

# Noura Howell

Assistant Professor  
Digital Media  
Georgia Institute of Technology

nourahowell.com  
nhowell8@gatech.edu

## ▷ EDUCATION

- 2020 School of Information, University of California, Berkeley  
Ph.D. in Information Management & Systems with a Designated Emphasis in New Media.
- 2012 Olin College of Engineering  
B.S. in Engineering with a Concentration in Computing, and the program's emphasis on human-centered design.
- 2007-8 Mississippi State University  
Gap year in pure math for fun—graph theory, group theory, topology—and music theory.

## ▷ PEER-REVIEWED PUBLICATIONS

- 2023 Fabulation as an Approach for Design Futuring  
Marie Louise Juul Søndergaard, Nadia Campo Woytuk, [Noura Howell](#), Vasiliki Tsaknaki, Karey Helms, Tom Jenkins, Pedro Sanches  
Designing Interactive Systems (DIS)  
In this year, the acceptance rate for this type of submission at this venue was 24%.
- Designing with Biosignals: Challenges, Opportunities, and Future Directions for Integrating Physiological Signals in Human-Computer Interaction  
Ekaterina R. Stepanova, John Desnoyers-Stewart, Alexandra Kitson, Bernhard E. Riecke, Alissa N. Antle, Abdallah El Ali, Jeremy Frey, Vasiliki Tsaknaki, [Noura Howell](#)  
Designing Interactive Systems (DIS) Extended Abstracts
- Towards Mutual Benefit: Reflecting on Artist Residencies as a Method for Collaboration in DIS  
Laura Devendorf, Leah Buechley, [Noura Howell](#), Jennifer Jacobs, Hsin-Liu (Cindy) Kao, Martin Murer, Daniela Rosner, Nica Ross, Robert Soden, Jared Tso, Clement Zheng  
Designing Interactive Systems (DIS) Extended Abstracts
- 2022 Diffraction-in-Action: Designerly Explorations of Agential Realism Through Lived Data  
Pedro Sanches, [Noura Howell](#), Vasiliki Tsaknaki, Tom Jenkins, Karey Helms  
Human Factors in Computing Systems (CHI)  
Honorable Mention Award.  
In this year, the acceptance rate for this type of submission at this venue was 14%. Honorable Mention is reserved for the top 5% of accepted papers.
- Fabulating Biodata Futures for Living and Knowing Together  
Vasiliki Tsaknaki, Pedro Sanches, Tom Jenkins, [Noura Howell](#), Laurens Boer, Afroditi Bitzouni  
Designing Interactive Systems (DIS)  
Acceptance rate: 30%

Design Futuring for Love, Friendship, and Kinships: Five Perspectives on Intimacy  
Sumita Sharma, Britta F. Schulte, Rocío Fatás Arana, [Noura Howell](#), Amy Twigger Holroyd, Grace Eden  
Human Factors in Computing Systems Extended Abstracts (alt.chi)

Button Portraits: Embodying Queer History with Interactive Wearable Artifacts  
Allie Riggs, [Noura Howell](#), Anne Sullivan  
International Conference on Interactive Digital Storytelling (ICIDS)

Feeling Air: Exploring Aesthetic and Material Qualities of Architectural Inflatables  
[Noura Howell](#), Shawn Protz, J. Byrd, M. Castellanos, A. Elkins, J. Hall, M. Holdsworth, L. Mallikeshwaran Rajagopal  
Sambasivan, C. Noel, O. Osiberu, R. Patel, D. Scallan, A. Uhrich, A. Anupam, B. Bosley, R. Donley, S. Milkes Espinosa,  
M. Ramirez, S. Nayak, A.-T. Tran, Y. Jia, and Y. Wang  
NordiCHI (Nordic Human-Computer Interaction Conference) Extended Abstracts

2021 Cracks in the Success Narrative: Rethinking Failure in Design Research through a Retrospective Trioethnography  
[Noura Howell](#), Audrey Desjardins, Sarah Fox  
ACM Transactions on Computer-Human Interaction (TOCHI).

