

# Olivia Weng

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## Education

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### University of California, San Diego

PhD (*In progress*), Computer Science

2020 - 2026 (expected)

Advisor: Ryan Kastner

### University of California, San Diego

MS, Computer Science

2020 - 2023

### The University of Chicago

BS, Computer Science *spec.* Computer Systems

2016 - 2020

## Research Experience

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### University of California, San Diego

Research Assistant

Sep 2020 - Present

Advisor: Ryan Kastner

### The University of Chicago

Research Assistant

Apr 2019 - Jan 2020

Advisor: Andrew A. Chien

### The University of Chicago

Research Assistant

Mar 2018 - Jan 2020

Advisor: Yanjing Li

## Employment

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### AMD

Research Intern

Jul 2023 - Dec 2023

### The University of Chicago

Computer Lab Tutor

Jan 2017 - Jun 2020

### Braintree

Software Engineer Intern

Jun 2019 - Aug 2019

### The University of Chicago

Research Assistant

Jun 2018 - Sep 2018

Advisor: Yanjing Li

### Gridless Power Corporation

Software Intern

Jun 2017 - Aug 2017

## Awards

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### Achievement Rewards for College Scientists (ARCS) Fellowship

San Diego Chapter

2023 - 2024

### National Science Foundation Graduate Research Fellowship

2022 - 2025

### Jacobs School of Engineering Fellowship

University of California, San Diego

2020 - 2022

### Kunzel Powell Fellowship

University of California, San Diego

2020 - 2021

Dean’s Fund for Undergraduate Research  
The University of Chicago

2020

Dean’s List  
The University of Chicago

2017, 2018, 2019

Grace Hopper Conference Scholarship  
The University of Chicago

2018

## Publications

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1. **FKeras: A Sensitivity Analysis Tool for Edge Neural Networks** To appear  
Olivia Weng, Andres Meza, Quinlan Bock, Benjamin Hawks, Javier Campos, Nhan Tran, Javier Duarte, Ryan Kastner.  
In *ACM Journal on Autonomous Transportation Systems*.  
To appear.
2. **Turn on, Tune in, Listen up: Maximizing Side-Channel Recovery in Cross-Platform Time-to-Digital Converters** To appear  
Colin Drewes, Tyler Sheaves, Olivia Weng, Keegan Ryan, William Hunter, Christopher McCarty, Ryan Kastner, Dustin Richmond  
In *ACM Transactions on Reconfigurable Technology and Systems (TRETS)*.  
To appear.
3. **Reliable Edge Machine Learning Hardware for Scientific Applications** VTS 2024  
Tommaso Baldi, Javi Campos, Ben Hawks, Jennifer Ngadiuba, Nhan Tran, Daniel Diaz, Javier Duarte, Ryan Kastner, Andres Meza, Melissa Quinnan, Olivia Weng, Caleb Geniesse, Amir Gholami, Michael W. Mahoney, Vladimir Loncar, Philip Harris, Joshua Agar, Shuyu Qin.  
In *IEEE 42nd VLSI Test Symposium (VTS)*.  
Tempe, AZ. April 2024
4. **Pentimento: Data Residue in Cloud FPGAs** ASPLOS 2024  
Colin Drewes, Olivia Weng, Andres Meza, Alric Althoff, Bill Hunter, David Kohlbrenner, Ryan Kastner, Dustin Richmond.  
In *Proceedings of the 29th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*.  
San Diego, CA. April 2024.
5. **Tailor: Altering Skip Connections for Resource-Efficient Inference** TRETS 2024  
Olivia Weng, Gabriel Marcano, Vladimir Loncar, Alireza Khodamoradi, Abarajithan G, Nojan Sheybani, Andres Meza, Farinaz Koushanfar, Kristof Denolf, Javier Mauricio Duarte, Ryan Kastner.  
In *ACM Transactions on Reconfigurable Technology and Systems (TRETS) 17, 1, Article 11*.  
January 2024.
6. **Adapting Skip Connections for Resource-Efficient FPGA Inference** FPGA 2023  
Olivia Weng, Gabriel Marcano, Alireza Khodamoradi, Nojan Sheybani, Farinaz Koushanfar, Kristof Denolf, Javier Duarte, Ryan Kastner.  
In *Proceedings of the 2023 ACM/SIGDA International Symposium on Field Programmable Gate Arrays (FPGA)*.  
Monterey, CA. February 2023.
7. **Turn on, Tune in, Listen up: Maximizing Channel Capacity in Time-to-Digital Converters** FPGA 2023  
Colin Drewes, Olivia Weng, Keegan Ryan, William Hunter, Christopher McCarty, Ryan Kastner, Dustin Richmond  
In *Proceedings of the 2023 ACM/SIGDA International Symposium on Field Programmable Gate Arrays (FPGA)*.  
Monterey, CA. February 2023. **Nominated for Best Paper.**
8. **Open-source FPGA-ML codesign for the MLPerf Tiny Benchmark** MLBench 2022  
Hendrik Borrás, Giuseppe Di Guglielmo, Javier Duarte, Nicolò Ghielmetti, Ben Hawks, Scott Hauck, Shih-Chieh Hsu, Ryan Kastner, Jason Liang, Andres Meza, Jules Muhizi, Tai Nguyen, Rushil Roy, Nhan Tran, Yaman Umuroglu, Olivia Weng, Aidan Yokuda, Michaela Blott

