

# Jasper Tran O’Leary

Paul G. Allen School of Computer Science & Engineering  
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## RESEARCH MISSION

To enable safe, expressive, and learnable programming for manipulating physical matter.

Specialization: Human-computer interaction

Other interests: Digital fabrication, programming languages, computer graphics

Current topics: Computational notebooks for fabrication, functional programming for machines

## EDUCATION

- Ph.D. Computer Science and Engineering, University of Washington, *expected June 2024*
- M.S. Computer Science and Engineering, University of Washington, 2020
- B.A. Computer Science, University of California, Berkeley, 2016

## PUBLICATIONS

### In Submission

- 2024 **J. Tran O’Leary**, T. Ramesh, O. Zhang, and N. Peek. “Implementing an Error-Prone Digital Fabrication Workflow as a Single Program.” *Under review for the 2024 ACM Conference on Human Factors in Computing Systems*.

### Peer-Reviewed Conference Articles

- 2023 J. Li, E. Rawn, J. Ritchie, **J. Tran O’Leary**, and S. Follmer. “Beyond the Artifact: Power as Lens for Creativity Support Tools.” *Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology*. doi:10.1145/3586183.3606831
- 2023 **J. Tran O’Leary**, G. Benabdallah, and N. Peek. “Imprimer: Computational Notebooks for CNC Milling.” *Proceedings of the 2023 ACM Conference on Human Factors in Computing Systems*. doi:10.1145/3544548.3581334
- 2022 **J. Tran O’Leary**, E. Jun, and N. Peek. “Improving Programming for Exploratory Digital Fabrication with Inline Machine Control and Styled Toolpath Visualizations.” *Proceedings of the 7th Annual ACM Symposium on Computational Fabrication*. doi:10.1145/3559400.3561998
- 2021 **J. Tran O’Leary**, C. Nandi, K. Lee, and N. Peek. “Taxon: a Language for Formal Reasoning with Digital Fabrication Machines.” *Proceedings of the 34th Annual ACM Symposium on User Interface Software and Technology*. doi:10.1145/3472749.3474779
- 2021 H. Twigg-Smith, **J. Tran O’Leary**, and N. Peek. “Tools, Tricks, and Hacks: Exploring Novel Digital Fabrication Workflows on #PlotterTwitter.” *Proceedings of the 2021 ACM Conference on Human Factors in Computing Systems*. doi:10.1145/3411764.3445653

- 2020 J. Vasquez, H. Twigg-Smith, **J. Tran O’Leary**, and N. Peek. “Jubilee: an Extensible Machine for Multi-Tool Fabrication.” *Proceedings of the 2020 ACM Conference on Human Factors in Computing Systems*. doi:10.1145/3313831.3376425
- 2019 **J. Tran O’Leary**, S. Zewde, J. Mankoff, and D. Rosner. “Who Gets to Future? Design Methods, Race, and Representation in Africatown.” *Proceedings of the 2019 ACM Conference on Human Factors in Computing Systems*. doi:10.1145/3290605.3300791
- 2018 **J. Tran O’Leary**, H. Winnemöller, W. Li, M. Dontcheva, and M. Dixon. “Charrette: Supporting In-Person Discussions around Iterations in User Interface Design.” *Proceedings of the 2018 ACM Conference on Human Factors in Computing Systems*. doi:10.1145/3173574.3174109
- 2017 C. Torres, **J. Tran O’Leary**, M. Nicholas, and E. Paulos. “Illumination Aesthetics: Light as a Creative Material within Computational Design.” *Proceedings of the 2017 ACM Conference on Human Factors in Computing Systems*. doi:10.1145/3025453.3025466 **Best Paper Award: Top 1% of Papers.**
- 2016 J. Lo, C. Torres, I. Yang, **J. Tran O’Leary**, D. Kaufman, W. Li, M. Dontcheva, and E. Paulos. “Aesthetic Electronics: Designing, Sketching, and Fabricating Circuits through Digital Exploration.” *Proceedings of the 29th Annual ACM Symposium on User Interface Software and Technology*. doi:10.1145/2984511.2984579