Calling for a Plurality of Perspectives on Design Futuring: An Un-Manifesto  
[Noura Howell](#), Britta F. Schulte, Amy Twigger Holroyd, Rocío Fatás Arana, Sumita Sharma, Grace Eden  
Human Factors in Computing Systems Extended Abstracts (alt.chi)

2020 Expanding Modes of Reflection in Design Futuring  
Sandjar Kozubae, Chris Elsdén, [Noura Howell](#), Marie Louise Juul Søndergaard, Nick Merrill, Britta Schulte,  
Richmond Y. Wong  
Human Factors in Computing Systems (CHI)  
Acceptance rate: 23%

Teachable Machine: Approachable Web-Based Tool for Exploring Machine Learning Classification  
Michelle Carney, Barron Webster, Irene Alvarado, Kyle Phillips, [Noura Howell](#), Jordan Griffith, Jonas Jongejan, Amit  
Pitaru, Alexander Chen  
Human Factors in Computing Systems (CHI) Extended Abstracts

Challenges and Opportunities for Designing with Biodata as Material  
Vasiliki Tsaknaki, Tom Jenkins, Laurens Boer, Sarah Homewood, [Noura Howell](#), Pedro Sanches  
NordiCHI (Nordic Human-Computer Interaction Conference) Extended Abstracts

2019 Life-Affirming Biosensing in Public: Sounding Heartbeats on a Red Bench  
[Noura Howell](#), Greg Niemeyer, Kimiko Ryokai  
Human Factors in Computing Systems (CHI).  
Acceptance rate: 24%

Emotional Biosensing: Exploring Critical Alternatives  
[Noura Howell](#), John Chuang, Abigail De Kosnik, Greg Niemeyer, Kimiko Ryokai. 2018  
Proceedings of the ACM on Human-Computer Interaction (CSCW)  
Acceptance rate: 26%

Vivewell: Speculating Near-Future Menstrual Tracking through Current Data Practices  
Sarah Fox, [Noura Howell](#), Richmond Wong, Franchesca Spektor  
Designing Interactive Systems (DIS)  
Acceptance rate: 25%

- 2018    Tensions of Data-Driven Reflection: A Case Study of Real-Time Emotional Biosensing  
Noura Howell, Laura Devendorf, Tomás Vega Gálvez, Rundong (Kevin) Tian, Kimiko Ryokai  
 Human Factors in Computing Systems (CHI)  
 Acceptance rate: 26%
- Capturing, Representing, and Interacting with Laughter  
 Kimiko Ryokai, Elena Duran, Noura Howell, Jonathan Gillick, David Bamman  
 Human Factors in Computing Systems (CHI)  
 Acceptance rate: 26%
- Doodle Daydream: An Interactive Display to Support Playful and Creative Interactions Between Coworkers  
 Samitha Elvitigala, Samantha W. T. Chen, Noura Howell, Denys J. C. Matthies, Suranga Nanayakkara  
 Proceedings of the Symposium on Spatial User Interaction
- 2017    Interrogating Biosensing in Everyday Life  
 Nick Merrill, Richmond Wong, Noura Howell, Luke Stark, Lucian Leahu, Dawn Nafus  
 Designing Interactive Systems (DIS) Extended Abstracts
- Celebrating Laughter: Capturing and Sharing Tangible Representations of Laughter  
 Kimiko Ryokai, Elena Duran, Dina Bseiso, Noura Howell, Ji Won Jun  
 Designing Interactive Systems (DIS) Extended Abstracts  
 Acceptance rate: 22%
- 2016    Biosignals as Social Cues: Ambiguity and Emotional Interpretation in Social Displays of Skin Conductance  
Noura Howell, Laura Devendorf, Rundong (Kevin) Tian, Tomás Vega Gálvez, Nan-Wei Gong, Ivan Poupyrev, Eric Paulos, Kimiko Ryokai  
 Designing Interactive Systems (DIS)  
 Acceptance rate: 26%
- "I don't want to wear a screen": Probing Perceptions of and Possibilities for Dynamic Displays on Clothing  
 Laura Devendorf, Joanne Lo, Noura Howell, Jung Lin Lee, Nan-Wei Gong, M. Emre Karagozler, Shiho Fukuhara, Ivan Poupyrev, Eric Paulos, Kimiko Ryokai  
 Human Factors in Computing Systems (CHI)  
 Best Paper Award  
 The Best Paper Award is reserved for the top 1% of accepted papers.
- 2013    On the  $L(2,1)$ -Labelings of Amalgamations of Graphs  
 Sarah Spence Adams, Noura Howell, Nathaniel Karst, Denise Sakai Troxell, Junjie Zhu  
 Discrete Applied Mathematics
- 2009    Effect of Microbial Pretreatment on Enzymatic Hydrolysis and Fermentation of Cotton Stalks for Ethanol Production  
 Jian Shi, Ratna R. Sharma-Shivappa, Mari Chinn, Noura Howell  
 Biomass and Bioenergy

