Stephen MacNeil

HCI · Non-Experts · Community-driven design · Informal Learning · Large Language Models

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My research focuses on democratizing the design process to involve communities. I study large-scale grassroots design efforts and develop technology to help communities, who lack formal training, by scaffolding impactful contributions and coordinating their efforts. These systems also act as probes to understand people, practices, and the nature of collaboration, design, and learning.

Appointments

Temple University *Philadelphia, PA*
Assistant Professor | Department of Computer and Information Sciences *2021 — Present*

University of California San Diego *San Diego, CA*
Postdoctoral Researcher | Dr. Steven Dow *2019 — 2021*

University of Tokyo *Tokyo, Japan*
Visiting Research Scientist | Dr. Koji Yatani *Summer '16*

Purdue University *West Lafayette, IN*
Research Assistant | Dr. Niklas Elmqvist *2010 — 2012*

Education

The University of North Carolina at Charlotte *Charlotte, NC*
Ph.D. in Computer Science | Advisor: Dr. Celine Latulipe *2019*
• Topic: Scaffolding Reflective Learning with an Ecology of Reflection Support Tools

The University of North Carolina at Charlotte *Charlotte, NC*
Master's Degree in Computer Science *2016*
• Concentration: Visualization and Computer Graphics

Purdue University *West Lafayette, IN*
Bachelor's Degree in Electrical and Computer Engineering *2012*
• Courses: Circuit design, probabilistic modeling, signal processing, and embedded programming

Grants

NSF Convergence Accelerator Track H: Next Generation Augmentative and Alternative Communication Technology Powered by Artificial Intelligence $749,960
Christine Holyfield (PI) Slobodan Vucetic, Stephen MacNeil, Eduard Dragut, Elizabeth R Lorah *12/2022-11/2023*

REU Site: Research Experiences in Pervasive Computing for Smart Health, Safety, and Well-being $409,297
Jamie Payton (PI) Jie Wu, Stephen MacNeil *03/2022-02/2025*

Publications

In my field of computer science and human-computer interaction, top-tier conferences (<30% acceptance rate) are as, or more, impactful than journals (see http://doi.org/fgjt2h). Underlined names indicate students under my supervision. [UG] indicates undergraduate students and [G] indicates PhD students.

Refereed Conference Papers

[1] Lena Armstrong, Abbey Liu, **Stephen MacNeil**, and Danaë Metaxa. The Silicone Ceiling: Auditing GPT's Race and Gender Biases in Hiring. 2024.

[2] **Stephen MacNeil**, Magdalena Rogalska[UG], Juho Leinonen, Paul Denny, Arto Hellas, and Xandria Crosland[UG]. Synthetic Students: A Comparative Study of Bug Distribution Between Large Language Models and Computing Students. In *Technical Symposium on Computing Science Education*, ACM SIGCSE VIRTUAL '24, 2024.

[3] Paul Denny, **Stephen MacNeil**, Jaromir Savelka, Leo Porter, and Andrew Luxton-Reilly. Desirable Characteristics for AI Teaching Assistants in Programming Education. In *Innovation and Technology in Computer Science Education*, ACM ITiCSE '23. 2024. [26.8% acceptance rate] 🏆 Best Paper Award (1%).

[4] Seth Bernstein[UG], Paul Denny, Juho Leinonen, Lauren Kan[UG], Arto Hellas, Matt Littlefield[UG], Sami Sarsa, and **Stephen MacNeil**. "Like a Nesting Doll": Analyzing Recursion Analogies Generated by CS Students using Large Language Models. In *Innovation and Technology in Computer Science Education*, ACM ITiCSE '23, 2024.

[5] Albatool Wazzan, **Stephen MacNeil**, and Richard Souvenir. Context or Clutter? Efficiently Matching Objects Across Scenes. In *International Conference on Multimedia Retrieval*, ACM ICMR '24, 2024.

[6] James Prather, Paul Denny, Juho Leinonen, David H. Smith IV, Brent Reeves, **Stephen MacNeil**, Brett A Becker, Andrew Luxton-Reilly, Thezyrie Amarouche, and Bailey Kimmel. Interactions with Prompt Problems: A New Way to Teach Programming with Large Language Models. In *Conference on Human Factors in Computing Systems*, ACM CHI '24, 2024.

[7] Albatool Wazzan, **Stephen MacNeil**, and Richard Souvenir. Comparing Traditional and LLM-based Search for Image Geolocation. In *Conference on Human Information Interaction And Retrieval*, ACM CHIIR '24, 2024.

[8] Irene Hou[UG], Sophia Mettille[UG], Owen Man[UG], Zhuo Li, Cynthia Zastudil[PhD], and **Stephen MacNeil**. The Effects of Generative AI on Introductory Students' Help-Seeking Preferences. In *Australasian Computing Education Conference*, ACM ACE '24, 2024.

[9] **Stephen MacNeil**, Paul Denny, Andrew Tran[UG], Juho Leinonen, Seth Bernstein[UG], Arto Hellas, Sami Sarsa, and Joanne Kim[UG]. Decoding Logic Errors: A Comparative Study on Bug Detection by Students and Large Language Models. In *Australasian Computing Education Conference*, ACM ACE '24, 2024.

