

Morgan Vigil-Hayes

vigilhay@msu.edu
loom-lab.github.io

RESEARCH INTERESTS

- Community Networks
- Rural computing
- Human-centered computer networks
- Indigenous computational futures
- Social computing
- Participatory Action Research
- Participatory design
- Network science
- Broadband advocacy
- Critical computing

EDUCATION

University of California, Santa Barbara, CA

Doctorate of Philosophy in Computer Science, June 2017

Dissertation: Community Networks for Challenged Environments

Advised by Elizabeth Belding

Westmont College, Santa Barbara, CA

Bachelor of Science in Computer Science, December 2011

Summa cum laude

POSITIONS HELD

Michigan State University, East Lansing, MI

Associate Professor, Media & Information

August 2025-current

Northern Arizona University, Flagstaff, AZ

Wolf Gumerman Chair, Honors College

August 2023-August 2025

Associate Professor, School of Informatics, Computing, & Cyber Systems

August 2023-August 2025

Assistant Professor, School of Informatics, Computing, & Cyber Systems

August 2017-May 2023

AWARDS & HONORS

2024 Google Academic Research Award for Society-Centered AI

Google Research

Awarded in recognition of positive and impactful emergent work investigating the needs, challenges, and opportunities surrounding culturally-responsive interactive systems that use LLMs for Native American health promotion. In collaboration with Dr. Mai ElSherief at Northeastern University.

CSCW Best Paper Award

"Mending the Fabric: The Contentious, Collaborative Work of Repairing Broadband Maps"

Awarded to top 1% of papers

CSCW Impact Recognition

"Mending the Fabric: The Contentious, Collaborative Work of Repairing Broadband Maps"

Educator of Influence

Northern Arizona University

Named as the "most influential educator" by a senior student awarded the Golden Axe Award (top 1% of graduating senior class)

2023

Distinguished Scholar

*College of Engineering, Informatics, and Applied Sciences
Northern Arizona University*

2021

CSCW Best Paper Award

"Integrating Cultural Relevance into a Behavioral mHealth Intervention for Native American Youth"

Awarded to top 1% of papers

CSCW Recognition for Contribution to Diversity & Inclusion

"Integrating Cultural Relevance into a Behavioral mHealth Intervention for Native American Youth"

2017

CSCW Recognition for Contribution to Diversity & Inclusion

"#Indigenous: Tracking the Connective Actions of Native American Advocates on Twitter"

Outstanding Graduate Student

*Department of Computer Science
UC Santa Barbara*

2013

Doctoral Scholar's Fellowship

UC Santa Barbara

Graduate Women's Scholarship

Microsoft

Graduate Research Fellowship

National Science Foundation

2012

Grace Hopper Award (Top Computer Science Graduate)

*Department of Computer Science
Westmont College*

2011

David K. Winter Servant Leadership Award

Westmont College

IN THE PRESS

- 2023 **"The Rockefeller Foundation Collaborates With Universities to Close America's Broadband Equity Gap"**
(02/2023)
<https://www.rockefellerfoundation.org/news/the-rockefeller-foundation-collaborates-with-universities-to-close-americas-broadband-equity-gap/>
- 2022 **"Grant will fund computer science curriculum designed for Native American kids"**
(02/2022)
<https://www.knau.org/knau-and-arizona-news/2022-02-16/grant-will-fund-computer-science-curriculum-designed-for-native-american-kids>
- 2021 **"Millions of Americans can't get broadband because of a faulty FCC map. There's a fix"**
(02/2021)
<https://www.cnet.com/home/internet/features/millions-of-americans-cant-get-broadband-because-of-a-faulty-fcc-map-theres-a-fix/>
- 2019 **"Tweets, hashtags, and an election that made history: Native researchers parse #NativeVote and the tweets from Native candidates in the 2018 mid-year election"** (11/2019)
<https://ictnews.org/news/tweets-hashtags-and-an-election-that-made-history>
- Technology Trends: Bridging the Digital Divide in Native American Communities
(01/2019) <https://www.socialworktoday.com/archive/IA19p6.shtml>
-

