



# Stephen MacNeil

POSTDOCTORAL RESEARCHER · COMMUNITY-DRIVEN DESIGN · HCI · VISUALIZATION

☎ 908.500.4515 | ✉ smacneil@ucsd.edu | 🏠 <http://stevemacn.github.io> | 📱 stevemacn | 🌐 stevemacn1

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

## Appointments

### Department of Computer and Information Sciences, Temple University

ASSISTANT PROFESSOR

[Philadelphia, PA](#)

2021 — Present

### University of California San Diego

POSTDOCTORAL RESEARCHER | DR. STEVEN DOW

[San Diego, CA](#)

2019 — 2021

### University of Tokyo

VISITING RESEARCH SCIENTIST | DR. KOJI YATANI

[Tokyo, Japan](#)

Summer '16

### Purdue University

RESEARCH ASSISTANT | DR. NIKLAS ELMQVIST

[West Lafayette, IN](#)

2010 — 2012

## Education

### The University of North Carolina at Charlotte

PH.D. IN COMPUTER SCIENCE | ADVISOR: CELINE LATULIPE | GPA: 3.97

[Charlotte, NC](#)

2019

- Topic: Scaffolding Reflective Learning with an Ecology of Reflection Support Tools

### The University of North Carolina at Charlotte

MASTER'S DEGREE IN COMPUTER SCIENCE | GPA: 3.94

[Charlotte, NC](#)

2016

- Concentration: Visualization and Computer Graphics

### Purdue University

BACHELOR'S DEGREE IN ELECTRICAL AND COMPUTER ENGINEERING

[West Lafayette, IN](#)

2012

- Courses: Circuit design, probabilistic modeling, signal processing, and embedded programming

## Honors & Awards

- 2017 **TA of the Year Award**, College of Computing & Informatics, UNC at Charlotte
- 2017 **Travel Award (\$1500)**, College of Computing & Informatics, UNC at Charlotte
- 2014 **GAANN Fellowship (Tuition and \$34k Annual Stipend)**, US Dept. of Education
- 2014 **Inducted Member**, Phi Kappa Phi Honorary Society
- 2014 **3rd Place Award - CCI Flash Talks Competition**, UNC at Charlotte
- 2012 **Graduate Assistant Support Plan (GASP) Award**, UNC at Charlotte

## 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>).

### REFEREED CONFERENCE PAPERS

- [1] **Stephen MacNeil**, Sarah Nicita, Ashley Boone, Kenneth Chen, Enrique Arcilla, Eric Richards, and Steven Dow. Seamful design: A review of open online design initiatives during covid-19. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, CHI '22, New York, NY, USA, 2021. ACM. (prepared for submission).
- [2] **Stephen MacNeil**, Zijian "Jason" Ding, Yajie Sun, Thomas Parashos, Kexin Quan, and Steven Dow. The problems with problem framing: Exploring how novices use adaptive scaffolding based on structural decomposition to craft problem statements. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, C&C '21, New York, NY, USA, 2021. ACM. [23.1% acceptance rate].
- [3] Srishti Palani, Zijian "Jason" Ding, Austin Nguyen, Andrew Chuang, **Stephen MacNeil**, and Steven Dow. Conotate: Proactively suggesting queries based on notes promotes knowledge discovery. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, New York, NY, USA, 2021. ACM. [26.3% acceptance rate] (**co-advisor**).
- [4] **Stephen MacNeil**, Zijian "Jason" Ding, Ashley Boone, Bryce Grubbs, and Steven Dow. Finding place in a design space: Challenges for supporting community design efforts at scale. In *Proceedings of the 2021 Conference of Computer Supported Cooperative Work (CSCW '21)*, New York, NY, USA, 2021. ACM.
- [5] **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 *Proceedings of the Annual Conference for American Society for Engineering Education (ASEE)*. ASEE, 2020. [20-30% historical acceptance rate].