In *Workshop on Benchmarking Machine Learning Workloads on Emerging Hardware (MLBench)*  
at *Fifth Conference on Machine Learning and Systems (MLSys)*.  
Santa Clara, CA. September 2022.

9. **Neural Network Quantization for Efficient Inference: A Survey** arXiv 2021  
Olivia Weng  
In *arXiv:2112.06126*.  
December 2021.
10. **A Tunable Dual-Edged Time-to-Digital Converter** FCCM 2021  
Colin Drewes, Steven Harris, Winnie Wang, Richard Appen, Olivia Weng, Ryan Kastner, William Hunter, Christopher McCarty, Dustin Richmond  
In *IEEE International Symposium on Field-Programmable Custom Computing Machines (FCCM)*  
Virtual, May 2021.
11. **Design Space Exploration for Machine Learning Architectures** ReCoDe 2021  
Michael Barrow, Olivia Weng, Ryan Kastner  
In *Workshop on Reimagining Codesign*  
hosted by *US DOE, Office of Advanced Scientific Computing Research*.  
Virtual, March 2021.
12. **Hardware-efficient Residual Networks for FPGAs** SLOHA 2021  
Olivia Weng, Alireza Khodamoradi, and Ryan Kastner.  
In *Workshop on System-level Design Methods for Deep Learning on Heterogeneous Architectures (SLOHA)*  
at *Conference on Design, Automation and Test in Europe (DATE)*.  
Grenoble, France, February 2021.
13. **Evaluating Achievable Latency and Cost: SSD Latency Predictors** AccML 2020  
Olivia Weng and Andrew A. Chien.  
In *Workshop on Accelerated Machine Learning (AccML)*  
at *High Performance Embedded Architectures and Compilers (HiPEAC)*.  
Bologna, Italy, January 2020.

## Presentations

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<b>Reliable Edge Machine Learning Hardware for Scientific Applications</b> VTS 2024, Tempe, AZ	April 23, 2024
<b>FKeras: A Sensitivity Analysis Tool for Edge Neural Networks</b> Fast Machine Learning for Science Workshop 2023, London, UK	September 27, 2023
<b>Open-source FPGA-ML codesign for the MLPerf Tiny Benchmark</b> MLBench 2022, Santa Clara, CA	September 1, 2022
<b>Hardware-efficient Residual Networks for FPGAs</b> SLOHA 2021, Virtual	February 5, 2021
<b>Evaluating Achievable Latency and Cost: SSD Latency Predictors</b> AccML 2020, Bologna, Italy	January 20, 2020