FUNDED GRANTS AND AWARDS

- 2024 **NSF Responsible Design, Development, and Deployment of Technology (09/24-08/25; \$75K; Senior Personnel; NSF 2427606)**
Conference: ReDDDoT Phase 1: Workshop: Situating Network Infrastructure with People, Practices, and Beyond
- NSF Responsible Design, Development, and Deployment of Technology (09/24-08/25; \$75K; Senior Personnel; NSF 2427641)**
Conference: ReDDDoT Phase 1: Workshop: Indigenous Approaches to Computational Futures
- 2023 **NSF Louis Stokes Alliance for Minority Participation in STEM (07/23-06/28; \$3.5M; Co-PI/NAU Site Director; NSF 2307200)**
Louis Stokes STEM Pathways Implementation-Only Alliance: Southern Nevada Northern Arizona

Rockefeller Foundation (01/23-06/24; \$500K; Co-PI)

CellWatch

2022 NSF CAREER Award (08/22-07/27; \$561K; Lead PI; NSF IIS 2145861)

CAREER: A Community-based Approach to Empowered Information and Communication Technology Measurement

NSF Smart & Connected Communities Integrated Research Grant (10/22-09/26; \$2.5M; Lead PI; NSF CNS 2224014)

SCC-IRG Track 1: Qöyangnuptu: Smart, Connected, and Culturally-centered System to Support the Well-being of Hopi/Tewa Youth

2021 NSF CS4All Research-Practitioner Partnership Grant (09/21-08/24; \$275K; Lead PI; NSF DRL 2122791)

Towards Culturally Responsive and Computationally Rich Problem Based Learning for K-5 Students

NSF CISE Collaborative Research Infrastructure Award (10/21-09/24; \$1.3M; Co-PI; NSF CNS 2120485)

Collaborative Research: CCRI: New: Distributed Sensing & Computing Over Sparse Environments (DISCOVER) Platform

NSF CIVIC Planning Grant Award (01/2021-08/2021; \$50K; Lead PI; NSF CNS 2043526)

SCC-CIVIC-PG Track B: Digital Backpack: Enabling Offline Web-based Content Access to Promote Student Academic Resiliency in Acute and Chronic Disaster Situations

2020 NSF Smart & Connected Communities Planning Grant (10/20-09/21; \$150K; Lead PI; NSF CNS 1951911)

SCC-PG: SUNRISE: Using Mobile Games in Rural Tribal Communities to Promote Social and Emotional Resilience in Youth

2018 NSF Smart & Connected Communities Integrated Research Grant (10/18-09/21; \$2M; Co-PI; NSF CNS 1831698)

SCC: PuebloConnect: Expanding Internet Access and Content Relevance in Tribal Communities

NAU Southwest Health Equity Center Pilot Project Program (09/18-08/20; \$60K; Lead PI)

ARORA: Using Augmented Realities to Gamify a Universal Social Learning Intervention

SUBMITTED GRANTS AND AWARDS

Under review **Toyota Research Institute Human-AI Kaizen (04/26-03/29; \$930K; Lead PI)**
StoryWalk: Co-creating Narratives for Location-Based Mobile Crowdsensing

Robert Woods Johnson Foundation (05/26-04/29; \$530K; Lead PI)
Active, Connected Communities: Sustainable Community Exergame Platform for Crowdsourced Broadband Measurements