- [6] **Stephen MacNeil**, Kyle Kiefer, Dev Takle, Brian Thompson, and Celine Latulipe. Ineqdetect: Visualizing students' conversations to increase awareness and support reflection. In *Proceedings of the 2019 Global Computing Education Conference, CompEd 2019*, New York, NY, USA, 2019. ACM. [33% acceptance rate].
- [7] Nasrin Dehbozorgi and **Stephen MacNeil**. Semi-automated analysis of reflections as a continuous course. In *Proceedings of the 2019 IEEE Frontiers in Education Conference (FIE '19)*, pages 1–5. IEEE, 2019. [56% acceptance rate].
- [8] Celine Latulipe, **Stephen MacNeil**, and Brian Thompson. Evolving a data structures class toward inclusive success. In *Proceedings of the 2018 IEEE Frontiers in Education Conference (FIE '18)*, San Jose, USA, October 2018. [59% acceptance rate].
- [9] Nasrin Dehbozorgi, **Stephen MacNeil**, Mary Lou Maher, and Mohsen Dorodchi. A comparison of lecture-based and active learning design patterns in cs education. In *the 2018 IEEE Frontiers in Education Conference (FIE '18)*, San Jose, USA, October 2018.
- [10] 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 *Proceedings of the 2018 IEEE Frontiers in Education Conference (FIE '18)*, 2018. [59% acceptance rate].
- [11] **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 '18*, pages 61–80. Springer, 2018. [39% acceptance rate].
- [12] **Stephen MacNeil**, Johanna Okerlund, and Celine Latulipe. Dimensional reasoning and research design spaces. In *In Proceedings of the 11th Conference on Creativity and Cognition, C&C '17*, New York, NY, USA, 2017. ACM. [28% acceptance rate].
- [13] **Stephen MacNeil**, Celine Latulipe, Bruce Long, and Aman Yadav. Exploring lightweight teams in a distributed learning environment. In *Proceedings of the 47th ACM Technical Symposium on Computing Science Education, SIGCSE '16*, pages 193–198, 2016. [35% acceptance rate].
- [14] **Stephen MacNeil**, Celine Latulipe, and Aman Yadav. Learning in distributed low-stakes teams. In *Proceedings of the Eleventh Annual International Conference on International Computing Education Research, ICER '15*, pages 227–236, 2015. [26% acceptance rate].

## REFEREED JOURNAL PAPERS

- [15] **Stephen MacNeil** and Niklas Elmqvist. Visualization mosaics for multivariate visual exploration. *Computer Graphics Forum*, 32(6):38–50, September 2013.

## BOOK CHAPTERS

- [16] 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.
- [17] 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 POSTERS AND WORKSHOPS

- [18] **Stephen MacNeil**, Zijian Ding, Kexin Quan, Ziheng Huang, Kenneth Chen, and Steven P. Dow. Probmap: Automatically constructing design galleries through feature extraction and semantic clustering. In *The Adjunct Publication of the 34th Annual ACM Symposium on User Interface Software and Technology, UIST '21*, page 134–136, 2021.
- [19] Srishti Palani, Zijian "Jason" Ding, **Stephen MacNeil**, and Steven Dow. The "active search" hypothesis: How search strategies relate to creative learning. In *Proceedings of the 2021 Conference on Human Information Interaction & Retrieval (CHIIR)*, 2021. **(co-advisor)**.
- [20] **Stephen MacNeil**. Tools to support data-driven reflective learning (doctoral consortium). In *Proceedings of the 2017 ACM Conference on International Computing Education Research, ICER '17*, pages 299–300, New York, NY, USA, 2017. ACM.
- [21] **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, FIE '17*. IEEE, 2017.
- [22] **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, ICC3 '17*, New York, NY, USA, 2017. ACM.
- [23] **Stephen MacNeil** and Celine Latulipe. Leveraging context to create opportunistic co-located learning environments. In *Proceedings of the 47th ACM Technical Symposium on Computing Science Education, SIGCSE '16*, pages 688–689, New York, NY, USA, 2016. ACM.

# Teaching

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## INSTRUCTOR

### Intro to Information Visualization, CIS 4330/4360

INSTRUCTOR

Temple University

Sp22

### System Integration, ITIS 6177

CO-INSTRUCTOR

UNC Charlotte

Sp18

### Web Dev Coding Boot Camp

SUBSTITUTE INSTRUCTOR

Trilogy Bootcamp

2016 — 2017

### STARS Service and Leadership Course, ITCS 1610/3610

INSTRUCTOR OF RECORD

UNC Charlotte

Sp16

## TEACHING ASSISTANT

### Human-Computer Interaction (HCI), ITIS 3130

VOLUNTEER TEACHING ASSISTANT

UNC Charlotte

Summer '18

### Data Structures and Algorithms, ITCS 2214

TEACHING ASSISTANT

UNC Charlotte

Fa16, Sp17

### Introduction to Programming II Lab, ITCS 1213

LAB INSTRUCTOR

UNC Charlotte

Sp13

### Computer Organization and Architecture Lab, ITCS 3182

LAB INSTRUCTOR

UNC Charlotte

Fa12

## TRAINING AND AWARDS

- 2022 **Teaching's EdTech Partners Program**, Temple University's Center for Advancement of Teaching
- 2017 **Teaching Assistant of the Year**, University of North Carolina (Charlotte)

# Service

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## EXTERNAL

- 2019 **Web and Social Media Chair**, International Conference 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

