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# Pranav Vempati

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## Summary

I am a software engineer whose interest lies at the confluence of machine learning and software engineering. My background includes a position as a data scientist at LLNL, multiple internships, research experience, relevant coursework, and organizational leadership experience as the President of [Santa Cruz Artificial Intelligence](#). Please browse my [LinkedIn profile](#), [GitHub profile](#), and [Stack Overflow profile](#) to learn more.

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## Education

### University of California. Santa Cruz

12/2021

Computer Science - B.S. • Santa Cruz, California

- GPA: 3.46/4.00
- Dean's Honor List, Fall 2021

Relevant Coursework: Applied Machine Learning, Introduction to Data Mining, Parallel Programming, Computer Architecture, Introduction to Probability Theory, Vector Calculus, Linear Algebra, Advanced Linear Algebra, Principles of Computer System Design, Introduction to Networking and the Internet, Introduction to Analysis of Algorithms.

### University of California. Santa Cruz

Computer Science – M.S. • Santa Cruz, California(January 2023-Present)

05/2024(expected)

- GPA: 3.82/4.00

Relevant Coursework: Computer Vision, Artificial Intelligence, Analysis of Algorithms, Computer Architecture, Compiler Design, Introduction of Probability Theory, Applied Bayesian Statistics

MS Project: Mitigation of itemset divergence in tree-based machine learning algorithms with a view to fairness

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## Skills

Python, Computer Vision, Natural Language Processing, TensorFlow, Keras, PyTorch, Machine Learning, Software Engineering, Data Science, OpenCV, Large Language Models, Transformers(Machine Learning), Generative AI, Prompt Engineering, C++, C, Scikit-Learn, NumPy, Pandas, Matplotlib, CUDA(introductory), Parallel Programming, Reinforcement Learning, Gitlab, Linux, Data Pipelines, DevOps, SQL, REST APIs, SLURM, CMake, Docker, Agile, Scrum, Continuous Integration, Git, GitHub Actions, Linear Algebra, Swift, Angular, TypeScript

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## Languages

English

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## Experience

## Lawrence Livermore National Laboratory

Data Scientist • Livermore , California

08/2022 - 01/2023

- I worked on libROM, a C++ ROM(Reduced Order Modeling) library to reduce the computational overhead of physical simulations, as a member of the ROM team in the Applications, Quality, and Simulations(ASQ) division of LLNL Computing. In particular, I authored a comprehensive suite of regression tests, enhanced the library's continuous integration workflow, and incorporated Finite Element Method based simulations into libROM.
- Implemented, in PyTorch, and leveraged Continuous Conditional Generative Adversarial Networks(CcGANs) for pixel-to-pixel prediction of laser energy deposition in a Directed Energy Deposition task in the context of Additive Manufacturing applications.

## Santa Cruz Artificial Intelligence

President • Santa Cruz , California

09/2021 – 08/2022

- Led a UCSC Baskin School of Engineering affiliated organization comprising over 150 members, prepared and delivered lessons to members, and mentored members as they worked on their projects.

Lecturer • Santa Cruz , California

09/2018 – 09/2021

- Delivered weekly lessons to members in conjunction with other officers.

## UCSC Computer Vision Lab

Researcher • Santa Cruz , California

06/2021 – 06/2022

- Worked with Professor Roberto Manduchi to maintain and benchmark a Swift-based OCR application for the visually impaired, incorporating features of the Google MLKit iOS API.

## VMware

Software Engineering Intern • Palo Alto, California

06/2020 - 09/2020

- Implemented an Angular-based project to enhance the user experience for the renovated Workspace One administration console. The resulting changes were deployed in production.
- Added new functionality to the Identity Management UI in Angular 8 and Clarity.

## ICURO

Embedded Systems and Deep Learning Intern • Santa Clara, California

08/2019 - 09/2019

- Delivered a Python OCR-based Computer Vision license plate recognition system leveraging TensorFlow Lite-based MobileNet and Darknet YOLO v3 models to achieve an accuracy of 96% on a randomly scraped dataset on resource-constrained Edge TPU hardware.
- Delivered 8-bit quantized models capable of on-device offline inference on Mendel Linux embedded systems that realized a 10x reduction in model size relative to a standard model.

## eZdia

Machine Learning Intern • Redwood City, California

07/2018 - 09/2018

- Extracted salient topical keywords from customer-supplied reviews and determined the emotional polarity associated with each topical keyword in the context of its usage across the review corpus employing NLP tools such as Latent Dirichlet Allocation.
- Classified e-commerce site URLs that link to a product or category page.

## eZdia

Machine Learning Intern • Redwood City, California

07/2017 - 08/2017

- Classified product descriptions of consumers conforming to predefined "personas".
  - Benchmarked the relative performance of multiclass Support Vector Machines and Random Forest classifiers on this task.
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## Projects

### Machine Learning Phases of Matter

- Implementing and extending, with SCAI advanced track member Giridhar Vadhul, the paper "[Machine Learning Phases of Matter](#)" by Juan Carrasquilla and Roger Melko, which, in particular, includes the implementation of a Convolutional Neural Network to detect topological phases in a ferromagnetic Ising Model in the absence of a conventional order parameter.
  - Implemented a proof of concept "toy model" detailed in the paper that validates the premise that a neural network can both effectively encode and learn the magnetization of the Ising Model configurations.
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## Certificates

Convolutional Neural Networks(Coursera), Sequence Models(Coursera), Neural Networks and Deep Learning(Coursera), Improving Deep Neural Networks(Coursera), Structuring Machine Learning Projects(Coursera)