PUBLICATIONS

- 2025 **Morgan Vigil-Hayes, Beatriz Palacios Abad, Elizabeth Belding, and Ellen Zegura. "CellWatch: Mobile Broadband Measurement Tool Suite Designed with and for Communities" in the *Internet Measurement Conference (IMC) Workshop of Policy-Relevant Internet Measurements and Experimentation (PRIME)*. Madison, WI, USA. October 2025. (Lightly reviewed)**
- Nazmul Hossain, Nicole Sylvester, Morgan Vigil-Hayes. "Characterizing Mobile Broadband Coverage of Routes in the United States" in the *53rd Research Conference on Communications, Information, and Internet Policy (TPRC53)*. Washington, DC, USA. September 2025.**
- Alireza Ebrahimi, Connor Gouin, Sayed Pedram Haeri Boroujeni, Juan Carlos Tique Rangel, Tolunay Seyfi, Truong X. Nghiem, Abolfazl Razi, Morgan Vigil-Hayes, Paul L. Heinrich, Fatemeh Afghah. "DISCOVER: A Cyberinfrastructure Testbed for Distributed Computing and Networking in Rural and Remote Environments" in *Proceedings of 26th IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM '25)*. Fort Worth, TX, USA, 2025, pp. 317-322, <https://ieeexplore.ieee.org/document/11027049>**
- 2024 **Chiara Holgate, Scott Drum, Fatemeh Afghah, Priscilla Sanderson, Morgan Vigil-Hayes, Tim Curry, and Brooke Davis (2024) "'Just in Time': Remote Heart Monitoring Feasibility Project for Members in Arizona Tribes – A Descriptive Report," *International Journal of Exercise Science: Conference Proceedings*: Vol. 14: Iss. 4, Article 108. <https://digitalcommons.wku.edu/ijesab/vol14/iss4/108>**
- Morgan Vigil-Hayes, Lakshmi Panguluri, Harry Dececco, Md Nazmul Hossain, Ann Collier, Darold Joseph, and Ashish Amresh. 2024. ICT-facilitated Health Interventions for Indigenous Communities: A Critical Literature Review. *ACM J. Responsib. Comput.* 1, 4, Article 25 (December 2024), 26 pages. <https://doi.org/10.1145/3687133>**
- Morgan Vigil-Hayes, Dayra Quiñonez, Italo De Santos. Critical Analysis of the Inclusivity of Crowdsourced Internet Measurement Apps. In the *52nd***

Research Conference on Communications, Information, and Internet Policy (TPRC52). Washington, DC, USA. September 2024.

Shelby Hagemann, Ann Collier, Laverne Dallas, Marissa Adams, Darold Joseph, Ashish Amresh, **Morgan Vigil-Hayes**. Designing a Resilience Resource Database with Hopi Behavioral Health Services. *ACM DIS Companion '24*, Copenhagen, Denmark. July 2024.
<https://dl.acm.org/doi/abs/10.1145/3656156.3663736>

Jared Duval, Shelby Hagemann, Tochukwu Ikwunne, Dayra Quinonez, **Morgan Vigil-Hayes**. Co-Designing Location-based Games for Broadband Data Collection. *ACM Conference on Designing Interactive Systems 2024 (DIS '24)*, Copenhagen, Denmark. July 2024.
<https://dl.acm.org/doi/abs/10.1145/3643834.3661502>

Beatriz Palacios Abad, Elizabeth Belding, **Morgan Vigil-Hayes**, and Ellen Zegura. 2024. Mending the Fabric: the Contentious, Collaborative Work of Repairing Broadband Maps. *Proc. ACM Hum.-Comput. Interact.* 8, CSCW2, Article 464 (November 2024), 24 pages.
<https://doi.org/10.1145/3687003>

2023

Morgan Vigil-Hayes. Indigenizing Social Computing: How Conceptualizations of Indigeneity Inform Next Steps. In *CSCW 2023 Workshop on Conceptualizing Indigeneity in Social Computing*.
<https://sites.google.com/view/indigeneity-social-computing/accepted-papers>

Ann F. Collier, Shelby Hagemann, Susan B. Trinidad, **Morgan Vigil-Hayes**. 2023. Human-to-Computer Interactivity Features Incorporated Into Behavioral Health mHealth Apps: Systematic Search. In *JMIR Formative Research* 2023;7:e44926. doi: [10.2196/44926](https://doi.org/10.2196/44926) PMID: [37389916](https://pubmed.ncbi.nlm.nih.gov/37389916/) PMCID: [10365630](https://pubmed.ncbi.nlm.nih.gov/10365630/)

Dipto Das, Parboti Roy, Carlos Toxtli, Kagonya Awori Awori, **Morgan Vigil-Hayes**, Monojit Choudhury, Neha Kumar, Syed Ishtiaque Ahmed, and Bryan Semaan. "Conceptualizing Indigeneity in Social Computing." In *Companion Publication of the 2023 Conference on Computer Supported Cooperative Work and Social Computing*, pp. 501-505. 2023.