[10] Irene Hou[UG], Owen Man[UG], Sophia Mettille[UG], Sebastian Gutierrez[UG], Kenneth Angelikas[UG], and **Stephen MacNeil**. More Robots are Coming: Large Multimodal Models (ChatGPT) can Solve Visually Diverse Images of Parsons Problems. In *Australasian Computing Education Conference*, ACM ACE '24, 2024.

[11] James Prather, Paul Denny, Juho Leinonen, Brett A Becker, Ibrahim Albluwi, Michelle Craig, Hieke Keuning, Natalie Kiesler, Tobias Kohn, Andrew Luxton-Reilly, and others. The robots are here: Navigating the generative ai revolution in computing education. In *Innovation and Technology in Computer Science Education*, ACM ITiCSE '23, 2023.

[12] Cynthia Zastudil[PhD], Magdalena Rogalska[UG], Christine Kapp[UG], Jennifer Vaughn[UG], and **Stephen MacNeil**. Discovering Stakeholders' Values for the use of Generative Models in Computing Education. In *Frontiers in Education*, IEEE FIE '23, 2023.

[13] Andrew Tran[UG], Kenneth Angelikas[UG], Egi Rama[UG], Chiku Okechukwu[UG], David H. Smith IV, and **Stephen MacNeil**. Generating Multiple Choice Questions for Computing Courses using Large Language Models. In *Frontiers in Education*, IEEE FIE '23, 2023.

[14] **Stephen MacNeil**, Ziheng Huang[UG], Zijian Ding[UG], Kenneth Chen[UG], Alex Yu[UG], and Steven Dow. Freeform Templates: combining freeform curation with structured templates. In *Conference on Creativity and Cognition*, ACM C&C '23, 2023. [21.3% acceptance rate].

[15] Zijian Ding[UG], **Stephen MacNeil**, and Joel Chan. Fluid Transformers and Creative Analogies: Exploring Large Language Models' Capacity for Augmenting Cross-Domain Analogical Creativity. In *Conference on Creativity and Cognition*, ACM C&C '23, 2023. [21.3% acceptance rate] 🏆 Honorable Mention.

[16] Juho Leinonen, Paul Denny, **Stephen MacNeil**, Andrew Tran[UG], Arto Hellas, Joanne Kim[UG], Sami Sarsa, Paul Denny, and Seth Bernstein[UG]. Assessing the Quality of AI-Generated Code Explanations for Learning by Example. In *Conference on Innovation and Technology in Computer Science Education*, ACM ITICSE '23, 2023. [27% acceptance rate].

[17] **Stephen MacNeil**, Andrew Tran[UG], Arto Hellas, Joanne Kim[UG], Sami Sarsa, Paul Denny, Seth Bernstein[UG], and Juho Leinonen. Experiences from Using Code Explanations Generated by Large Language Models in a Web Software Development E-Book. In *Technical Symposium on Computing Science Education*, ACM SIGCSE '23, 2023.

[18] **Stephen MacNeil**, Zijian Ding[UG], Yajie Sun[UG], Thomas Parashos[UG], Kexin Quan[UG], and Steven Dow. The Problems with Problem Framing: Exploring how novices use adaptive scaffolding based on structural decomposition to craft problem statements. In *Conference on Creativity and Cognition*, ACM C&C '21, 2021. [23.1% acceptance rate].

[19] Srishti Palani, Zijian Ding[UG], Austin Nguyen, Andrew Chuang, **Stephen MacNeil**, and Steven Dow. CoNotate: Proactively Suggesting Queries Based on Notes Promotes Knowledge Discovery. In *Conference on Human Factors in Computing Systems*, ACM CHI '21, 2021. [26.3% acceptance rate] **(co-advisor)**.

[20] **Stephen MacNeil**, Mohsen Dorodchi, Erfan Al Hossami, Aileen Benedict, Mohammad Mahzoon, and Devansh Desai. Curri: A Curriculum Visualization System that Unifies Curricular Dependencies with Temporal Student Data. In *Conference for American Society for Engineering Education*, ASEE '20, 2020. [20-30% historical acceptance rate].

[21] **Stephen MacNeil**, Kyle Kiefer[UG], Dev Takle[UG], Brian Thompson[UG], and Celine Latulipe. IneqDetect: Visualizing Students' Conversations to Increase Awareness and Support Reflection. In *Global Computing Education Conference*, ACM CompEd '19, 2019. [33% acceptance rate].

[22] Nasrin Dehbozorgi and **Stephen MacNeil**. Semi-automated Analysis of Reflections as a Continuous Course. In *Frontiers in Education Conference*, IEEE FIE '19, 2019. [56% acceptance rate].

[23] Celine Latulipe, **Stephen MacNeil**, and Brian Thompson[UG]. Evolving a Data Structures Class Toward Inclusive Success. In *Frontiers in Education Conference*, IEEE FIE '18, 2018. [59% acceptance rate].

[24] Nasrin Dehbozorgi, **Stephen MacNeil**, Mary Lou Maher, and Mohsen Dorodchi. A Comparison of Lecture-based and Active Learning Design Patterns in CS Education. In *Frontiers in Education Conference*, IEEE FIE '18, 2018.

