Peter Van Esch

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Education

University of California, Santa Cruz **Fall 2021 - Present (Expected Spring 2025)**
BS in Computer Science, Minor in Mathematics *GPA: 3.89*

Projects

Redlands Corners
- Written with Vue, created a website that displays a local corner house from the city of Redlands and gives the user five attempts to guess the street intersection. To help, the site also contains embedded google maps to narrow down the area of search.

Mars Orbit Builder
- Using data from online about the direction of Mars and the direction of the Sun, I took the data in pairs of a martian year and used basic trigonometry to recreate what Johannes Kepler did in the 15th century. By taking dates a martian year apart I calculated where Mars is. With enough data you could find many points and shape our Mars' orbit, just as Kepler did centuries ago.

Digit Classification Neural Network
- Written in python to aid my Sudoku Solver, this two hidden layer neural network relied on small images of written numbers from the MNIST data set. Using thousands of images for training, the network was able to correctly identify numbers with 84 % accuracy.

Automated Content
- Developed in python, a script that takes celebrity images and names off the web and puts them into a slide show for the audience to rank by favoritism. The script then screen records the slide show to make a final video ready to upload to Youtube.

Image Classification Vision Transformer
- 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. The model performed extremely well and placed 3rd in the class.

RSA Encryption
- Written in C, using the product of two large primes numbers as the basis for a public and private exponents. Program could create or open text files and images to encrypt and decrypt.

Huffman Encoding
- Developed in C, implemented stacks, priority queues, linked lists, and binary trees to create Huffman Encoding. Any file could be encoded and decoded dramatically reducing the size of the file.

Work Experience

UCSC CSE 144 Tutor March 2024 - Present
- After taking the course in deep learning and tremendously succeeding, I transitioned into being a course tutor. This involved helping students understand course concepts, preparing them for exams and giving guidance on homework.

UCSC STAT 131 Tutor March 2023 - Present
- Again with great success in Introduction to Probability Theory, I was able to further demonstrate my skills by becoming a course tutor. Similar to my other tutor role, my responsibilities revolved around providing general assistance to students.

Skills

- Python, Pandas, OpenCV, Scikit-learn, Matplotlib, C, C++, Javascript, WebGl, HTML, Vue, Calculus, Mathematics, Github, Visual Studio Code, Communication, Teamwork, Creative Problem Solving