## Teaching

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<b>CSE 142L:</b> Computer Architecture: A Software Perspective – <i>Head TA</i> · Developed control flow graph visualizer for students to visually see computer architecture concepts in action	Summer 2021, Fall 2021
<b>CMSC 15400:</b> Introduction to Computer Systems – <i>Grader</i>	Spring 2020
<b>CMSC 15200:</b> Introduction to Computer Science II – <i>Grader</i>	Summer 2018, Winter 2019
<b>CMSC 22200:</b> Computer Architecture – <i>Grader</i>	Spring 2018
<b>CMSC 16100:</b> Honors Introduction to Computer Science I – <i>Grader</i>	Autumn 2017

## Service

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- UCSD CSE NSF GRFP Workshop**, Organizer Oct 2022 - Present
- Develop curriculum on how to write a strong application for the NSF GRFP, leading students through weekly lessons and peer review
  - Mentees: Anya Bouzida (Awardee), Katherine Izhikevich, Lisa Takai
- UCSD CSE Graduate Committee**, PhD Student Representative Oct 2022 - Present
- Represent PhD student interests during committee discussions to guide the formation of a new Research Exam and guidelines for PhD student advising
- UCSD GradWIC Mentorship Program**, Mentor Oct 2021 - Present
- Mentor a Masters student (Qian Qian) in finding a software engineering internship and guiding her through the interview process
  - Mentored a Masters student (Feiyu) in starting research in machine learning hardware acceleration
- UCSD CSE DEI Book Club**, Organizer + Member Oct 2020 - Present
- Select books and lead discussion on pressing and timely diversity issues, focusing on the U.S.
  - Books read: *The Color of Law*, *Minor Feelings*, *How to be an Anti-Racist*, *Whistleblower: My Unlikely Journey to Silicon Valley and Speaking Out Against Injustice*, *Between the World and Me*, *The Loneliest Americans*, *The End of Bias: A Beginning*, *Automating Inequality*, *Fulfillment: Winning and Losing in One-Click America*, *Teaching to Transgress: Education as the Practice of Freedom*
- MyCSPHD.org**, Content Creator + Panelist Dec 2020 - Apr 2021
- Created an informational video on the CS Ph.D. experience based on an interview with a Ph.D. student at the University of Washington, currently available on the My CS Ph.D Youtube channel
  - Participated in two My CS Ph.D. information session panels, answering questions about why pursue a Ph.D in CS and what Ph.D student life is like
- Jacobs Undergraduate Mentoring Program**, Mentor Oct 2020 - Jun 2021
- Mentored three undergraduate students, fostering connections between software engineers in industry and maintaining morale amidst a global pandemic
- UCSD GradWIC Graduate School Application Workshop**, Volunteer Oct 2020 - Mar 2021
- Reviewed and gave feedback on several undergraduate students' graduate school application materials over multiple workshop sessions
- ACM-W@UChicago Mentorship Program**, Undergraduate Mentor May 2018 - Jun 2020
- Guided Neha through how to start research and secure a research advisor, pointing her to various professors in the department with whom she could potentially work—she worked with Professor Shan Lu
  - Supported and checked in with Melanie as she went through the internship recruiting process and the CS major at UChicago, reviewing her resume and helping her select classes
- CS Student Activities Council**, Student Representative Sep 2017 - Jun 2020
- Secured funding to support four computer science student organizations on campus to host events that foster collaboration and grow the undergraduate tech community at UChicago
- Asynchronous Anonymous**, Director Jan 2017 - Jun 2020
- Coordinated weekly tech talks given by a diverse set of undergraduates, elevating minority speakers, to build an inclusive tech community at UChicago, engaging students with new technologies
- Society of Women Engineers' Girls' Day in STEM**, Volunteer May 2019
- Created a workshop that taught basic cryptography topics, in which 50 middle and high school girls participated
  - Facilitated a discussion on diversity and what it means to be a woman in STEM among a group of 7 local Chicago middle school girls
- compileHer Tech Capstone 2019**, Volunteer Apr 2019
- Led a group of 12 local Chicago middle school girls through interactive workshops that introduced select computer science topics, guiding them through completing each activity
- ACM-W@UChicago**, Board Member Jan 2017 - Jun 2018

- Organized study breaks and student panels in committee of five women computer science majors weekly to bring women and minority computer science community together and discuss diversity issues in the tech industry