Eric Vin

Computer Science PhD Student at UCSC

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Education

PhD (Candidate), University of California Santa Cruz

Santa Cruz, CA

GPA:4.0/4.0 *September 2021 - Present*

- PhD in Computer Science
- Advised by Daniel Fremont

BS/BA, University of California Santa Cruz

Santa Cruz, CA

GPA: 3.75/4.0 *September 2017 - June 2021*

- Bachelor of Science in Computer Science with Highest Honors
- Bachelor of Arts in Computational Mathematics with Highest Honors
- University Honors, Cum Laude

Experience

Research Resident

Ann Arbor, MA

Toyota Research Institute North America *May 2025 - August 2025*

- Summer research resident at Toyota Research Institute North America Future Research Department.

Graduate Student Researcher

Santa Cruz, CA

University of California, Santa Cruz *June 2021 - Present*

- Working under Daniel Fremont at UCSC on the Scenic project, a domain-specific probabilistic programming language for modeling the environments of cyber-physical systems like robots and autonomous cars.
- Working on expanding Scenic's functionality from testing and analysis towards being a full verification framework.
- Extended the language in general to enable new applications and domains.
- Advised by Daniel Fremont

Teaching Assistant

Santa Cruz, CA

University of California, Santa Cruz *December 2022 - March 2023*

- Winter 2022: CSE 103 (Computational Models)

Undergraduate Researcher in Language, Systems and Data Lab

Santa Cruz, CA

University of California, Santa Cruz *February 2021 - June 2021*

- Worked under Daniel Fremont at UCSC to complete a senior thesis extending the original Control Improvisation concept to allow for labelling of improvisations.
- Formalized new problem definitions for Labelled Control Improvisation, an extension of the original Control Improvisation problem. Provided efficient algorithms and rigorous guarantees for these new problems.

Undergraduate Researcher in i-NRG Lab

Santa Cruz, CA

University of California, Santa Cruz *February 2018 - July 2021*

- Worked on the PIMAP project under Katia Obraczka and Sam Mansfield at UCSC.
- PIMAP is "a system architecture that presents a standard to collect medical device data, store it and analyze it in the Cloud, in a secure and private manner".
- Implemented PIMAP framework for Sentinel and SmartDerm bandages for collecting, analysing, and visualizing data to detect and prevent pressure ulcers.

Tutor and Reader

Santa Cruz, CA

University of California, Santa Cruz *January 2020 - June 2021*

- Spring 2021: Reader for CSE 130 (Operating Systems)
- Spring 2020: Reader for CSE 120 (Computer Architecture)
- Winter 2020: Tutor for CSE 110A (Compilers)

Publications and Theses

LeanLTL: A unifying framework for linear temporal logics in Lean
ITP 2025
Eric Vin, Kyle A. Miller, and Daniel J. Fremont
Short Paper

3D Environment Modeling for Falsification and Beyond with Scenic 3.0
CAV 2023
Eric Vin, Shun Kashiwa, Matthew Rhea, Daniel J. Fremont, Edward Kim, Tommaso Dreossi, Shromona Ghosh, Xiangyu Yue, Alberto L. Sangiovanni-Vincentelli, and Sanjit A. Seshia
Tool Paper

Tackling Simulation Inconsistencies in the Robot Design Process by Selective Empirical Evaluation
DESTION 2023
Anwesha Chattoraj, **Eric Vin**, Yusuke Tanaka, Jillian Naldrien Pantig, Daniel J. Fremont, Ankur Mehta
Workshop Paper

Symbiotic CPS Design-Space Exploration through Iterated Optimization
DESTION 2023
Sheng-Jung Yu, Inigo Incer, Valmik Prabhu, Anwesha Chattoraj, **Eric Vin**, Daniel J. Fremont, Ankur Mehta, Alberto Sangiovanni-Vincentelli, Shankar Sastry, Sanjit Seshia
Workshop Paper

Randomized Synthesis for Diversity and Cost Constraints with Control Improvisation
CAV 2022
{Andreas Gittis, **Eric Vin**}*, Daniel J. Fremont
Conference Paper
* The two first authors contributed equally to the paper.

A Novel IoT System For Patient-Centric Pressure Ulcer Prevention Using Sensor Embedded Dressings
PerCom 2022
Sachin Rangarajan, Young Lee, Vinith Johnson, Kaelan Schorger, Hanmin Lee, Dung Nguyen, Mohammad H. Behfar, Elina Jansson, Jari Rekila, Jussi Hiltunen, **Eric Vin**, Katia Obraczka
WIP Paper

Labelled Control Improvisation
University of California Santa Cruz
Eric Vin
Bachelor's Thesis

An IoT System for Autonomous, Continuous, Real-Time Patient Monitoring and Its Application to Pressure Injury Management
ICDH 2021
Sam Mansfield, **Eric Vin**, Katia Obraczka
Conference Paper

An IoT-Based System for Autonomous, Continuous, Real-Time Patient Monitoring and Its Application to Pressure Injury Management
DCOSS 2021
Sam Mansfield, **Eric Vin**, Katia Obraczka
Poster Paper
Note: Extended in Conference Paper above

Awards and Achievements

UTC Student of the Year *Department of Transportation*

January 2025

- Selected as an "Outstanding Student of the Year" for the Department of Transportation's University Transportation Centers.
- Nominated by the National Center for Transportation Cybersecurity and Resiliency (TraCR) conference based at Clemson University.

Best Student Poster *TraCR Annual Conference*

May 2024

- Received first place for best student poster at the annual National Center for Transportation Cybersecurity and Resiliency (TraCR) conference based at Clemson University.

Dean's Award, Chancellor's Award *University of California, Santa Cruz*

June 2022

- "Dean's Awards are granted to fifty of the most excellent undergraduate research theses or projects ... Fifteen Chancellor's Awards are granted to the most outstanding top three theses or projects from each division's Deans' Awardees."
- Received Dean's Award and Chancellor's Award for my Bachelor's Thesis, "Labelled Control Improvisation".

Patrick Mantey Undergraduate Leadership Award *University of California, Santa Cruz*

May 2020

- "The Patrick Mantey Undergraduate Leadership Award recognizes a Baskin School of Engineering undergraduate student who demonstrates outstanding leadership abilities and exhibits academic merit. Students, whose contributions represent the very best attributes and accomplishments in the community, are nominated by faculty (students do not apply) ... BSOE faculty nominate students for this award."
- Nominated by Katia Obraczka for my work on the PIMAP project.

Research Experience for Undergraduates Fellowship *National Science Foundation*

July-September 2019

- Received a REU Summer Fellowship and Stipend from the National Science Foundation for my work on the PIMAP project at UCSC under Katia Obraczka and Sam Mansfield.

Service

Reviewer, NeuS 2025

Member, Artifact Evaluation Committee, ICCPS 2023

Projects

Scenic

https://github.com/BerkeleyLearnVerify/Scenic

- A domain-specific probabilistic programming language for modeling the environments of cyber-physical systems like robots and autonomous cars. Scenic has been used for the development, training, and testing of cyber-physical systems. I began working on Scenic on version 3.0.