 30th Annual Susan M. Arseven '75 Conference for Women in Science and Engineering “Session I and Session II,” Virtual (Feb. 2022)
- **N. Coleman**, Panelist for Conference for the Advancement of Science Teaching, “Zoom-a-WISE-Woman Virtual Workshop,” Virtual (Nov. 2021)
- **N. Coleman**, Panelist for National Network of State Teachers of the Year Conference, “Zoom-a-WISE-Woman Virtual Workshop,” Virtual (June. 2021)
- **N. Coleman**, Panel Moderator for 2021 Disaster PRIMR 2021 Conference “Next Generation of Resilience and Sustainability,” Virtual (Feb. 2021)