Md Nazmul Hossain and **Morgan Vigil-Hayes**. 2023. Woes, Workarounds, and Wishes of Users Living in a Multinetwork Reality. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23)*. Association for Computing Machinery, New York, NY, USA, Article 320, 1–7. <https://doi.org/10.1145/3544549.3585795>

Beatriz Palacios Abad, Michael Koohang, **Morgan Vigil-Hayes**, and Ellen Zegura. 2023. Alone and Together: Resilience in a Fluid Socio-Technical-Natural System. *Proc. ACM Hum.-Comput. Interact.* 7, CSCW1, Article 24 (April 2023), 26 pages.
<https://doi.org/10.1145/3579457>

2022

Esther Showalter, **Morgan Vigil-Hayes**, Ellen Zegura, Richard Sutton, and Elizabeth Belding. "Pandemic-influenced human mobility on tribal lands in California: Data sparsity and analytical precision." *PLOS One* 17, no. 12 (2022): e0276644.

Esther Han Beol Jang, Nicola Bidwell, Jen Liu, Phoebe Sengers, Naveen Bagalkot, Nervo Verdezoto, Melissa Densmore, **Morgan Vigil-Hayes**, and Shaddi Hasan. 2022. Situating Network Infrastructure with People, Practices, and Beyond: A Community Building Workshop. In *Companion Publication of the 2022 Conference on Computer Supported Cooperative Work and Social Computing (CSCW'22 Companion)*. Association for Computing Machinery, New York, NY, USA, 267–272.
<https://doi.org/10.1145/3500868.3560716>

Morgan Vigil-Hayes, Md Nazmul Hossain, Alexander K Elliott, Elizabeth M. Belding, and Ellen Zegura. 2022. LoRaX: Repurposing LoRa as a Low Data Rate Messaging System to Extend Internet Boundaries. In *Proceedings of the 5th ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS '22)*. Association for Computing Machinery, New York, NY, USA, 195–213.
<https://doi.org/10.1145/3530190.3534807>

Beatriz Palacios Abad, Elizabeth Belding, **Morgan Vigil-Hayes**, and Ellen Zegura. 2022. Note: Towards Community-Empowered Network Data Action. In *Proceedings of the 5th ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS '22)*. Association for Computing Machinery, New York, NY, USA, 585–588.
<https://doi.org/10.1145/3530190.3534836>

Tarun Mangla, Esther Showalter, Vivek Adarsh, Kipp Jones, **Morgan Vigil-Hayes**, Elizabeth Belding, and Ellen Zegura. 2022. A Tale of Three Datasets: Characterizing Mobile Broadband Access in the U.S. *Commun. ACM* 65, 3 (March 2022), 67–74. <https://doi.org/10.1145/3462672>

2021

Marisa E. Duarte and **Morgan Vigil-Hayes**. "An Indigenous Feminist Approach to Digital Methods." *Indigenous Peoples Rise Up: The Global Ascendancy of Social Media Activism* (2021): 93. Rutgers University Press.

Vivek Ardash, Michael Nekrasov, Udit Paul, Tarun Mangla, Arpit Gupta, **Morgan Vigil-Hayes**, Ellen Zegura, and Elizabeth Belding. "Coverage is Not Binary: Quantifying Mobile Broadband Quality in Urban, Rural, and Tribal Contexts," 2021 *International Conference on Computer Communications and Networks (ICCCN)*, Athens, Greece, 2021, pp. 1-9, doi: 10.1109/ICCCN52240.2021.9522152.

