# Subash Katel


CONTACT INFORMATION

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EDUCATION

**Princeton University**, Princeton, NJ
Ph.D. in Computer Sciences — Aug 2025 -

**University of California San Diego**, La Jolla, CA
B.S. in Computer Science — March 2025

RESEARCH EXPERIENCE

**Harvard Edge Lab, Harvard University**
*Research Assistant, Prof. Vijay Janapa Reddi* — May 2024 - present
Exploring the application of Generative AI and large language models (LLMs) for hardware design automation across various languages.

**ACT Lab, UC San Diego**
*Research Assistant, Prof. Hadi Esmaeilzadeh* — Apr 2024 - Jun 2025
Developed key compiler tools, including custom visualization for intermediate representations (IR) and a converter transforming PyTorch models to the custom Fhy language, enhancing debugging and enabling integration between high-level ML models and hardware-specific languages.

**Kastner Research Group, UC San Diego**
*Research Assistant, Prof. Ryan Kastner* — Jan 2024 - Jun 2025
Evaluating the viability of repurposed smartphones (Google Pixel Fold) for hosting containerized EdTech applications, analyzing performance for Jupyter notebooks and PrairieLearn, with the goal of creating sustainable, low-carbon educational computing environments.

**Duarte Lab, UC San Diego**
*Research Assistant, Prof. Javier Duarte* — Jan 2024 - Jun 2025
Applying self-supervised learning for analyzing jets in high-energy physics. Developed Jet-based Joint Embedding Predictive Architecture (J-JEPA) to learn augmentation-independent representations of jets.

**Muscle Physiology Lab, UC San Diego**
*Research Assistant, Prof. David Berry* — Dec 2023 - Sept 2024
Implemented and trained UNet architecture for automated spine muscle segmentation in MRI data, improving analysis efficiency for Naval Health Research Center's (NHRC) Warfighter Performance study.

PUBLICATIONS, PRESENTATION

**Katel, S.***, Li, H.*, Zhao, Z.*, Duarte, J. (2024). Learning Symmetry-Independent Jet Representations via Jet-Based Joint Embedding Predictive Architecture. Presented at *ML4Jets Workshop*, Paris, France and *NeurIPS Workshop on Machine Learning for Physical Sciences*, Vancouver, Canada.

Switzer, J., **Katel, S.**, Lee, J. C., Rajacn, A. R. A., Kastner, R., & Pannuto, P. (2024). Reducing the Carbon Footprint of EdTech with Repurposed Devices. Presented at *MICRO, The 15th International Green and Sustainable Computing Conference (IGSC) Workshop and at joint Google/UCSD summit* .

PROJECTS

**Cuda to OpenCL Conversion**
Open-sourced and migrated UCSD's Parallel Programming curriculum from NVIDIA CUDA to OpenCL.

**UAV Search & Report**
Developed a proof-of-concept UAV system for autonomous surveying and object detection in Search and Rescue (SAR) missions, using off-the-shelf components and existing software frameworks.

## Working Experience

**San Diego Supercomputer Center**, San Diego, CA

*Software Engineering Intern* June 2021 - September 2021

Worked on various software development projects, focusing on mobile applications, implemented iOS applications using React.js and JavaScript, collaborating closely with the design team to ensure a seamless user experience based on client feedback.

## Awards

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| Excellence in Research Award, UC San Diego | 2025 |
| NSF Empower Scholarship, UC San Diego | 2023 - 2025 |
| Empower Research Scholarship, UC San Diego | 2024 |
| UCSD Travel Grant - ML4Jets Conference | 2024 |
| CSE Travel Grant - ASPLOS Conference | 2024 |
| NSF REU Pannuto Summer Scholarship, UC San Diego | 2024 |
| Jacobs School Student Travel Fund - NeurIPS, UC San Diego | 2024 |
| Richard L. and Fern W. Erion & Laidlaw-Erion Scholarship, UC San Diego | 2023 |

## Teaching Experience

**Teaching Assistant**, UCSD, CA

*CSE 160 Parallel Programming* Jan 2025 - Mar 2025

**Saddleback LRC**, Saddleback College, Mission Viejo, CA

*Volunter CS Tutor*

Supported students through personalized tutoring on programming concepts and the temporal organization of their coursework related to the Computer Science program.

## Outreach

**SASE Student Chapter,** Saddleback College, Mission Viejo, CA

Co-Founded and Led an organization that promotes and supports diversity to underrepresented minorities on campus through professional development workshops in a broad spectrum of Computer Science & engineering disciplines.

**ACM Student Chapter,** Saddleback College, Mission Viejo, CA

Connected the chapter to external organizations for pro-bono software development services and acted as a liaison for guest speakers and local business opportunities.

**Society of American Military Engineers,** Saddleback College, Mission Viejo, CA

Developed the community-based mentorship program in the chapter that matches transfer-ready students with first-year students to promote STEM awareness and success.

## Skills

- Programming Languages: Python, C++, CUDA, OpenCL
- Hardware Description Languages: Verilog
- Tools & Frameworks: Pytorch, Docker, Kubernetes,