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Jasper Tran O'Leary

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Full-stack software engineer with 7 years of experience building applications for robot programming research.

EDUCATION

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|--------------|----------------------------------|------------------------------------|---------------------|
| Ph.D. | Computer Science and Engineering | University of Washington | Sep 2017 – Jun 2024 |
| M.S. | Computer Science and Engineering | University of Washington | Sep 2017 – Jan 2021 |
| B.A. | Computer Science | University of California, Berkeley | Jan 2013 – Dec 2016 |

GPA: 3.88 (PhD/MS), 3.34 (BA). Selected coursework: algorithms, data structures, operating systems, networks, artificial intelligence, machine learning, graphics, programming language design and implementation.

SKILLS

Fluent: Javascript, Typescript, React, Python, Unix, Node.js, Git, HTML/CSS, Three.js

Proficient: C, C++, Arduino, Java, PyTorch, Numpy, Scipy, OpenCV, SQL, MongoDB, CAD/CAM.

Exposure: Docker, Ruby, Rust, OCaml, Haskell, WebGL, WebAssembly.

EMPLOYMENT

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| Graduate Student Researcher | University of Washington | Sep 2017 – present |
| <ul style="list-style-type: none">Engineered 4 interactive software systems to help users of digital fabrication tools (e.g., 3D printing, laser cutting, lab automation robotics); published results as 4 papers in CS research journals.Pioneered the concept of digital fabrication-as-programming in human-computer interaction research. | | |

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|---|-----------|---------------------|
| Software Engineer | Freelance | May 2021 – Sep 2021 |
| <ul style="list-style-type: none">Refactored a static PDF book catalog with a custom-built searchable library of book curricula.Leveraged vanilla Javascript and metaprogramming to implement dynamic functionality within existing Squarespace infrastructure without access to a backend.Work done for Hope in a Box, a non-profit for LGBTQ+ inclusive book curricula in public schools.<u>Leveraged knowledge</u> in Javascript, Google Sheets API, Git, and Github Actions. | | |

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| Research Intern | Adobe | Feb 2017 – Sep 2017 |
| <ul style="list-style-type: none">Prototyped a web-based UI design application that featured within-canvas graphical version control.Demonstrated in an experiment that use of the prototype correlated with increased confidence and recall in discussing previous design decisions compared to a baseline UI design tool.Published results in a CS journal (doi:10.1145/3173574.3174109) and as a patent (US10896161B2).<u>Leveraged knowledge</u> in Javascript, Meteor.js, and Git. | | |

PROJECTS

Personal Website: jasperoleary.com (for additional information, projects, and publications)

Library for Fabrication Machine Control within Computation Notebooks (“Imprimer”)

- Developed an open source library to enable computational notebook to replicate experimental two-sided CNC milling, milled 4 example objects as a proof-of-concept.
- Built multiple web backends: a Python add-in for Autodesk Fusion 360, a reactive web page rendering AR visualizations via a JSON grammar, and a server for CNC instruction parsing and dispatch.
- Technologies used: Typescript, Python, Node.js, Websockets, HTTP API design, CNC milling.

Web Application and Domain-Specific Language for Fabrication Machines (“Taxon”)

- Built a full-stack web application that for representing digital fabrication machines as programs.
- Formalized a domain specific language and compiler for moving between programs and simulations.
- Technologies used: Javascript, Node.js, Three.js, Express.js, and MongoDB.

Browser-Based Programming Environment for Machine Control and Visualization (“Verso”)

- Implemented a web-based code editor for direct machine control and visualization leveraging React and automatic code generation for custom within-code UIs.
- Leveraged language interpreter techniques for machine-specific visualizations with Three.js and OpenCV.
- Technologies used: Typescript, Node.js, React, Three.js, SQL, HTTP API design, and OpenCV.