- 2022 **Judge, Frank Friedman Capstone Showcase**, Temple University *Philadelphia, PA*
- 2020 **Coordinator**, UCSD Design Lab Research Seminar *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

- 2021 **Design Facilitator**, 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 **Table organizer**, NC Science and Technology Expo *Charlotte, NC*
- 2016 **Table organizer**, Julia Robinson Math and Science Festival *Charlotte, NC*
- 2009 **President**, Sigma Pi Fraternity *West Lafayette, IN*

## REVIEWER

- ACM CSCW Conference**, Computer Supported Cooperative Work 20, 21, 22
- ACM C&C Conference**, Creativity and Cognition 22
- ACM IMWUT Journal**, Interactive, Mobile, Wearable and Ubiquitous Technologies 21
- ACM CHI Conference**, Conference on Human Factors in Computing Systems 21
- ACM CompEd Conference**, Global Computing Education Conference 19
- ACM ICCS Conference**, International Conference on Computational Creativity 17
- ACM SIGCSE Conference**, Special Interest Group on Computer Science Education 17
- IEEE TETC Journal**, Transactions on Emerging Topics in Computing 17

# Invited Talks and Presentations

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## INVITED TALKS

### University of Maryland, Human-Computer Interaction Lab (HCIL)

DEMOCRATIZING EXPERT WORK THROUGH CONTEXT-AWARE ADAPTIVE SCAFFOLDING

*Virtual*  
2022-04

### NSF-Sponsored Workshop Series - Human-Technology Interface: Pathways to Products for Lifelong Learning

NATURENET: DEVELOPING BESPOKE TECHNOLOGY FOR SMALL THIRD PLACE COMMUNITIES

*Virtual*  
2021-12

### Temple University

COMMUNITY-DRIVEN DESIGN: DEMOCRATIZING EXPERT PROCESSES THROUGH SOCIAL COMPUTING AND VISUALIZATION TOOLS

*Virtual*  
2021-04

### University of Illinois–Chicago (UIC)

COMMUNITY-DRIVEN DESIGN: DEMOCRATIZING EXPERT PROCESSES THROUGH SOCIAL COMPUTING AND VISUALIZATION TOOLS

*Virtual*  
2021-03

### Worcester Polytechnic Institute (WPI)

COMMUNITY-DRIVEN DESIGN: SUPPORTING COMMUNITY PROBLEM SOLVING WITH SOCIAL COMPUTING AND VISUALIZATION

*Virtual*  
2021-02

## CONFERENCE TALKS

### C&C 21: Creativity and Cognition

FRAMING CREATIVE WORK: HELPING NOVICES FRAME BETTER PROBLEMS THROUGH INTERACTIVE SCAFFOLDING

*Virtual*  
2021-05

### CompEd 19: Global Computing Education Conference

INEQDETECT: VISUALIZING STUDENTS' CONVERSATIONS TO INCREASE AWARENESS AND SUPPORT REFLECTION

*Chengdu, China*  
2019-05

### FIE 18: Frontiers in Education (Doctoral Consortium)

SCAFFOLDING REFLECTIVE LEARNING WITH AN ECOLOGY OF REFLECTIVE SUPPORT TOOLS

*San Jose, California*  
2018-10

### FIE 18: Frontiers in Education

EVOLVING A DATA STRUCTURES CLASS TOWARD INCLUSIVE SUCCESS

*San Jose, California*  
2018-10

### ICER 17: International Conference on Education Research (Doctoral Consortium)

TOOLS FOR DATA-DRIVEN REFLECTIVE LEARNING

*Tacoma, Washington*  
2017-08

### C&C 17: Creativity and Cognition

DIMENSIONAL REASONING AND RESEARCH DESIGN SPACES

*Singapore*  
2017-06

### ICCC 17: 1st Workshop on Co-Creation

CO-CREATING DIMENSIONS AND EXAMPLES USING DESIGN SPACE GAPS

*Atlanta, Georgia*  
2017-06

### SIGCSE 16: Special Interest Group for Computer Science Education

DISTRIBUTED LOW-STAKES TEAMS IN THE WILD

*Memphis, Tennessee*  
2016-03

### ICER 15: International Computing Education Research

LEARNING IN DISTRIBUTED LOW-STAKES TEAMS

*Omaha, Nebraska*  
2015-08

## GUEST LECTURES

### CIS 4496: Projects in Data Science (Professor Abha Belorkar, 20 Students)

DEMOCRATIZING EXPERT WORK THROUGH CONTEXT-AWARE ADAPTIVE SCAFFOLDING

*Philadelphia, PA*  
2022-03

### CIS 1001: Intro. to Academics in CS (Professor Polychronopoulou, 150 students)

DEMOCRATIZING EXPERT WORK THROUGH CONTEXT-AWARE ADAPTIVE SCAFFOLDING

*Philadelphia, PA*  
2022-03

