Wesley Johanson

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PROFESSIONAL EXPERIENCE

Python Developer | Materials Research Lab | UC Santa Barbara **June – September 2022**

- Worked on developing an object-oriented 3D organoid detection and tracking program using computer vision with modules such as OpenCV, NumPy, and SciPy.
- Developed python scripts to automate thousands of measurements of organoid cell systems for liver cancer research in Fiji (formally ImageJ) image processing software.
- Processed databases delivering statistical distributions of cell system diameters, intercellular distances in 3D, and monochromatic amplitude in Matplotlib. To stochastically determine tracking parameter ranges for organoid cell system detection.
- Created an image processing pipeline for cell detection using discrete fast Fourier transforms to create frequency band pass filters, gaussian blurring with convolutional kernels, image thresholding, Sobel and canny edge detection.
- Generated detection and tracking videos. Annotating and concatenating images from multiple experimental datasets, iterating through time and z-dimensions in the dataset with varying tracking parameter inputs for empirical accuracy analysis.
- Confronted challenging problems such as ringing boundary artifacts from FFT image deconvolutions, 3D occlusions of overlapping ellipsoidal cell systems, refractive optical distortions from heterogenous Matrigel polymer matrices, false positive detections on the textured surfaces of organoids due to incredibly narrow depth-of-field optics, and organoid splitting.

Math & Chemistry Tutor | Apollo Tutoring | Fremont, CA **December 2019 – August 2020**

- Tutored high school students in mathematics and chemistry.
- Prepared students for SAT and ACT placement exams.
- Designed advertisements, assisted in sales, digital marketing, and management of a small business startup.

STEM Tutor | Math Engineering & Science Achievement Center | Cabrillo Community College **March 2015 – June 2016**

- Tutored undergraduate students in general and organic chemistry, calculus-based physics, C++ and MATLAB programming, linear algebra, and differential equations.
- Organized and headed a bi-weekly multivariable & vector calculus workshop for a year and a half.

Math Tutor | Math Learning Center | Cabrillo Community College **March 2015 – June 2016**

- Tutored college students in undergraduate mathematics and statistics.

Private Tutor | Self-Employed | Santa Cruz, CA **September 2014 – June 2016**

- Tutored college students in undergraduate mathematics, chemistry, and physics.

EDUCATION

Chemical Engineering B.S. | UC Santa Barbara **Graduating June 2024**

- Transferred with a 3.96 GPA and was admitted to UC Berkeley, UCLA, and UC San Diego. I choose UCSB since it was the most competitive public chemical engineering program in the state of California.

Chemical Engineering | Cabrillo Community College **January 2013 – June 2017**

Computer Science | Cabrillo Community College **September 2020 – June 2021**

- Completed computer science courses such as algorithms and data structures, discrete mathematics, and more in C++ and Java.

Software Engineering | 42 Silicon Valley | Fremont, CA **November 2019 – March 2020**

- Attended a free coding school. Learning Unix systems, BASH scripting, Git version control, and created logic flow diagrams.
- Worked with an incredibly diverse international student body from countries including (but not limited to) Nigeria, Afghanistan, France, Taiwan, Peru, Canada, Haiti, Spain, and Germany.

SCHOLARSHIPS AND AWARDS

National Science Foundation SSTEM Award | Cabrillo Community College **August 2016**

- Was a top student in my linear algebra course, scoring highest in my class on my second midterm exam. This led to my professor writing me a letter of recommendation and I was awarded with a $7,000 academically based scholarship contractually requiring me to quit tutoring and go to school full time in September of 2016.

Most Creative Use of GitHub Award | SB Hacks Hackathon | UC Santa Barbara **May 2023**

- Collaborated in a team environment to quickly implement an online cheat checker website. Using pretrained computer vision ML models. Spearheaded the design of the project, helped teammates understand degree of freedom analysis and ML concepts.