[25] Mohsen Dorodchi, Aileen Benedict, Devansh Desai, Mohammad Mahzoon, **Stephen MacNeil**, and Nasrin Dehbozorgi. Design and Implementation of a CS1 Course with Periodic Reflections Validated by Learning Analytics. In *Frontiers in Education Conference*, IEEE FIE '18, 2018.

[26] **Stephen MacNeil**, Sarah Abdellahi, Mary Lou Maher, Jin Goog Kim, Mohammad Mahzoon, and Kazjon Grace. Designing with and for the Crowd: A Study of Design Processes in NatureNet. In *Design Computing and Cognition*, DCC '18. Springer, 2018.
[39% acceptance rate].

[27] **Stephen MacNeil**, Johanna Okerlund, and Celine Latulipe. Dimensional Reasoning and Research Design Spaces. In *Conference on Creativity and Cognition*, ACM C&C '17, 2017. [28% acceptance rate].

[28] **Stephen MacNeil**, Celine Latulipe, Bruce Long, and Aman Yadav. Exploring Lightweight Teams in a Distributed Learning Environment. In *Technical Symposium on Computing Science Education*, SIGCSE '16, 2016. [35% acceptance rate].

[29] **Stephen MacNeil**, Celine Latulipe, and Aman Yadav. Learning in Distributed Low-Stakes Teams. In *Conference on International Computing Education Research*, ICER '15, 2015. [26% acceptance rate].

Refereed Journal Papers

[30] Christine Holyfield, **Stephen MacNeil**, Nicolette Caldwell, Tara O'Neill Zimmerman, Elizabeth Lorah, Slobodan Vucetic, and Eduard Dragut. Leveraging Communication Partner Speech to Automate Augmented Input for Children on the Autism Spectrum who are Minimally Verbal: Prototype Development and Preliminary Efficacy Investigation. In *American Journal of Speech-Language Pathology*, AJSLP '24, 2024.

[31] **Stephen MacNeil**, Zijian Ding[UG], Ashley Boone[UG], Bryce Grubbs[UG], and Steven Dow. Finding Place in a Design Space: Challenges for SupportingCommunity Design Efforts at Scale. In *Computer Supported Cooperative Work*, ACM CSCW '21, 2021.

[32] **Stephen MacNeil**, Sarah Nicita[UG], Ashley Boone[UG], Kenneth Chen[UG], Enrique Arcilla, Eric Richards, and Steven Dow. Seamful Design: A review of open online design initiatives during COVID-19. In *Computer Supported Cooperative Work*, ACM CSCW '23, 2023. (prepared for submission).

[33] **Stephen MacNeil** and Niklas Elmqvist. Visualization Mosaics for Multivariate Visual Exploration. *Computer Graphics Forum*, 32(6):38–50, September 2013.

Book Chapters

[34] Mary Lou Maher, Nasrin Dehbozorgi, Mohsen Dorodchi, and **Stephen MacNeil**. *Faculty Experiences in Active Learning: A Collection of Strategies for Implementing Active Learning Across Disciplines*, chapter Design Patterns for Active Learning. UNC Charlotte, 2020.

[35] Celine Latulipe and **Stephen MacNeil**. *Faculty Experiences in Active Learning: A Collection of Strategies for Implementing Active Learning Across Disciplines*, chapter A Model for Mentoring Faculty and Teaching Assistants in Active Learning. UNC Charlotte, 2020.

Short Papers Demos and Workshops

[36] Ziheng Huang[UG], Sebastian Gutierrez[UG], Hemanth Kamana[UG], and **Stephen MacNeil**. Memory Sandbox: Transparent and Interactive Memory Management for Conversational Agents. In *Conference on Creativity and Cognition*, ACM UIST '23, 2023.

[37] Ziheng Huang[UG], Kexin Quan[UG], Joel Chan, and **Stephen MacNeil**. CausalMapper: Challenging designers to think in systems with Causal Maps and Large Language Model. In *Conference on Creativity and Cognition*, ACM C&C '23, 2023.

[38] Ziheng Huang[UG] and **Stephen MacNeil**. DesignNet: a knowledge graph representation of the conceptual design space. In *Conference on Creativity and Cognition*, ACM C&C '23, 2023.

[39] **Stephen MacNeil**, Joanne Kim[UG], Juho Leinonen, Paul Denny, Seth Bernstein[UG], Brett Becker, Michael Wermelinger, Arto Hellas, Andrew Tran[UG], Sami Sarsa, James Prather, and Viraj Kumar. The Implications of Large Language Models for CS Teachers and Students. In *Technical Symposium on Computing Science Education*, ACM SIGCSE '23, 2023.

[40] **Stephen MacNeil**, Andrew Tran[UG], Arto Hellas, Joanne Kim[UG], Sami Sarsa, Paul Denny, Seth Bernstein[UG], and Juho Leinonen. Generating CS Learning Materials with Large Language Models. In *Technical Symposium on Computing Science Education*, ACM SIGCSE '23, 2023.

[41] **Stephen MacNeil**, , Parth Patel[UG], and Ben Smolin[UG]. Expert Goggles: Detecting and Annotating Visualizations using a Machine Learning Classifier. In *Symposium on User Interface Software and Technology*, ACM UIST '22, 2022.