### DSGN160: Civic Design (Professor Steven Dow, 100 Students)

PROBLEM FRAMING: HOW ADOPTING MULTIPLE PERSPECTIVES AIDS PROBLEM SOLVING

*San Deigo, CA*  
2020-02

### COGS01: Introduction to Cognitive Science (Professor Mary Boyle, 100 Students)

CO-CONSTRUCTING DESIGN SPACES THROUGH COMMUNITY-DRIVEN DESIGN

*San Deigo, CA*  
2020-02

## Research Mentorship: Students Supervised

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I've been fortunate to lead 10+ research teams and mentor 30+ students. I've supervised teams as large as 5 students. Most students have worked on a volunteer basis. As a team leader, I am careful to respect students' time and ensure a return on their investment.

- 2015 **Kyla Bouldin**, NSF REU - BloomMatrix, The Ohio State University
- 2017 **Mariah Olsen**, NSF REU - BloomMatrix, University of North Carolina at Charlotte
- 2017 **Kyle Kiefer**, IneqDetect, UNC Charlotte
- 2017 **Brian Thompson**, IneqDetect, UNC Charlotte
- 2017 **Dev Takle**, IneqDetect - Machine Learning, UNC Charlotte
- 2018 **Erfan Al Hosssami**, Curriculum Visualization - Visualization, UNC Charlotte
- 2018 **Aileen Benedict**, Curriculum Visualization, UNC Charlotte
- 2018 **Devansh Desai**, Curriculum Visualization, UNC Charlotte
- 2018 **Anvesh Mekala**, Crowd Innovation - Web Dev, UNC Charlotte
- 2018 **Prutha Shirodkar**, NatureNet - ReactNative Development, UNC Charlotte
- 2018 **Sakshi Shrivastava**, NatureNet - Mobile App Development, UNC Charlotte
- 2018 **Dilip Subramaniam**, Crowd Innovation - Machine Learning & NLP, UNC Charlotte
- 2019 **Ashley Boone**, Community-driven design, University of Washington
- 2019 **Zijian "Jason" Ding**, Community-driven design, UC San Diego
- 2019 **Anthony "Bryce" Grubbs**, Community-driven design, UC San Diego
- 2019 **Eric Richards**, Civic Research Team, UC San Diego
- 2019 **Natalie Duprey**, Civic Research Team, UC San Diego
- 2019 **Enrique Arcilla**, Civic Research Team, UC San Diego
- 2020 **Julie Fung**, Civic Research Team, UC San Diego
- 2020 **Kenneth Chen**, Design during Covid-19, UC San Diego
- 2020 **Sarah Nicita**, Design during Covid-19, Brown University
- 2020 **Jimmy Lozano**, Innovation Analytics, UC San Diego
- 2020 **Yajie Sun**, Adaptive Scaffolding, UC San Diego
- 2020 **Kexin Quan**, Adaptive Scaffolding, UC San Diego
- 2020 **Thomas Parashos**, Adaptive Scaffolding, UC San Diego
- 2020 **Kendall Nakai**, Adaptive Scaffolding, UC San Diego
- 2020 **Srishti Palani**, Exploratory Search and Contextual Search, UC San Diego
- 2021 **Ziheng Huang**, Digial Whiteboards, UC San Diego
- 2021 **Avery Hom**, Digial Whiteboards, UC San Diego
- 2021 **Alex Yu**, UC San Diego
- 2021 **Khiem Pham**, UC San Diego
- 2021 **Erin Ross**, Temple University
- 2021 **Maggie Hanley**, Temple University
- 2021 **Aaron Wile**, Temple University
- 2021 **Josh Withka**, Temple University
- 2022 **Andrew Tran**, Temple University
- 2022 **Dan Mogil**, Temple University
- 2022 **Parth Patel**, Temple University
- 2022 **Seth Bernstein**, Temple University

## References

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### ACADEMIA

- Dr. Steven Dow, Associate Professor, UC San Diego
- Dr. Celine Latulipe, Professor, UNC Charlotte
- Dr. Mary Lou Maher, Professor, Department Chair, UNC Charlotte
- Dr. Niklas Elmqvist, Associate Professor, University of Maryland iSchool
- Dr. Jennifer Preece, Professor, Dean Emerita, University of Maryland iSchool

### INDUSTRY

- Dr. Vladimir Veselov, Senior Software Development Engineer - Amazon AWS & Winner of the Loebner Medal (2012 Turing Test)
- Keith McCormick, Usability Specialist and Business Informatics, Johnson & Johnson

### TEACHING

- Dr. Manuel A. Pérez-Quñones, Professor, Associate Dean, UNC Charlotte