## ▷ OTHER WRITINGS

- 2023      Fast-Switching Spatial Thermal Display Using Water and Visible Lights  
            Sosuke Ichihashi, Masahiko Inami, [Noura Howell](#)  
            Position paper at workshop Smell, Taste, and Temperature Interfaces, CHI
- 2022      Comments in response to the Federal Trade Commission’s Advance Notice of Proposed Rulemaking (ANPR) on a  
            Trade Regulation Rule on Commercial Surveillance and Data Security  
            Richmond Wong, Watson Hartsoe, [Noura Howell](#)  
            Comment ID FTC-2022-0053-1100
- Children are the Future of Emotion AI  
            Noura Howell  
            Position paper at workshop Age Against the Machine: Designing Ethical AI for and with Children, NordiCHI
- Years, Illness, Wildfires, Pandemic: Time and ‘External Factors’ in Design Ideation Processes  
            Noura Howell  
            Position paper at workshop Time and Its Study in Design Ideation Processes, NordiCHI
- Exploring Architectural Inflatables and Emotion AI to Activate Affective Public Space  
            Noura Howell  
            Position paper at workshop Workshop on Tangible Interaction for Wellbeing, CHI
- 2020      Opacity as Stubborn, Resistant Uncertainty  
            Noura Howell  
            Position paper at workshop Embracing Uncertainty in HCI, CHI
- 2019      Heart Sounds as a Means of Giving Form to Critical Alternatives with Biosensory Data  
            Noura Howell  
            Position paper at workshop Doing Things with Research through Design, CHI
- 2018      Reconfiguring Desire & Data  
            [Noura Howell](#), Greg Niemeyer  
            Position paper at workshop Grand Visions for Post-Capitalist Human-Computer Interaction, CHI
- 2017      Personal Reflection as Creative Practice in Collaboration with Biosensing Machines  
            Noura Howell  
            Position paper at workshop Mixed-Initiative Creative Interfaces, CHI
- 2016      Textiles as On-Body Interactive Surfaces  
            Noura Howell  
            Position paper at workshop Digital Craftsmanship: HCI Takes on Technology as an Expressive Medium, DIS
- Representation and Interpretation of Biosensing  
            Noura Howell  
            Position paper at DIS Doctoral Consortium
- 2015      Connecting Two Oakland Neighborhoods: Surveillance and Self-Representation  
            Noura Howell  
            Position paper at workshop Inviting Participation through IoT: Experiments and Performances in Public Spaces,  
            Critical Alternatives

## ▷ ART EXHIBITIONS & PERFORMANCES

Heart Sounds Bench, 2022. *Georgia Tech Library Art Gallery*, Atlanta, US.

Embodied Transductions, 2022. New Interfaces for Musical Expression music and performances track.

Infrastructural Membranes, 2022. Ferst Arts Center, Atlanta, US.

Feeling Air: A Psycho-Speculative Inflatable Happening, 2021. *Black Mountain College Museum + Arts Center Annual Conference*, Asheville, US, with Shawn Protz and students at Georgia Tech and N.C. State University.

Heart Sounds Buckets, 2019. *Worth Ryder Art Gallery*, Berkeley, US, with Stephanie Tang, Kimiko Ryokai.

Salaam Participatory Peace Sculpture, 2018. Figment Arts Festival, Oakland, US, with Stan Clark, Sahil Mohan.

Ebb Color-Changing Fabric, 2018. *Tech Museum of the Center for Information Technology Research in the Interest of Society*, Berkeley, US, with Laura Devendorf et al.

Salaam Participatory Peace Sculpture, 2017. *Islamophobia Conference*, Berkeley, US, with Stan Clark, Sahil Mohan.