Norman Makoto Su, Jean Hardy, **Morgan Vigil-Hayes**, Tiffany Veinot, and Rob Comber. 2021. Introduction: Performing Rurality with Computing. *ACM Trans. Comput.-Hum. Interact.* 28, 3, Article 16e (June 2021), 13 pages. <https://doi.org/10.1145/3461832>

Marisa Elena Duarte, **Morgan Vigil-Hayes**, Ellen Zegura, Elizabeth Belding, Ivone Masara, and Jennifer Case Nevarez. 2021. As a Squash Plant Grows: Social Textures of Sparse Internet Connectivity in Rural and Tribal Communities. *ACM Trans. Comput.-Hum. Interact.* 28, 3, Article 16 (June 2021), 16 pages. <https://doi.org/10.1145/3453862>

Morgan Vigil-Hayes, Ann Futterman Collier, Shelby Hagemann, Giovanni Castillo, Keller Mikkelsen, Joshua Dingman, Andrew Muñoz, Jade Luther, and Alexandra McLaughlin. 2021. Integrating Cultural Relevance into a Behavioral mHealth Intervention for Native American Youth. *Proc. ACM Hum.-Comput. Interact.* 5, CSCW1, Article 165 (April 2021), 29 pages. <https://doi.org/10.1145/3449239> [BEST PAPER AWARD - top 1%] [DIVERSITY AND INCLUSION RESEARCH AWARD]

Esther Showalter, **Morgan Vigil-Hayes**, Ellen Zegura, Rich Sutton, and Elizabeth Belding. 2021. Tribal Mobility and COVID-19: An Urban-Rural Analysis in New Mexico. In *Proceedings of the 22nd International Workshop on Mobile Computing Systems and Applications (HotMobile '21)*. Association for Computing Machinery, New York, NY, USA, 99–105. <https://doi.org/10.1145/3446382.3448654>

2020 Marisa Elena Duarte, **Morgan Vigil-Hayes**, Sandra Littletree, Miranda Belarde-Lewis. Of Course, Data Can Never Fully Represent Reality. *Human Biology*, 91(3), 163-178, (9 June 2020) <https://doi.org/10.13110/humanbiology.91.3.03>

2019 **Morgan Vigil-Hayes**, Nicholet Deschine Parkhurst, Marisa Elena Duarte. 2019. Complex, Contemporary, and Unconventional: Characterizing the Tweets of the #NativeVote Movement and Native American Candidates through the 2019 U.S. Midterm Elections. *Proc. ACM Hum.-Comput. Interact.* 3, CSCW, Article 103 (November 2019), 27 pages. <https://doi.org/10.1145/3359205> [DIVERSITY AND INCLUSION RESEARCH AWARD]

Jean Hardy, Chanda Phelan, **Morgan Vigil-Hayes**, Norman Makoto Su, Susan Wyche, and Phoebe Sengers. 2019. Designing from the rural. *Interactions* 26, 4 (July-August 2019), 37–41. <https://doi.org/10.1145/3328487>

Morgan Vigil-Hayes, Ann Futterman Collier, Giovanni Castillo, Davona Blackhorse, Nikole Awbery, and John-Paul Abraham. 2019. Designing a Mobile Game That Develops Emotional Resiliency in Indian Country. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems (CHI EA '19)*. Association for Computing Machinery, New York, NY, USA, Paper LBW2122, 1–6. <https://doi.org/10.1145/3290607.3312790>

Esther Showalter, Nicole Moghaddas, **Morgan Vigil-Hayes**, Ellen Zegura, and Elizabeth Belding. 2019. Indigenous Internet: Nuances of Native American Internet Use. In *Proceedings of the Tenth International*

Conference on Information and Communication Technologies and Development (ICTD '19). Association for Computing Machinery, New York, NY, USA, Article 45, 1–4. <https://doi.org/10.1145/3287098.3287141>

- 2018** **Morgan Vigil-Hayes**, Jeanna Matthews, Amelia Acker, and Daniel Carter. 2018. Reflections on alternative Internet models and how they inform more mindful connectivity. ITU Journal: ICT Discoveries, Article 2 (November 2018). 9 pages.
https://www.itu.int/dms_pub/itu-s/opb/journal/S-JOURNAL-ICTS.VII2-2018-14-PDF-E.pdf