[42] **Stephen MacNeil**, Zijian Ding[UG], Kexin Quan[UG], Ziheng Huang[UG], Kenneth Chen[UG], and Steven P. Dow. ProbMap: Automatically Constructing Design Galleries through Feature Extraction and Semantic Clustering. In *Symposium on User Interface Software and Technology*, ACM UIST '21, 2021.

[43] Srishti Palani, Zijian Ding[UG], **Stephen MacNeil**, and Steven Dow. The "Active Search" Hypothesis: How Search Strategies Relate to Creative Learning. In *Conference on Human Information Interaction & Retrieval*, ACM CHIIR '21, 2021. **(co-advisor)**.

[44] **Stephen MacNeil**, Mohsen Dorodchi, and Nasrin Deborghzi. Using Spectrums and Dependency Graphs to Model Progressions from Introductory to Capstone Courses. In *Frontiers in Education Conference*, IEEE FIE '17, 2017.

[45] **Stephen MacNeil**, Celine Latulipe, and Johanna Okerlund. Co-Creating Dimensions and Examples Using Design Space Gaps. In *First Workshop on Co-Creation at the International Conference on Computational Creativity*, ACM ICCC '17, 2017.

Posters

[46] Cynthia Zastudil[PhD], Christine Holyfield, June A Smith, and **Stephen MacNeil**. Enhancing Grid Displays with Predictive Anchoring. *ACM ASSETS '24*, 2024.

[47] Cynthia Zastudil[PhD], Christine Holyfield, Christine Kapp[UG], Xandria Crosland[UG], Elizabeth R Lora, Tara Zimmerman, and **Stephen MacNeil**. Exploring the use of Generative AI to Support Automated Just-in-Time Programming for Visual Scene Displays. *ACM ASSETS '24*, 2024.

[48] Seth Bernstein[UG], Paul Denny, Juho Leinonen, Matt Littlefield[UG], Arto Hellas, and **Stephen MacNeil**. Analyzing Students' Preferences for LLM-Generated Analogies. *ACM ITiCSE '24*, 2024.

[49] Elizabeth Garrison, **Stephen MacNeil**, Matt Tincani, Donald A. Hantula, and Slobodan Vucetic. Exploring the Use of a Virtual Interview Coach to Support Job Seekers with Autism Learn Interview Skills. In *Neurodiversity at Work Research Conference*, NWRC '24, 2024.

[50] **Stephen MacNeil**, Juho Leinonen, Paul Denny, Natalie Kiesler, Arto Hellas, James Prather, Brett Becker, Michael Wermelinger, , and Karen Reid. Discussing the Changing Landscape of Generative AI in Computing Education. In *Technical Symposium on Computing Science Education*, ACM SIGCSE '24, 2024.

[51] Rebecca Fritz, Cynthia Zastudil[PhD], and **Stephen MacNeil**. AR Autocomplete: An AAC Device Powered by Computer Vision and Large Language Models. *STARS Celebration '23*, 2023.

[52] Andrew Tran[UG], Linxuan Li, Egi Rama[UG], Kenneth Angelikas[UG], and **Stephen MacNeil**. Using Large Language Models to Automatically Identify Programming Concepts in Code Snippets. In *Conference on International Computing Education Research*, ACM ICER '23, 2023.

[53] James Prather, Paul Denny, Juho Leinonen, Brett A Becker, Ibrahim Albluwi, Michael E Caspersen, Michelle Craig, Hieke Keuning, Natalie Kiesler, Tobias Kohn, and others. Transformed by Transformers: Navigating the AI Coding Revolution for Computing Education: An ITiCSE Working Group Conducted by

Humans. In *Conference on Innovation and Technology in Computer Science Education*, ACM ITiCSE '23, 2023.

[54] **Stephen MacNeil**, <u>Josh Withka</u>^{UG}, <u>Aaron Wile</u>^{UG}, <u>Parth Patel</u>^{UG}, Emily Jao^{UG}, and <u>Maggie Hanley</u>^{UG}. A Context-Aware Browser Extension for Just-in-Time Learning of Data Literacy Skills. In *Conference on International Computing Education Research*, ACM ICER '22, 2022.

[55] **Stephen MacNeil**, <u>Andrew Tran</u>^{UG}, Dan Mogil, <u>Seth Bernstein</u>^{UG}, Erin Ross, and Ziheng Huang^{UG}. Automatically generating diverse explanations of code snippets for CS students using the large language model GPT-3. In *Conference on International Computing Education Research*, ACM ICER '22, 2022.

[56] **Stephen MacNeil**. Tools to Support Data-driven Reflective Learning (Doctoral Consortium). In *Conference on International Computing Education Research*, ACM ICER '17, 2017.

[57] **Stephen MacNeil** and Celine Latulipe. Leveraging Context to Create Opportunistic Co-Located Learning Environments. In *Technical Symposium on Computing Science Education*, ACM SIGCSE '16, 2016.