## ▷ GRANTS & AWARDS

2023	PI	\$10K	High-Resolution, Fast-Switching, Non-Contact Thermal Interfaces Ralph E. Powe Junior Faculty Enhancement Award
	PI	\$6K	Novel Thermal Interfaces Georgia Institute of Technology COVID Faculty Relief Fund
	PI	\$4.7K	Towards Ethical, Inclusive Emotion AI Futures Georgia Institute of Technology Small Grant for Research
2022	PI	\$8.8K	PREMIER: Performance Residencies in Electronic Music for Interdisciplinary Education Research Georgia Institute of Technology GVU/IPaT Community Engagement Grant with Co-PI Alex Cohen
	Co-PI	\$50K	Computational Craft Community Team Building Georgia Institute of Technology Provost Funding with PI Anne Sullivan, Co-PIs Vernelle Noel, Michael Nitsche, Sabetta Matsumoto
	PI	\$5K	Exploring the Promise and Peril of Emotion AI Georgia Institute of Technology Small Grant for Research
	PI	\$6.5K	Emotion AI - Novel Facial Recognition Tech that Predicts Emotions - Investigating Sociotechnical Implications of Emotion AI Georgia Institute of Technology COVID Faculty Relief Fund
2021	PI	\$10K	Engaging Diverse Students and Public Audiences with TensorFlow Emotion ML and Inflatable Architectural Immersive Environments with Co-PI Shawn Protz
2020	Co-PI*	\$4K	An Alternate Lexicon for AI with collaborators Noopur Raval and Co-PI Morgan Ames Berkeley Center for Technology, Society, & Policy and Algorithmic Fairness & Opacity Group

2019	PI*	\$25K	Speculating ‘Smart City’ Cybersecurity with the Heart Sounds Bench: Détourning Data and Surveillance in Public Space with mentor Kimiko Ryokai Berkeley Center for Long Term Cybersecurity
	Co-PI*	\$5K	Engaging Expert Stakeholders about the Future of Menstrual Biosensing Technology with collaborators Sarah Fox, Richmond Wong, and Franchesca Spektor Berkeley Center for Technology, Society, & Policy and Center for Long Term Cybersecurity
	PI*	\$1.5K	The Heart Sounds Bench with mentee Stephanie Tang Berkeley New Media Undergraduate Research Mentorship Award
2018	PI*	\$4K	Re-Centering the Body in Technological Utopias with mentee Franchesca Spektor and mentor John Chuang Berkeley Tech for Social Good
	PI*	\$2K	BaBench: Exploring Speculative Futures for Biosensing in Public Space Berkeley Jacobs Innovation Center
	PI*	-	Berkeley Arts Research Center Fellowship with mentor Greg Niemeyer
	Co-PI*	\$5K	Menstrual Biosensing Survival Guide with collaborators Richmond Wong and Sarah Fox Berkeley Center for Technology, Society, & Policy and Center for Long Term Cybersecurity
	PI*	\$1.5K	The Heart Sounds Bench with mentee Victor Iancu Berkeley New Media Undergraduate Research Mentorship Award
	PI*	-	Feeler Crawler Octopoets with mentee Wenny Miao and mentor Greg Niemeyer Berkeley New Media Summer Research Award
	PI*	\$4K	Berkeley Graduate Division Summer Grant
2017	-	-	Berkeley Outstanding Student Instructor Award
2014		\$21K	Berkeley Cota Robles Fellowship

\*As a PhD student at the time, I could not officially PI grants, but I planned the research, wrote the grant proposals, decided how to allocate funds, did the research, and wrote the research publications. These grants came out of my research agenda, while faculty mentors signed off and gave high level advice.

## ▷ TEACHING

### **Computer as Expressive Medium**

Lead instructor, Georgia Tech, 2022. Creative coding in p5.js for interactive media art, plus critical analysis of digital art.

### **Principles of Interaction Design**

Lead instructor, Georgia Tech, 2022-3. Designing and evaluating screen-based interfaces. Contextual inquiry, task analysis, accessibility audit, heuristic evaluations.

### **Critical Making with Emotion AI**

Lead instructor, Georgia Tech, 2021. Designing and building interactive art installations that use emotion AI to analyze facial imagery to classify emotion, to prompt critical reflect on social impacts of emotion AI.

