Peter Van Esch

SOFTWARE DEVELOPER

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Recent Computer Science Graduate Ready to Contribute to Innovative Tech Solutions.

Professional Summary

Enthusiastic computer science graduate with a solid foundation in software development and problem-solving. Experienced in collaborative projects and coding through coursework, including hands-on training in Python, JavaScript, iOS and web development. Eager to apply theoretical knowledge in practical settings and contribute to innovative technology solutions. Quick learner with strong analytical skills and a passion for continuous learning, seeking an entry-level position to kickstart a career in software engineering.

Education

BS in Computer Science, Minor in Mathematics **Fall 2021 - Present (Expected Spring 2025)**
University of California, Santa Cruz
GPA: 3.91
Dean's Honors List: All years (2021 - Present)

Key Skills

✔ SwiftUI	✔ Node.js	✔ React	✔ Vercel
✔ Firebase	✔ Stripe	✔ Python	✔ Pandas
✔ OpenCV	✔ Scikit-learn	✔ Matplotlib	✔ C,C++
✔ JavaScript	✔ WebGI	✔ HTML	✔ Vue

Projects

Findr **Present**
Created an iOS app using SwiftUI, with Firebase supporting the database. Users sign in through Google or Apple Auth to upload photos they believe will make a good post. The Firebase-hosted model determines whether the posts are inside or outside, ensuring eligibility before they are posted to the feed. The goal is for users to 'find' each other's posts by taking very similar photos. By comparing location and image data, the post is either found or not, and the user earns points based on how many others have found their post. The app is available on the App Store.

Solar System Simulator
Present
Created a 3D simulation of our solar system's orbits using Three.js. The scene is customizable, allowing users to stop, slow down, or speed up time. The project enables users to modify the six Keplerian Orbital Elements to observe how these changes affect the future of planetary orbits.

Mars Orbit Builder **March 2024**
Using online data about the orbital directions of Mars and the Sun, I took the data from pairs of dates a Martian year apart and used basic trigonometry to recreate what Johannes Kepler did in the 16th century. By taking dates a Martian year apart I calculated where

Mars is. With enough data, you could find many points and shape Mars' orbit, just as Kepler did. Achieved first place in the Celestial Mechanics course for this project.

Image Classification Vision Transformer **March 2024**
Written in Python for my Deep Learning final project, this model makes use of transfer learning. Using the VIT-16 from Facebook research, I froze the layers of the pretrained model, and replaced the head with my own linear layers to classify 1000 images making up 100 different classes. Achieved 3rd place in the class for performance.

Automated Content **September 2023**
Written in Python, my script takes celebrity images and names off the web and puts them into a slide show for users to choose their favorites. The script then screen records the slide show to make a final video ready to upload to YouTube.

Redlands Corners **May 2023**
Developed a website using Vue.js that showcases a corner house in Redlands, allowing users five attempts to guess the street intersection. The site features embedded Google Maps to assist users in narrowing down their search area.

Huffman Encoding **November 2022**
Developed in C, this program uses stacks, priority queues, linked lists, and binary trees to create Huffman Encoding. Any file can be encoded and decoded, dramatically reducing the size of the file.

RSA Encryption **October 2022**
Written in C, this program uses the product of two large primes numbers as the basis for a public and private exponents. The program can create or open text files and images to encrypt and decrypt.

Professional Experience

Course Tutor, Baskin Engineering UCSC, *Santa Cruz, CA* **March 2024 – Present**
With A's in all of my favorite courses, I became a course tutor at Baskin Engineering UCSC. In this role, I conduct both in-person and online office hours, where I plan lessons, review lecture materials, and guide students through individual questions. I help clarify concepts and ensure students grasp key ideas, supporting them in their academic success. Courses I have tutored are:

- CSE 144 Applied Deep Learning — Spring 2024, Fall 2024, Winter 2025
- CSE 102 Introduction to Analysis of Algorithms — Winter 2025
- CSE 114A Functional Programming — Winter 2025
- CSE 20 Introduction to Python Basics — Fall 2024
- CSE 101 Introduction to Data Structures and Algorithms — Fall 2024
- STAT 131 Introduction to Probability Theory — Spring 2024

Fellow, Headstarter, *Remote* **July 2024 – September 2024**
Built and deployed 5 AI projects in 5 weeks using React JS, Next.js, Firebase, Clerk, and Vercel, following agile methodologies with weekly sprints and incorporated CI/CD practices for iterative deployment. Additionally, participated in weekly sessions with engineers from Google, Y Combinator, Stanford, Amazon and venture-backed startups. Some notable projects included:

- **NutriCards** – Developed a subscription-based product using Next.js, Firebase, Stripe, and OpenAI. The service allows users to generate customized recipes based on user preferences, providing a breakdown of ingredients, nutritional information, and preparation directions.

- **AI Virtual Assistant** – Using Next.js and OpenAI, and deployed to Vercel, my AI assistant is an AI version of myself trained and updated on my features, accomplishments, and other information. The goal is to give potential employers the ability to get to know me, my accomplishments, and my interests before they decide to interview me.