Jennifer Switzer

jfswitze@ucsd.edu | jenniferswitzer.com

Education

PhD in Computer Science — *In progress*
University of California San Diego, San Diego, CA | GPA 4.0/4.0

Master of Engineering in Electrical Engineering and Computer Science — June 2020
Massachusetts Institute of Technology, Cambridge MA | GPA 5.0/5.0
M.Eng. Concentration in computer systems

Bachelor of Science in Electrical Engineering and Computer Science — June 2018
Massachusetts Institute of Technology, Cambridge MA | GPA 4.7/5.0

Research and Work Experience

Graduate Research Assistant — Sept 2020 - *In progress*
University of California San Diego
Advisors: Ryan Kastner and Pat Pannuto

Graduate Research Assistant — June 2018 - March 2020
Computer Science and Artificial Intelligence Lab, MIT
PI: Howard Shrobe
Research topic: Preventing IPC-facilitated type confusion in Rust (M.Eng. Thesis)

Undergraduate Researcher — Feb 2017 - March 2018
The Research Lab of Electronics (RLE), MIT
PI: Steven Leeb
Research topic: User-facing analytics for a non-intrusive load monitoring system

Computer Science Intern — June 2016 - Aug 2016
GreenWatch, Wavre, Belgium
Project: Analysing solar energy production data to distinguish the cause of production dips.

Undergraduate Researcher — Feb 2016 - Feb 2017
Computer Science and Artificial Intelligence Lab, MIT
PI: Hal Abelson
Research topic: Building an experimental middle-school computer science curriculum

Environmental Engineering Intern — Aug 2015 - June 2015
Talisman Energy, Edson, Alberta, Canada
Project: Evaluating the environmental impact of a gas plant's water disposal system

Publications and Posters

1. Jennifer Switzer, Ryan Kastner, and Pat Pannuto. Architecture of a junkyard datacenter. *arXiv preprint arXiv:2110.06870*, 2021
2. Jennifer Switzer, Eric Siu, Subhash Ramesh, Ruohan Hu, Emanoel Zadorian, and Ryan Kastner. Renée: New life for old phones. *IEEE Embedded Systems Letters*, pages 1–1, 2022
3. Jennifer Switzer and Barath Raghavan. Information batteries: Storing opportunity power with speculative execution. *SIGENERGY Energy Inform. Rev.*, 1(1):1–11, dec 2022
4. Jennifer Switzer. Flexible computing for intermittent energy. *XRDS: Crossroads, The ACM Magazine for Students*, 27(4):30–33, 2021
5. Jennifer Switzer, Rob McGuinness, Pat Pannuto, George Porter, Aaron Schulman, and Barath Raghavan. Terrawatt: Sustaining sustainable computing of containers in containers. *arXiv preprint arXiv:2102.06614*, 2021
6. Andre Aboulian, Daisy H Green, Jennifer F Switzer, Thomas J Kane, Gregory V Bredariol, Peter Lindahl, John S Donnal, and Steven B Leeb. Nilm dashboard: A power system monitor for electromechanical equipment diagnostics. *IEEE Transactions on Industrial Informatics*, 15(3):1405–1414, 2018
7. Jennifer Switzer, Andre Aboulian, Steven B Leeb. A user dashboard for a Non-Intrusive Load Monitoring (NILM) system. Poster presented at: 2017 MIT Energy Initiative Research Symposium; 2017 Dec 4-5; Cambridge, MA.

Invited Talks

Beyond operational efficiency: Nontraditional efforts for carbon-efficient computing — 5-6-22.
Green G Working Group. Virtual.

Junkyard datacenters: Carbon-efficient computing systems from old phones — 4-29-22.
CNS Research Review. Virtual.

Junkyard datacenters: Carbon-efficient computing systems from old phones — 4-25-22.
CSE 291: The Environmental Impact of Modern Computing. UC San Diego.

Teaching and Leadership

Mentor, ENLACE summer research program — Summer 2022
Responsibilities: Advise a pair of high school student researchers.

Mentor, Early Research Scholar's Program (ERSP) — Sept 2021 - In progress
Responsibilities: Advise a team of four undergraduate researchers.

President, MIT Women's Initiative — May 2016 - May 2020
Responsibilities: Presided over weekly meetings, coordinated sponsorship and raised $14,000; Gave presentations to middle and high school students in groups as large as 300.

Tutor, MIT ESL Program for Service Employees — Sept 2017 - Sept 2019
Responsibilities: Created English as a Second Language (ESL) lesson plans and provide weekly in-person tutoring for an MIT service employee, to help them achieve career or personal goals such as work advancement or citizenship.

Lab assistant, Math for Computer Science, MIT — Jan 2016 - May 2016
Responsibilities: Led a team of 8 students as they completed class problems; provided feedback and answered questions; graded their assignments and exams.

Class projects

A Green Blockchain Consensus Algorithm (6.S898) — Fall 2019
Project: A blockchain consensus algorithm based on training climate models.

A Terminal-based Adventure game (6.945) — Spring 2019
Project: A terminal-based adventure game built from scratch in Scheme.

Decaf Compiler (6.035) — Fall 2017
Project: Built a compiler for Decaf, a strongly-typed, object-oriented language.

LED Pac-Man Game (6.115) — Spring 2017
Project: A Pac-Man game on a 32-by-32 RGB LED array using PSoC and 8051 microcontrollers.

Peak Power Controller (6.131) — Fall 2016
Project: Peak power tracking by hysteresis control for a photovoltaic cell.