Teaching

My accomplishments as an educator include developing **three new courses** from scratch. I have consistently received **positive feedback (4.6/5)** from student evaluations and from peer teaching reviews. I was awarded a **TA of the Year Award** for the 2016-2017 academic year. I have also participated in the **EdTech Partners** and **GAANN Teaching Fellowship** teacher training programs. I have **attended 10+ conferences** that focus on computing education and have published over 15 papers about computing education.

Instructor

Projects in Data Science, CIS 4496	*Temple University*
Instructor - 13 students per semester	*Sp23*
Human-AI Interaction, CIS 5590 (New Course)	*Temple University*
Instructor - 13 students per semester	*Fa22, Fa23*
Intro to Information Visualization, CIS 4330/4360 (New Course)	*Temple University*
Instructor - 30 students per semester	*Sp22, Sp23*
Independent Study, CIS 4282/4382	*Temple University*
Instructor - 5 total students	*Fa22, Sp23*
Independent Research I, CIS 2082	*Temple University*
Instructor - 9 total students	*Sp23*
System Integration, ITIS 6177 (New Prep)	*UNC Charlotte*
Co-Instructor	*Sp18*
Web Dev Coding Boot Camp	*Trilogy Bootcamp*
Subsitute Instructor	*2016 — 2017*
STARS Service and Leadership Course, ITCS 1610/3610	*UNC Charlotte*
Instructor of Record	*Sp16*

Teaching Assistant

Human-Computer Interaction (HCI), ITIS 3130	*UNC Charlotte*
Volunteer Teaching Assistant	*Summer '18*
Data Structures and Algorithms, ITCS 2214	*UNC Charlotte*
Teaching Assistant	*Fa16, Sp17*
Introduction to Programming II Lab, ITCS 1213	*UNC Charlotte*
Lab Instructor	*Sp13*
Computer Organization and Architecture Lab, ITCS 3182	*UNC Charlotte*
Lab Instructor	*Fa12*

Training and Awards

2022	**EdTech Partners Program**, Center for Advancement of Teaching	*Temple University*
2017	**Teaching Assistant of the Year**, College of Computing and Informatics	*UNC Charlotte*

Service

My accomplishments related to service include committee roles in my department and university, academic organizing roles, and engaging local communities in civic design initatives and informal learning experiences. One highlight has been my advisory role in the regional student-led OwlHacks Hackathon which has brought sponsors, students, and community members together in the Philadelphia Region.

EXTERNAL

2024	**Paper Session Chair**, ACM ITiCSE	*Milan, Italy*
2024	**Doctoral Consortium Member**, ACM Conference on Creativity and Cognition	*Chicago, IL*
2024	**Workshops and Tutorials Chair**, ACM Conference on Creativity and Cognition	*Chicago, IL*
2023	**Workshops and Tutorials Chair**, ACM Conference on Creativity and Cognition	*Virtual*
2019	**Web and Social Media Chair**, International Conf. on Computational Creativity	*Charlotte, NC*
2017	**Student Volunteer**, Creativity & Cognition 2017 Conference, ACM	*Singapore*
2015	**Web and Social Media Chair**, UIST 2015 Conference, ACM	*Charlotte, NC*

INTERNAL

2024	**Faculty Advisor**, OwlHacks Fall Hackathon	*Temple University*
2024	**REU Site Director**, Pervasive Computing for Smart Health, Safety, and Well-being	*Temple University*
2024	**REU Advisor**, Pervasive Computing for Smart Health, Safety, and Well-being	*Temple University*
2024	**Chair**, CIS PhD Recruitment Committee	*Temple University*
2024	**Member**, CIS Student Awards Committee	*Temple University*
2024	**Member**, CIS Merit Review Committee	*Temple University*
2023	**Faculty Advisor**, OwlHacks Fall Hackathon	*Temple University*
2023	**REU Advisor**, Pervasive Computing for Smart Health, Safety, and Well-being	*Temple University*
2023	**Faculty Advisor**, OwlHacks Spring Hackathon	*Temple University*
2023	**Member**, CIS Merit Review Committee	*Temple University*
2023	**Member**, CIS Faculty Search Committee	*Temple University*
2023	**Board Member**, Cultural Analytics Certificate Program	*Temple University*
2022	**REU Advisor**, Pervasive Computing for Smart Health, Safety, and Well-being	*Temple University*
2022	**Judge**, Frank Friedman Capstone Showcase	*Temple University*
2020	**Coordinator**, Design Lab Research Seminar	*UC San Deigo*
2018	**Judge**, Undergraduate Research Competition (URC)	*Charlotte, NC*
2017	**Judge**, REU Poster Competition, NSF	*Charlotte, NC*
2015	**Co-organizer, Speaker**, CEI Workshop: "Learning in Lightweight Teams"	*Charlotte, NC*
2015	**Founder**, Learning Sciences Reading Group, UNC Charlotte	*Charlotte, NC*

COMMUNITY

2022	**Panel Moderator**, CSCW Northeast	*Cornell Tech*
2021	**Design Workshop Organizer**, SDDW (San Diego Design Week)	*San Diego*
2021	**Design Facilitator**, ScaleSD (Smart Cities Accelerator Labs + Environment)	*San Diego*
2020	**Panel Moderator**, Tunisia Design Week, Design Equity Panel	*Tunisia (Online)*
2020	**Organizer**, Design for San Diego (D4SD)	*San Diego*
2020	**Design Facilitator**, Design for San Diego (D4SD) Design Jams	*San Diego*
2020	**Young Designers' Circle Member**, World Design Organization (WDO)	*Global*
2016	**Activity organizer**, NC Science and Technology Expo	*Charlotte, NC*
2016	**Activity organizer**, Julia Robinson Math and Science Festival	*Charlotte, NC*
2009	**President**, Sigma Pi Fraternity	*West Lafayette, IN*