#### Doctoral Symposia

- 2023 **J. Tran O’Leary**. “Physical-Digital Computing.” *Adjunct Proceedings of the 36th Annual ACM Symposium on User Interface Software and Technology*. doi:10.1145/3586182.3616709

#### Extended Abstracts and Demonstrations

- 2021 **J. Tran O’Leary**, C. Nandi, K. Lee, and N. Peek. “Taxon: a Language for Formal Reasoning with Digital Fabrication Machines.” *Demonstration at the 6th Annual ACM Symposium on Computational Fabrication*.
- 2021 **J. Tran O’Leary**, C. Nandi, K. Lee, and N. Peek. “A Grammar of Digital Fabrication Machines.” *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. doi:10.1145/3411763.3451829
- 2020 J. Vasquez, H. Twigg-Smith, **J. Tran O’Leary**, and N. Peek. “Jubilee Demo: An Extensible Machine for Multi-Tool Fabrication.” 2020. *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. doi:10.1145/3334480.3383179
- 2019 **J. Tran O’Leary** and N. Peek. “Machine-o-Matic: a Programming Environment for Prototyping Digital Fabrication Workflows.” *Presented at 10th Annual Workshop on Human-Computer Interaction and Programming Languages*.
- 2019 **J. Tran O’Leary** and N. Peek. “Machine-o-Matic: a Programming Environment for Prototyping Digital Fabrication Workflows.” *Adjunct Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology*. doi:10.1145/3332167.3356897
- 2018 **J. Tran O’Leary** and N. Peek. “Material Flow in Makerspaces.” *International Symposium on Academic Makerspaces*. <https://ijamm.pubpub.org/pub/d42sj8vn>
- 2018 **J. Tran O’Leary**. “3D Printing Self-Unmaking Objects.” *Workshop on Making Use of Non-Deterministic Art Practices in HCI*.
- 2016 C. Torres, **J. Tran O’Leary**, and E. Paulos. “Leveraging Theatricality for an Expressive Internet of Things.” *Proceedings of the 2016 ACM Conference Companion Publication on*

*Designing Interactive Systems*. doi:10.1145/2908805.2908807

## Magazine Articles

- 2023     **J. Tran O’Leary**, G. Benabdallah, N. Peek. “Physical-Digital Computing.” *XRDS: Crossroads, The ACM Magazine for Students*. Volume 29, Issue 4, Summer 2023, pp 48–53. doi:10.1145/3596930

## Patents

- 2018     L. Dontcheva, W. Li, M. Dixon, **J. Tran O’Leary**, H. Winnemöller. “Integrated Computing Environment for Managing and Presenting Design Iterations.” US10896161B2.

## AWARDS

- 2022     Research Exchange Award, Research University Alliance  
2017     Top Scholars First Year Scholarship, UW HCDE and UW Graduate School  
2017     Best Paper Award (Top 1% of Papers), ACM Conference on Human Factors in Computing  
2015     Summer Undergraduate Research Fellowship, UC Berkeley

## INVITED TALKS

- 2023     Cornell Tech HCI & Fabrication Group. *Host: Thijs Roumen*.  
2023     University of Pennsylvania HCI Group. *Host: Andrew Head*.  
2023     Boston University Graphics Group. *Host: Edward Chiang*.  
2021     Allen School Colloquium, University of Washington. *Host: Zachary Tatlock*.

## RESEARCH EXPERIENCE

- 2017–     Graduate Research Assistant  
            *Mentor: Nadya Peek*  
            University of Washington  
2017     Research Intern  
            *Mentors: Holger Winnemöller, Wilmot Li, Morgan Dixon, and Mira Dontcheva*  
            Adobe Research  
2013–16   Undergraduate Research Assistant  
            *Mentors: Cesar Torres and Eric Paulos*  
            University of California, Berkeley

## TEACHING EXPERIENCE

Serving as a teaching assistant at the University of Washington unless otherwise noted.