- 2017** Marissa Elena Duarte and **Morgan Vigil-Hayes**. 2017. #Indigenous: A technical and decolonial analysis of activist uses of hashtags across social movements. MediaTropes., 7(1).
- Paul G. Flikkema and **Morgan Vigil-Hayes**, "Self-adaptive and resilient urban networking infrastructure for disasters and smart city services," 2017 IEEE International Conference on Big Data (Big Data), Boston, MA, USA, 2017, pp. 4074-4079, <https://ieeexplore.ieee.org/document/8258424>
- Mai ElSherief, **Morgan Vigil-Hayes**, Ramya Raghavendra, and Elizabeth Belding. 2017. Whom to Query? Spatially-Blind Participatory Crowdsensing under Budget Constraints. In Proceedings of the First ACM Workshop on Mobile Crowdsensing Systems and Applications (CrowdSenSys '17). Association for Computing Machinery, New York, NY, USA, 31–37. <https://doi.org/10.1145/3139243.3139249>
- Morgan Vigil-Hayes**, Elizabeth Belding, and Ellen Zegura. 2017. FiDO: A Community-based Web Browsing Agent and CDN for Challenged Network Environments. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 1, 3, Article 108 (September 2017), 25 pages.
<https://doi.org/10.1145/3132030>
- Morgan Vigil-Hayes**, Marisa Duarte, Nicholet Deschine Parkhurst, and Elizabeth Belding. 2017. #Indigenous: Tracking the Connective Actions of Native American Advocates on Twitter. In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW '17). Association for Computing Machinery, New York, NY, USA, 1387–1399. <https://doi.org/10.1145/2998181.2998194> **HONORABLE MENTION FOR BEST PAPER AWARD - top 3%**

- 2016** Paul Schmitt, **Morgan Vigil-Hayes**, Elizabeth Belding. 2016. A Study of MVNO Data Paths and Performance. In: Karagiannis, T., Dimitropoulos, X. (eds) Passive and Active Measurement. PAM 2016. Lecture Notes in Computer Science, vol 9631. Springer, Cham.
https://doi.org/10.1007/978-3-319-30505-9_7
- Morgan Vigil**, Elizabeth Belding, and Matthew Rantanen. 2016. Repurposing FM: Radio Nowhere to OSNs Everywhere. In Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work &

Social Computing (CSCW '16). Association for Computing Machinery, New York, NY, USA, 1260–1272. <https://doi.org/10.1145/2818048.2820001>

- 2015 Waylon Brunette, **Morgan Vigil**, Fahad Pervaiz, Shahar Levvari, Gaetano Borriello, and Richard Anderson. 2015. Optimizing Mobile Application Communication for Challenged Network Environments. In Proceedings of the 2015 Annual Symposium on Computing for Development (DEV '15). Association for Computing Machinery, New York, NY, USA, 167–175. <https://doi.org/10.1145/2830629.2830644>

Mariya Zheleva, Paul Schmitt, **Morgan Vigil**, and Elizabeth Belding. "Internet Bandwidth Upgrade: Implications on Performance and Usage in Rural Zambia." *Information Technologies & International Development* 11, no. 2 (2015): pp-1.

Morgan Vigil, Matthew Rantanen, and Elizabeth Belding. 2015. A First Look at Tribal Web Traffic. In Proceedings of the 24th International Conference on World Wide Web (WWW '15). International World Wide Web Conferences Steering Committee, Republic and Canton of Geneva, CHE, 1155–1165. <https://doi.org/10.1145/2736277.2741645>

- 2013 Mariya Zheleva, Paul Schmitt, **Morgan Vigil**, and Elizabeth Belding. 2013. The Increased Bandwidth Fallacy: Performance and Usage in Rural Zambia. In Proceedings of the 4th Annual Symposium on Computing for Development (ACM DEV-4 '13). Association for Computing Machinery, New York, NY, USA, Article 2, 1–10. <https://doi.org/10.1145/2537052.2537060>

Mariya Zheleva, Paul Schmitt, **Morgan Vigil**, and Elizabeth Belding. 2013. Community detection in cellular network traces. In Proceedings of the Sixth International Conference on Information and Communications Technologies and Development: Notes - Volume 2 (ICTD '13). Association for Computing Machinery, New York, NY, USA, 183–186. <https://doi.org/10.1145/2517899.2517932>

