Blair Subbaraman

b1air (at) uw (dot) edu | blairsubbaraman.com

Education

2020-Present PhD, Human Centered Design & Engineering, *University of Washington*, Seattle, WA
Anticipated Graduation: Spring 2026
Advisor: Nadya Peek
Committee: Mako Hill, Daniela Rosner, Casey Reas

2022 MS, Human Centered Design & Engineering, *University of Washington*, Seattle, WA

2018 BA, Physics, *Pomona College*, Claremont, CA
Advisor: Dwight Whitaker
Minor: Mathematics

Research and Work Experience

2020-Present Machine Agency
with Nadya Peek, University of Washington
In my PhD research, I study and build systems for domain experts to creatively engage computer-controlled machines.

2022 Slip Rabbit Studio
with Timea Tihanyi & Audrey Desjardins, University of Washington
Developed ceramic 3D printing workflows over 6 months to physicalize audio data in custom sculptural forms.

2018-2020 Center for Research in Engineering, Media, & Performance (REMAP)
with Jeff Burke, UCLA
Staff research associate working as a developer & designer on several immersive theater performances and new media installations.

2015-2018 Fluids Dynamics Lab
with Dwight Whitaker, Pomona College
Devoloped hardware, software, and scientific instrumentation to perform biological hydrodynamics experiments.

Publications

Refereed Conference and Journal Articles

All conference and journal articles are peer-reviewed.

2025 **Blair Subbaraman**, Nathaneal Bursch, and Nadya Peek. It's Not the Shape, It's the Settings: Tools for Exploring, Documenting, and Sharing Physical Fabrication Parameters in 3D Printing. In Proceedings of the 2025 ACM CHI Conference on Human Factors in Computing Systems (CHI '25)

2024 **Blair Subbaraman**, Orlando de Lange, Sam Ferguson, and Nadya Peek. The Duckbot: A System for Automated Imaging and Manipulation of Duckweed. In Plos one 19, no. 1 (2024)

2023 **Blair Subbaraman** and Nadya Peek. 3D Printers Don't Fix Themselves: How Maintenance is Part of Digital Fabrication. In Proceedings of the 2023 ACM Designing Interactive Systems Conference (DIS '23).

2023 **Blair Subbaraman**, Shenna Shim, and Nadya Peek. Forking a Sketch: How the OpenProcessing Community Uses Remixing to Collect, Annotate, Tune, and Extend Creative Code. In Proceedings of the 2023 ACM Designing Interactive Systems Conference (DIS '23).

2022 **Blair Subbaraman** and Nadya Peek. P5.fab: Direct Control of Digital Fabrication Machines from a Creative Coding Environment. In Proceedings of the 2022 ACM Designing Interactive Systems Conference (DIS '22).

2022 Xiaowen Sun, Daniel Gilman Calderón, **Blair Subbaraman**, and Jeffrey A. Burke. An Audience Data-Driven Alternate Reality Storytelling Design. In International Conference on Human-Computer Interaction (C&C '22).

Conference Posters and Juried Demonstrations

2024 **Blair Subbaraman** and Nadya Peek. Playing the Print: MIDI-based Fabrication Interfaces to Explore and Document Material Behavior. In Extended Abstracts of the 2024 CHI Conference on Human Factors in Computing Systems (CHI EA '24).

2022 **Blair Subbaraman** and Nadya Peek. Demonstrating p5.fab: Direct control of Digital Fabrication Machines From a Creative Coding Environment. In Adjunct Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology (UIST '22 Adjunct).

2021 **Blair Subbaraman** and Nadya Peek. Demonstrating p5.fab: Direct control of Digital Fabrication Machines From a Creative Coding Environment. In ACM Symposium on Computational Fabrication (SCF '21)

Magazine Articles

2022 Gabrielle Benabdallah and **Blair Subbaraman**. Explorations in narrative biosensing. Interactions. ACM New York, NY, USA, 2022.

Professional Activities

Talks

* *Indicates invited talk*

2024 Sketching with Machines, *Hackaday Superconference*, Pasadena, CA, USA.

2024* Science Jubilee: Open-source Hardware for Laboratory Automation, *Duckweeds, Microbes, and Symbiosis*, University of British Columbia, Vancouver, Canada.

2023* Computational Fabrication in Performance Contexts, *UCLA School of Theater, Film, & Television*, Los Angeles, CA, USA.

2023 Bridging Creative Code and Digital Fabrication, *Open Source Arts Contributors Conference*, Clinic for Open Source Arts (COSA), University of Denver, CO, USA.