PROGRAM COMMITTEE

ACM SIGCSE, Special Interest Group on Computer Science Education	2025
ACM ICER, Conference on International Computing Education Research	2024
ACM ITiCSE, Conference on Innovation and Technology in Computer Science Education	2024
ACM FAccT, Conference on Fairness, Accountability, and Transparency	2024
ACM CHI, Conference on Human Factors in Computing Systems	2024, 2025
ACM C&C, Creativity and Cognition	2023

Grant Reviewer

U.S. Department of Education, Institute of Education Sciences (IES)	2023

Journal Reviewer

ACM TiiS, Transactions on Interactive Intelligent Systems	2024
PLOS ONE, Public Library of Science	2023
Computer Sciene Education, Taylor and Francis	2024
ACM TOCE, Transactions on Computing Education	2023, 2024
ACM CSCW, Computer Supported Cooperative Work	2020, 2021, 2022
ACM IMWUT, Interactive, Mobile, Wearable and Ubiquitous Technologies	2021, 2023
IEEE TETC, Transactions on Emerging Topics in Computing	2017

Conference Reviewer

ACM C&C Conference, Creativity and Cognition	2022, 2023
ACM CHI, Conference on Human Factors in Computing Systems	2021, 2023
ACM CompEd, Global Computing Education Conference	2019
ACM ICCC, International Conference on Computational Creativity	2017
ACM SIGCSE, Special Interest Group on Computer Science Education	2017

Reviewer Awards

ACM CHI, 3x Special Recognitions for Outstanding Reviews
ACM IMWUT, 1 Special Recognition for Outstanding Reviews

Honors & Awards

2024	**Best Paper Award (Top 1%)**, ACM ITiCSE
2023	**Best Paper Honorable Mention (Top 5%)**, ACM Creativity and Cognition
2019	**US Representative for the Young Designers Circle**, World Design Organization
2017	**TA of the Year Award**, College of Computing & Informatics, UNC at Charlotte
2014	**GAANN Fellowship (Tuition and $34k Stipend)**, US Dept. of Education
2014	**Inducted Member**, Phi Kappa Phi Honorary Society

Invited Talks, Presentations, and Press Coverage

Keynote

CCSC 24: Consortium for Computing Sciences in Colleges	*Albany, NY*
A (Brief) History of Generative AI in Computing Education: From Use Cases to Tools, Strategies, and Assessment	*2024-4*

Invited Talks

Dagstuhl Seminar	*Schloss Dagstuhl*
The metacognitive and social harms of generative AI	*2024-6*
Raspberry Pi Seminar Series	*Virtual*
Generative AI is changing undergraduate education; and undergraduate research too!	*2024-5*

University of Maryland, Human-Computer Interaction Lab (HCIL) *Virtual*
DEMOCRATIZING EXPERT WORK THROUGH CONTEXT-AWARE ADAPTIVE SCAFFOLDING *2022-04*

Human-Technology Interface: Pathways to Products for Lifelong Learning (NSF Workshop) *Virtual*
NATURENET: DEVELOPING BESPOKE TECHNOLOGY FOR SMALL THIRD PLACE COMMUNITIES *2021-12*

Temple University *Virtual*
COMMUNITY-DRIVEN DESIGN: DEMOCRATIZING EXPERT PROCESSES THROUGH SOCIAL COMPUTING AND VISUALIZATION TOOLS *2021-04*

University of Illinois–Chicago (UIC) *Virtual*
COMMUNITY-DRIVEN DESIGN: DEMOCRATIZING EXPERT PROCESSES THROUGH SOCIAL COMPUTING AND VISUALIZATION TOOLS *2021-03*

Worcester Polytechnic Institute (WPI) *Virtual*
COMMUNITY-DRIVEN DESIGN: SUPPORTING COMMUNITY PROBLEM SOLVING WITH SOCIAL COMPUTING AND VISUALIZATION *2021-02*

CONFERENCE TALKS

ACE 24: Australasian Computing Education Conference *Sydney, NSW, Australia*
DECODING LOGIC ERRORS: A COMPARATIVE STUDY ON BUG DETECTION BY STUDENTS AND LLMS *2024-02*

ASHA 23: American Speech-Language-Hearing Association *Boston, MA*
AAC BY AND FOR THE PEOPLE: ADOPTING HUMAN-CENTERED DESIGN PRACTICES TO INFORM AAC DESIGN *2023-11*

SIGCSE 23: Special Interest Group for Computer Science Education *Toronto, CA*
EXPERIENCES FROM USING CODE EXPLANATIONS GENERATED BY LARGE LANGUAGE MODELS IN AN E-BOOK *2023-03*