### **Creative Programming & Electronics**

Teaching assistant, UC Berkeley, 2018. Hands-on Arduino, p5.js, circuits, and soldering.

### **Biosensing Technologies in Everyday Life**

Lead instructor, NC State University, 2021. Readings, discussion, and student-driven projects on sociotechnical implications of biosensing technologies such as algorithmic oppression, surveillance, and emotional biosensing.

### **Critical Making & Design Futuring**

Lead instructor, NC State University, 2020, 2021. Readings, discussion, and student-driven critical making and critical design futuring projects on topics such as algorithmic oppression, facial recognition, biometric surveillance, content moderation, etc.

### **Theory & Practice of Tangible User Interfaces**

Teaching assistant, UC Berkeley, 2016, 2017, 2018. Curriculum development, leading labs on embodied interaction, design theory, Arduino, circuits, soldering. Design critique and project mentorship.

### **Creative Code Immersive**

Teaching assistant, Gray Area Foundation for the Arts, 2014. Night class for artists. Arduino, Processing, circuits, and JavaScript.

### **Deconstructing Data Science**

Teaching assistant, UC Berkeley, 2016. Machine learning methods with critical social analysis of assumptions and bias embedded in algorithms and how these can reinforce inequality. Python tutoring, project advising.

## ▷ WORK EXPERIENCE & INDUSTRY COLLABORATIONS

### **North Carolina State University**

Assistant professor, Communication Dept., 2020 - 2021

### **Google ATAP Project Jacquard**

Research collaborator, e-textile data display, 2016

### **Intel Labs**

Software developer for Galileo IoT programming kit UI design and code, multi client sync protocol, 2014

### **Augmented Human Lab**

Visiting researcher with Suranga Nanayakkara at Singapore University of Technology & Design, 2017

### **The Echo Nest & SiriusXM**

Software developer. Data viz, full stack web, dashboard, parallelization for SiriusXM, 2012 - 2013

### **Army Corps of Engineers**

Parallelized 10K+ line FORTRAN model with OpenMP, 2007

## ▷ ACADEMIC SERVICE

### Track Chair

- 2024 TEI Social Media
- 2023 DIS Workshops
- 2023 Academic Mindtrek Papers

### Associate Chair

- 2022-24 Human Factors in Computing Systems (CHI)
- 2023 Tangible, Embedded, and Embodied Interaction (TEI)
- 2019-20 Designing Interactive Systems (DIS)

## Reviewer

- 2017-23 Designing Interactive Systems (DIS)
- 2016-22 Human Factors in Computing Systems (CHI)
- 2021-22 Transactions on Human-Computer Interaction (ToCHI)
- 2018-22 Tangible Embedded Embodied Interactions (TEI)
- 2018-22 NordiCHI
- 2022 India HCI
- 2019-21 Computer-Supported Cooperative Work and Social Computing (CSCW)
- 2021 National Science Foundation of the US (NSF)
- 2021 Journal of Textile Design Research and Practice
- 2020 ACM Group
- 2017 Design Issues

## University Committees

- 2022-23 Executive Committee, Georgia Tech School of Literature, Media, & Communication
- 2020-21 Grants Committee, NC State Dept. of Communication
- 2020-21 Peer Teaching Evaluations Standards & Scheduling
- 2019 Office Redesign Committee, UC Berkeley School of Information
- 2015-16 PhD Student Representative to the Faculty, UC Berkeley School of Information

## ▷ INVITED TALKS, PANELS, & WORKSHOPS

Emotion AI and Fabulation: Seeking Biopolitical Futures of Respectful Care. Keynote speaker at workshop by Nordic Fabulation Network. Umeå, Sweden, 2023

Fabulating Futures for Flourishing and Vibrant Worlds. Workshop hosted at Nordic Design Research Society (Nordes) Conference. Linköping University, Sweden, 2023. With Tom Jenkins, Marie-Louise Juul Søndergaard, Pedro Sanches, Vasiliki Tsaknaki, Nadia Campo Woytuk, Karey Helms, Laurens Boer, and Jason Tucker.

Introduction to Collaborative Autoethnography, Querying Experience workshop, Novel Interfaces for Musical Expression (NIME) conference. Online and in Mexico City, 2023

Workshop on ChatGPT, ethics, and education for K12 teachers. GoSTEAM conference, CEISMC, Georgia Tech, Atlanta, US, 2023. With Sumita Sharma.