2023 Custom Workflow Automation with Jubilee, *Global Community Biosummit 6.0*, Virtual & MIT

2022* Niche Experiments with Jubilee: Duckweed Growth Assays as a Case Study, *Duckweeds and Microbes: A New Frontier in Symbiosis Research*, University of Toronto.

2021 BodyTeller: Explorations in Narrative Biosensing, *Society for Social Studies of Science (4S 2021)*, Virtual

Workshops and Outreach Organization

2024, 2025 Pathways to Open-Source Hardware for Laboratory Automation, *University of Washington*, Seattle, Washington, USA, Co-Organizer.
Co-organized two consecutive NSF-funded three-day workshop with 25 participants. The workshops gathered an international group of scientists and engineers using open-source technologies for automating scientific experiments to build and share their approaches.

Awards and Honors

2024 Processing Foundation Fellowship Finalist

2018 Richard P. Edmunds Physics Prize for outstanding graduating student, Pomona College

Teaching Experience

2021 HCDE 439: Physical Computing, *University of Washington*, Graduate Teaching Assistant
Undergraduate level introduction to engineering and prototyping interactive systems & environments for human-centered applications. Sole TA.

2018 PHYS 128: Electronics with Laboratory, *Pomona College*, Undergraduate Teaching Assistant
Transistors and integrated circuits in a variety of applications including operational amplifiers, basic digital circuits, analog/digital conversion and an introduction to microprocessors. Served as one of two TAs.

2017 PHYS 41: General Physics with Laboratory, *Pomona College*, Undergraduate Teaching Assistant
Calculus-based introduction to Newtonian mechanics and thermodynamics for non-majors. One of two TAs.

2015, 2016 PHYS 70: Spacetime, Quanta and Entropy with Laboratory, *Pomona College*, Undergraduate Teaching Assistant
Calculus-based introduction to principles of contemporary physics. Topics include conservation laws, special relativity, quantum physics and thermal physics, all viewed from a 21st century perspective. One of two TAs.

Academic Service

Reviewing

** Special Recognition for Outstanding Reviews*

2025 ACM Conference on Human Factors in Computing (CHI)*
ACM Conference on Designing Interactive Systems (DIS)*

2024 ACM Conference on Human Factors in Computing (CHI)*
ACM Conference on Designing Interactive Systems (DIS)*
Halfway to the Future Symposium (HttF)

2023 ACM Conference on Human Factors in Computing (CHI)*
ACM Conference on Designing Interactive Systems (DIS)*

Conference Service

2024 Student Volunteer, ACM Conference on Human Factors in Computing (CHI)

2022 Session Chair, ACM Symposium on Computational Fabrication (SCF)
Student Volunteer, Eyeo Festival

2017 Student Volunteer, Eyeo Festival

Mentorship

**Signifies co-authorship on peer-reviewed article*

2024-Present Nathaneal Bursch*, Bachelor's Student, Mechanical Engineering, University of Washington.

2022-2024 Sam Ferguson*, Bachelor's Student, Human Centered Design and Engineering, University of Washington.

2022-2023 Shenna Shim*, Bachelor's Student, Human Centered Design and Engineering, University of Washington.

Performances & Installations

2020 The Invention of Morel, Virtual Performance
Developer for a workshop and performance exploring distributed remote virtual production during COVID-19 through an adaptation of The Invention of Morel by Adolfo Bioy Casares.

2019-2020 The Man in the High Castle, UCLA Freud Playhouse & Virtual
AR app development and HCI research for an experimental, immersive theater piece based on the world of the streaming series The Man in the High Castle.

2019 @LAs, UCLA Freud Playhouse
Developer and designer working with directors, cinematographers, and set designers to realize an AI/ML driven pop-up exhibition prototype as part of UCLA's Future Storytelling Summer Institute 2019.

2018 The Buzz, UCLA Campus
Created and deployed the sound platform for a Raspberry Pi based audio/furniture installation in collaboration with UCLA cityLAB.

2018 Entropy Bound, UCLA Little Theater
Developed software for custom wearables to support an experimental play weaving dramaturgy with code.

Selected Synergistic Activities

2023-Present **p5.js Math Steward**
One of ten stewards for issues, contributions, and community discussion related to the Math features of the open source creative coding library p5.js.

2018-2021 **OpenPTrack Community Manager**
Managed issues, questions, and discussions for OpenPTrack, an open source person tracking software for the arts.

2016-2018 **Community Science Projects**
Lead partnership between Pomona College and Fremont Academy of Engineering & Design, a public high school in Pomona, CA.