SIGCSE 23: Special Interest Group for Computer Science Education *Toronto, CA*
THE IMPLICATIONS OF LARGE LANGUAGE MODELS FOR CS TEACHERS AND STUDENTS *2023-03*

C&C 21: Creativity and Cognition *Virtual*
FRAMING CREATIVE WORK: HELPING NOVICES FRAME BETTER PROBLEMS THROUGH INTERACTIVE SCAFFOLDING *2021-05*

CompEd 19: Global Computing Education Conference *Chengdu, China*
INEQDETECT: VISUALIZING STUDENTS' CONVERSATIONS TO INCREASE AWARENESS AND SUPPORT REFLECTION *2019-05*

FIE 18: Frontiers in Education (Doctoral Consortium) *San Jose, California*
SCAFFOLDING REFLECTIVE LEARNING WITH AN ECOLOGY OF REFLECTIVE SUPPORT TOOLS *2018-10*

FIE 18: Frontiers in Education *San Jose, California*
EVOLVING A DATA STRUCTURES CLASS TOWARD INCLUSIVE SUCCESS *2018-10*

ICER 17: International Conference on Education Research (Doctoral Consortium) *Tacoma, Washington*
TOOLS FOR DATA-DRIVEN REFLECTIVE LEARNING *2017-08*

C&C 17: Creativity and Cognition *Singapore*
DIMENSIONAL REASONING AND RESEARCH DESIGN SPACES *2017-06*

ICCC 17: 1st Workshop on Co-Creation *Atlanta, Georgia*
CO-CREATING DIMENSIONS AND EXAMPLES USING DESIGN SPACE GAPS *2017-06*

SIGCSE 16: Special Interest Group for Computer Science Education *Memphis, Tennessee*
DISTRIBUTED LOW-STAKES TEAMS IN THE WILD *2016-03*

ICER 15: International Computing Education Research *Omaha, Nebraska*
LEARNING IN DISTRIBUTED LOW-STAKES TEAMS *2015-08*

GUEST LECTURES

CIS 1001: Intro. to Academics in CS (Professor Polychronopoulou, 220 students) *Philadelphia, PA*
DEMOCRATIZING EXPERT WORK *2022-11*

CIS 4496: Projects in Data Science (Professor Abha Belorkar, 20 Students) *Philadelphia, PA*
DEMOCRATIZING EXPERT WORK THROUGH CONTEXT-AWARE ADAPTIVE SCAFFOLDING *2022-03*

CIS 1001: Intro. to Academics in CS (Professor Polychronopoulou, 150 students) *Philadelphia, PA*
DEMOCRATIZING EXPERT WORK THROUGH CONTEXT-AWARE ADAPTIVE SCAFFOLDING *2022-03*

DSGN160: Civic Design (Professor Steven Dow, 100 Students) *San Deigo, CA*
PROBLEM FRAMING: HOW ADOPTING MULTIPLE PERSPECTIVES AIDS PROBLEM SOLVING *2020-02*

COGS01: Introduction to Cognitive Science (Professor Mary Boyle, 100 Students) *San Deigo, CA*
CO-CONSTRUCTING DESIGN SPACES THROUGH COMMUNITY-DRIVEN DESIGN *2020-02*

Temple University TU Update
HTTPS://TEMPLEUPDATE.COM/ *2023*

Montreal AI Ethics Institute
HTTPS://MONTREALETHICS.AI/PROMPT-MIDDLEWARE-HELPING-NON-EXPERTS-ENGAGE-WITH-GENERATIVE-AI/ *2023*

LLM Agent Paper List (2.5k+ Stars)
HTTPS://GITHUB.COM/WOOOODYY/LLM-AGENT-PAPER-LIST *2023*

Research Mentorship: Students Supervised

I have been fortunate to work with 95 students (75 undergraduate students) throughout my career. **52 of these undergraduate students have published a paper or poster** with me at an academic conference or journal. Six of my former students have gone on to pursue graduate degrees at places like Georgia Tech, University of Maryland, University of Washington, and Harvard. Additionally, students have obtaiend internships and/or full-time positions at companies that include Duolingo, Spotify, Amazon, Microsoft, Intuit, and Slack.

Research is a team effort and I am grateful for having many wonderful team members.

PhD Students

2022	**Cynthia Zastudil**, Temple University	[8, 12]
2022	**Rahad Arman Nabid**, Temple University	

Dissertation Committees

2022	**Sejin Paik**, Boston University	
2023	**Abdullah Aljebreen**, Temple University	
2023	**Amani Almalki**, Temple University	
2023	**Rafaa Aljurbua**, Temple University	
2023	**Albatool Wazzan**, Temple University	[5, 7]
2023	**Elizabeth Garrison**, Temple University	[49]
2023	**Sidra Hanif**, Temple University	
2023	**Ziyu Yang**, Temple University	

Graduate Researchers

2018	**Anvesh Mekala** , UNC Charlotte	
2018	**Prutha Shirodkar** , UNC Charlotte, Esri	
2018	**Sakshi Shrivastava** , UNC Charlotte	
2018	**Dilip Subramaniam** , UNC Charlotte, Tyson Foods	
2020	**Srishti Palani** , UC San Diego	[19, 43]
2023	**Zhuo Li** , Temple University	[8]