Talk on using STEM for enacting ethical change with Finland high school students. Online to Oulu, Finland, 2023

Panelist for Full Radius Dance film screening of *Extension of Self: a dance between human and digital*. Georgia Tech University, 2023

Respondent for Jennifer Robertson's talk Emotional Robots and Digital Hormones: Japanese Perspectives on Human-Robot Coexistence, part of the talk series Emerging Technologies and the Future of the Humanities. Emory University, US, 2023

Toward an Affirmative Biopolitics: Reimagining Biodata with Feeling and Fabulation. Invited talk with Women in Music Technology. Georgia Tech, US, 2023

Panel facilitator for Artists-in-Residence Panel for artists of PREMIER, Media Arts, and Library Artists-in-Residence programs. Georgia Tech, US, 2023

Exploring Emotion AI Ethics by Designing Tangible, Embodied, Social, Emotional Experiences with Biodata. Ethics & Coffee talk series. Georgia Tech, US, 2023

Speaker at Meet the Artists: Reception for Georgia Tech Artists-in-Residence of PREMIER, Media Arts, and Library Artists-in-Residence programs. Georgia Tech, US, 2023

Panel facilitator for IPaT Tuesday Think Tank on Artist Residencies. Georgia Tech, US, 2022



Design Futuring. Leading a two-day invited workshop at University of Oulu, Finland, 2022

Towards an Affirmative Biopolitics: Reimagining biodata with Feeling and Fabulation. Invited lecture at Aalto University, as part of the Critical AI & Crisis Interrogatives Seminar. Aalto University, Finland, 2022

Women in AI Finland invited talk with middle schoolers on AI and AI careers. International School in Oulu, Finland, 2022

Radio interview with NPR City Lights with Lois Reitzes, with Birney Robert, about the Heart Sounds Bench (my work) being in the exhibit Extension of Self (curated by Birney Robert), 2022

Community Conversation: Impact, Arts, and Technology. Invited panelist alongside Gabriel Kahane and Felipe Barral. Hosted by the Atlanta Opera and Georgia Tech Arts. Atlanta, US, 2022

Designing for Emotional Meaning-Making with Data. Invited lecture at The Scholars' Lab, University of Virginia, US, 2022

Exploring the Promise and Peril of Emotion AI, Designing for Emotional Meaning-Making with Data, and Imagining an Affirmative Biopolitics with Data. Invited lecture at the Gvu Seminar Series, Georgia Tech, US, 2021

Designing for Emotional Meaning-Making with Data: Imagining an Affirmative Biopolitics. Invited lecture at the Coffee & Viz Research Exchange, North Carolina State University, US, 2021

Beyond Big Tech: Careers in Social Impact, Tech for Good, and Research. Panelist, UC Berkeley, 2021

Diversity Admissions Panel, UC Berkeley, 2020

Reimagining Cybersecurity through the Design of the Heart Sounds Bench, talk at Center for Long-Term Cybersecurity Research Exchange, Berkeley, US, 2019

Emotional Biosensing, talk at InfoCamp Conference, Berkeley, US, 2019

Emotional Biosensing, talk at Bay Area Signal Hackers, Pandora, Oakland, US, 2019

A Case Study of Emotional Biosensing: Tensions of Data-Driven Reflection, for the Society for the Social Studies of Science (4S), Boston, US, 2017

Design Thinking: From Idea to Innovation, workshop facilitator for tech industry executives with the Augmented Human Lab, Colombo, Sri Lanka, 2017

Emotional Biosensing, guest lecture for the class Mind-Reading and Telepathy for Beginners and Intermediates at UC Berkeley, 2017

Machine Learning Introduction, guest lecture for the class City Planning 101 at UC Berkeley, 2017

Information vs. Interaction: A Case Study of Affective Computing, lecture for the class Deconstructing Data Science at UC Berkeley, 2016

Rethinking Data with Emotion and Materiality, guest lecture for the class Sensors, Humans, Data, Apps at UC Berkeley, 2016

Rethinking Data with Emotion and Materiality, lecture for the class Tangible User Interfaces at UC Berkeley, 2016