

Jasper Tran O’Leary

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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 2023*

M.S. Computer Science and Engineering, University of Washington, 2020

B.A. Computer Science, University of California, Berkeley, 2016

PUBLICATIONS

Peer-Reviewed Conference Articles

- 2023 **J. Tran O’Leary**, G. Benabdallah, and N. Peek. “Imprimer: Computational Notebooks for CNC Milling.” *To appear in 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 CHI 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 CHI 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 7th Annual ACM Symposium on Computational Fabrication*. 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 7th Annual ACM Symposium on Computational Fabrication*. 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 CHI 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 Symposium on User Interface Software and Technology*. doi:10.1145/2984511.2984579

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

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
2023–16 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.

2022 Maja Ling Han, Computer Science, University of Copenhagen

2019–20 Khang Lee*, Electrical Engineering, University of Washington

ACADEMIC SERVICE

Program Committees

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

Peer Reviewing

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

<https://www.hcde.washington.edu/peek>

nadya@uw.edu

Jennifer Mankoff

Richard E. Ladner Endowed Professor

Paul G. Allen School of Computer Science & Engineering, University of Washington
Seattle, WA

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Mira Dontcheva

Senior Research Scientist

Creative Intelligence Lab, Adobe Research
Seattle, WA

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César Torres

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Arlington, TX

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