Schmitt, Paul, **Morgan Vigil**, Mariya Zheleva, and Elizabeth M. Belding. 2013. Communication Flow Patterns in the D4D dataset. NetMob Session on Data for Development (D4D)

INVITED TALKS, PRESENTATIONS, & PANELS

- 2025 *NetGauge Game Jam: Place-based Game-making for a Better Internet*
7/2025 Four Corners Computer Science Convening (Flagstaff, AZ)
- 2024 *Caring Counts: Data work that can empower communities*
10/2024 Gumerman Lecture Northern Arizona University (Flagstaff, AZ)
- Towards Community-driven mHealth Systems & Research*
04/2024 University of Texas at San Antonio (Virtual)

Panel: Balancing Fundamental Research with Community Engagement in S&CC
02/2024 NSF S&CC PI Meeting (Nashville, TN)

Community Engagement, Digital Equity, and Healthcare Applicants
02/2024 Yukon First Nations and Tech Conference (Virtual)

2023 *Weaving a New Web: Lessons for Information Infrastructure from Indigenous Knowledge, Networks, and Action*
10/2023 Gumerman Lecture Northern Arizona University (Flagstaff, AZ)

Indigenizing Social Computing: How Conceptualizations of Indigeneity Inform Next Steps
10/2023 CSCW Workshop on Conceptualizing Indigeneity in Social Computing (Minneapolis, MN)

Exploring Computer Science through the Lens of Internet Citizen Scientists
07/2023 CSTA Four Corners Computer Science Convening (Durango, CO)

The Future is Multinetworked
02/2023 Michigan State University Rural Computing Speaker Series (Lansing, MI)

2022 *Panel: S&CC and Rural Communities*
04/2022 NSF Smart & Connected Communities PI Meeting (Washington, DC)

2021 *There and Back Again: A Journey Applying Quantitative Methods to Indigenous Data*
09/2021 Keynote for Workshop de Colaboração Online: WCO2021(Virtual)

Mixed Methods Approaches to Characterizing Indigenous Social Media Usage
04/2021 University of Washington Applied Indigenous Research Methods (Virtual)

Panel: Community Planning, Education and the Workforce
04/2021 NSF Smart & Connected Communities PI Meeting (Virtual)

2020 *Addressing LTE Coverage Inaccuracies in Indian Country* with E. Zegura and E. Belding
10/2020 Internet Society Indigenous Connectivity Conference (Virtual)

2018 *A New Narrative: Rural Agency and Culture at the Center*
10/2019 CSCW Workshop on Rural Computing

TEACHING EXPERIENCE

Courses Taught

Computer Networks	Taught at the undergraduate and graduate level at NAU for a total of six offerings.
Network Science	Taught at the undergraduate and graduate level at NAU for a total of four offerings.
Network Security	Taught at the undergraduate and graduate level at NAU for a total of two offerings.
Social Computing	Taught at the undergraduate and graduate level at NAU as a single co-convened offering.
Cyber Ethics Seminar	Taught as an undergraduate honors course at NAU for a total of one offering.
Introduction to Programming	Taught once at the undergraduate level in C++ at UCSB.

Courses Developed (Not Taught)

Computing Tools I-III	Developed for undergraduate students as a three-part seminar sequence focused on introducing undergraduate students to standard computing tools such as Linux utilities, version control, IDEs, virtual machines, cloud-based services, and containerization. Sequence has been taught by other instructors five times since 2021.
------------------------------	--

Graduate Students Advised

Yuxuan Wang PhD Information & Media Michigan State University (Committee)	Expected defense: May 2029 Working dissertation title TBD
Varshika Srinivasavaradhan PhD Computer Science UC Santa Barbara (Committee)	Expected defense: May 2027 Working dissertation title TBD
Shelby Hagemann PhD Informatics & Computing Northern Arizona University	Expected defense: May 2028 Working dissertation title: <i>"Facilitating Work between Cultural Knowledge Holders and Large Language Models"</i>
Md Nazmul Hossain PhD Informatics & Computing	Expected defense: May 2026

Northern Arizona University

Working dissertation title: *"Supporting User Navigation through the Logistics of Multinetworked Environments"*