## PhD Courses

Prototyping Interactive Systems: Circuits, Digital Fabrication, and Machine Learning

## **Masters Courses**

Fabrication and Physical Prototyping

Digital Fabrication

## **Undergraduate Courses**

Physical Computing

User Interface Design and Development (head teaching assistant, UC Berkeley)

Structure and Interpretation of Computer Programs (course assistant, UC Berkeley)

## **Guest Lectures**

Reading Web Data on Microcontroller Firmware. Physical Computing (Undergraduate). *Instructor: Nadya Peek.*

Sending Sensor Data from Microcontrollers to Web Pages. Physical Computing (Undergraduate). *Instructor: Nadya Peek.*

Basic Electronics. Physical Computing (Undergraduate). *Instructor: Nadya Peek.*

Critiques of Design Methods. Foundations of Human Centered Design and Engineering (Undergraduate). *Instructor: Kristin Dew.*

Lineages of Digital Fabrication Research. Theoretical Foundations of Human Centered Design and Engineering (PhD). *Instructor: David Ribes.*

## **MENTORING**

\* Signifies co-authorship on peer-reviewed articles.

2023 Thrisha Ramesh\*, B.S. Computer Science and Engineering, University of Washington

2023 Octi Zhang\*, B.S. Computer Science and Engineering, University of Washington

2022 Maja Ling Han, M.S. Computer Science, University of Copenhagen

2019–20 Khang Lee\*, B.S. Electrical Engineering, University of Washington

## **ACADEMIC SERVICE**

### **Program Committees**

2022 ACM Symposium on User Interface Software and Technology (UIST)

### **Peer Reviewing**

2024 IEEE Virtual Reality

2023 ACM Symposium on User Interface Software and Technology (UIST)

2023 ACM Conference on Human Factors in Computing (CHI)

2022 ACM Symposium on User Interface Software and Technology (UIST)

2021 ACM Conference on Designing Interactive Systems (DIS)

- 2021 ACM Conference on Human Factors in Computing (CHI)
- 2020 ACM Symposium on Computational Fabrication (SCF)
- 2020 ACM Conference on Tangible and Embodied Interaction (TEI)
- 2020 ACM Symposium on User Interface Software and Technology (UIST)
- 2020 Journal of Open Hardware
- 2020 ACM ACM Conference on Human Factors in Computing (CHI)
- 2019 ACM Conference on Computer Supported Collaborative Work (CSCW)
- 2019 ACM Conference on Human Factors in Computing (CHI)
- 2019 ACM Conference on Creativity and Cognition (C&C)
- 2019 ACM Conference on Designing Interactive Systems (DIS)
- 2018 ACM Conference on Designing Interactive Systems (DIS)
- 2018 ACM Nordic Conference on Human Factors in Computing (NordiCHI)

### **Organizational Committees**

- 2022 Web Chair, ACM Symposium on User Interface Software and Technology (UIST)
- 2020 Web Chair, ACM Symposium on User Interface Software and Technology (UIST)

### **Service to the University**

- 2021–22 Allen School PhD Visit Days Coordinator
- 2022 Allen School PhD Admissions Reader
- 2020 Allen School Human-Computer Interaction Seminar Organizer

## **REFERENCES**

### **Nadya Peek** (advisor)

Assistant Professor

Human Centered Design and Engineering, University of Washington  
Seattle, WA

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[nadya@uw.edu](mailto:nadya@uw.edu)

### **Jennifer Mankoff**

Richard E. Ladner Endowed Professor

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[jmankoff@cs.washington.edu](mailto:jmankoff@cs.washington.edu)

### **Mira Dontcheva**

Senior Research Scientist

Creative Intelligence Lab, Adobe Research  
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