Undergraduate Researchers

2015	**Kyla Bouldin** , UNC Charlotte (NSF REU), BARK	
2017	**Mariah Olsen** , UNC Charlotte (NSF REU)	
2017	**Kyle Kiefer** , UNC Charlotte, AvidXchange	[21]
2017	**Brian Thompson** , UNC Charlotte, AvidXchange	[21, 23]
2017	**Dev Takle** , UNC Charlotte, Amazon	[21]
2018	**Erfan Al Hosssami** , UNC Charlotte, PhD @ UNCC	[20]
2018	**Aileen Benedict** , UNC Charlotte, PhD @ UNCC	[20]
2018	**Devansh Desai** , UNC Charlotte, Duke Energy	[20]
2019	**Ashley Boone** , University of Washington, PhD @ Georgia Tech	[31]
2019	**Zijian "Jason" Ding** , UCSD, PhD @ University of Maryland	[14, 18, 19, 31, 42, 43]

2019	**Anthony "Bryce" Grubbs** , UC San Diego	[31]
2019	**Eric Richards** , UC San Diego, Skylight	
2019	**Natalie Duprey, Spotify** , UC San Diego	
2019	**Enrique Arcilla** , UC San Diego	
2020	**Julie Fung** , UC San Diego, TheXPlace	
2020	**Kenneth Chen** , UC San Diego, Slack	[14, 42]
2020	**Sarah Nicita** , Brown University, MS @ Harvard	
2020	**Jimmy Lozano** , UC San Diego	
2020	**Yajie Sun** , UC San Diego	[18]
2020	**Kexin Quan** , UC San Diego	[18, 42]
2020	**Thomas Parashos** , UC San Diego	[18]
2020	**Kendall Nakai** , UC San Diego, Microsoft	[14]
2021	**Ziheng Huang** , UC San Diego	[14, 36–38, 42, 55]
2021	**Avery Hom** , UC San Diego	
2021	**Alex Yu** , UC San Diego	[14]
2021	**Khiem Pham** , UC San Diego	
2021	**Erin Ross** , Temple University	[55]
2021	**Maggie Hanley** , Temple University	[54]
2021	**Aaron Wile** , Temple University	[54]
2021	**Josh Withka** , Temple University, Cigna	[54]
2022	**Emily Jao** , UC San Diego	[54]
2022	**Irene Hou** , UC San Diego	[8, 10]
2022	**Andrew Tran** , Temple University	[9, 13, 16, 17, 39, 40, 52, 55]
2022	**Dan Mogil** , Temple University	[55]
2022	**Seth Bernstein** , Temple University	[4, 9, 16, 17, 39, 40, 48, 55]
2022	**Parth Patel** , Temple University	[41, 54]
2022	**Joanne Kim** , Temple University	[9, 16, 17, 39, 40]
2022	**Fuad Hassan** , Temple University	
2022	**Matt Harootunian** , Temple University	
2022	**Ben Smolin** , Temple University	[41]
2022	**Jaina Lukose** , Temple University	
2022	**Brian Ramos** , Temple University	
2022	**Kenneth Angelikas** , Temple University	[10, 13, 52]
2023	**Egi Rama** , Temple University	[13, 52]
2023	**Chiku Okechukwu** , Temple University	[13]
2023	**Najuk Patel** , Temple University	
2023	**Magdalena Rogalska** , Temple University	[2, 12]
2023	**Christine Kapp** , Temple University	[12, 47]
2023	**Iris Ye** , Temple University	
2023	**Sydney Kimbell** , Temple University	
2023	**Jennifer Vaughn** , Temple University	[12]
2023	**Lauren Kan** , Temple University	[4]
2023	**Matt Littlefield** , Temple University	[4, 48]
2023	**Jimson Whiskeyman** , Temple University	
2023	**Noel Chacko** , Temple University	
2023	**Sebastian Gutierrez** , Temple University	[10, 36]
2023	**John Bernardin** , Temple University	
2023	**Ishan Aggarwal** , Temple University	
2023	**Owen Man** , Temple University	[8, 10]

2023	**Hemanth Kamana** , Temple University	[36]
2023	**Rebecca Fritz** , The University of Dallas	[51]
2023	**Sophia Mettille** , Temple University	[8, 10]
2023	**Sophie Chen** , Temple University	
2023	**Hannah Vy Nguyen** , Temple University	
2023	**Jihye Lee** , Temple University	
2023	**Xandria Crosland** , Western Governors University	[2, 47]
2024	**Trevor Flick** , Temple University	
2024	**Leili Massoum-Zadeh** , Temple University	
2024	**Adyan Chowdhury** , Temple University	
2024	**Yashi Patel** , Temple University	
2024	**June A. Smith** , Berea College	[46]
2024	**Liam Newsam** , UC Berkeley	
2024	**Eric Zhang** , Temple University	
2024	**Logan Krause** , Temple University	
2024	**Gavin** , Temple University	

HIGH SCHOOL RESEARCHERS

2022	**Leon Li** , Conestoga High School	[52]
2023	**Ryan Ding** , Conestoga High School	
2023	**Maanasa Gogula** , Conestoga High School	
2023	**Sirnira Davis-Burke** , Conestoga High School	