Beatriz Palacios Abad
PhD Human Centered Computing
Georgia Tech
(Committee)

Defended: June 2025
Dissertation: *"Broadband Data Action for Empowered Communities"*

Lakshmi Panguluri
Masters in Computer Science
Northern Arizona University
(Co-Chair)

Defended: November 2023
Thesis title: *"Comparative Analysis of Content: Human Expert vs. Artificial Intelligence in an Exploratory Study"*

Md Ashiqul Amin
Masters in Computer Science
Northern Arizona University

Defended: July 2020
Thesis title: *"WOLFF: A LoRa-based Network Architecture to Extend Internet Service in Remote Areas"*

Undergraduate Students Mentored in Research & Project-based Learning

Taylen Silver Johnson ('28), Joshua Kent ('27), Tyler Bryant ('27), Ashley Jimenez Perez ('27), Olivia Vester ('26), Cole Pendergraft ('25), Bailey McCauslin ('24), Nicole Sylvester ('24), Dayra Quinonez ('24), Harry DeCecco ('24), Shelby Hagemann ('23), Jack Normand ('23), Quinton Jasper ('23), Kylie Cook ('22), Elena Umbria Macaron ('22), Zane Fink ('21), Andrew Munoz ('21), Keller Mikkelsen ('20), Kainoa Boyce ('20), Adam Paquet ('19), Daniel Williams ('18), Tyler Thatcher ('18)

PROFESSIONAL SERVICE

Conferences

ACM CHI

Associate Chair: 2023-2024
Reviewer: 2025

SNIP+ Workshop
(SIGCOMM Workshop)

Co-organizer: 2023

**Conceptualizing Indigeneity
in Social Computing Workshop**
(CSCW Workshop)

Co-organizer: 2023

ACM CSCW

Awards Co-Chair: 2024
Associate Chair: 2019-2020

ACM COMPASS

Treasurer: 2022, 2018
PC Member: 2018, 2019, 2020, 2021, 2022

ACM DIS

Associate Chair: 2021, 2022

**IEEE Global Humanitarian
Technology Conference**

Track Chair: 2022

IEEE/ACM MobiCom

Posters Co-Chair: 2019

Journal Associate Editor

ACM Journal on Computing and Sustainable Societies

2022-current

ACM ToCHI

Special Issue Associate Editor: 2020-2021

Journal Reviewer

Catalyst: Feminism, Theory, Technoscience

2025

2022-current

ACM ToCHI

University Service

NAU SICCS PhD Recruitment Committee

Chair: 2023-current

NAU Institute for Native-serving Educators

Advisory board member: 2022-current

NAU Diversity Curriculum Committee

2022-current

Indigenous Peoples Sub-committee

NAU SICCS Faculty Search Committee

2018-current

6 tenure track searches; 8 non-tenure track searches

NAU SICCS Computer Science Program and Curriculum Committee

2018-current

NAU Women Who Compute Faculty Advisor

2018-current

UCSB American Indians in Science and Engineering Society (AISES) Co-advisor

2015-2017

UCSB Women in Computer Science Co-President

2012-2015

COMMUNITY OUTREACH

**NetGauge Game Jam for
Culturally-Aware Research
Experience Students**
Flagstaff, AZ

June 2025
Three-hour hands-on programming workshop for 21
Native American high school students to create games
using Twine.

**Culturally-Responsive Computer
Science Teaching Workshop**
*Flagstaff, Hopi, Navajo, and White
Mountain Apache*

October 2023, April 2024
Two-day workshop for 14 Native-serving educators from
Northern Arizona region at NAU

Internet Measurement Workshops
*Santa Clara Pueblo and Flagstaff
Unified School District*

December 2020, February 2020 & May 2019

**Hope Tutoring Navajo
Computer Science Camps**
Leupp, Birdsprings, and Flagstaff

2017-2019
Six-week sessions per academic semester; met for four
hours on weekends at Navajo Chapter Houses

**Board Member
Santa Barbara American Indian
Health & Services**
Santa Barbara

2016-2017
Monthly board meetings and annual strategic planning
retreat. Consulted on youth-facing services and
communication strategies.