

EMMA MUNCH

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Education

B.S. in Computer Science in progress, Expected Graduation: May 2021, GPA: 3.88/4.00

University of Southern California. Los Angeles, CA

Skills

Languages: Python, C/C++, Java, HTML/CSS, JavaScript

Environment: Linux CLI, Git, Miniconda, Docker

Databases: MongoDB Atlas, GCP SQL, Amazon RDS, MS SQL

Libraries: NumPy, Pandas, Matplotlib, Jupyter Notebook/Jupyter, Tensorflow, Keras, Seaborn, OpenCV, sklearn, React

Other: Tableau, Excel, Adobe Illustrator, Adobe Lightroom

Experience

Ionpath, Inc., Menlo Park, CA

Data Science Intern—January 2020–February 2020, July 2020–August 2020, December 2020–January 2021

- Trained and tested U-net convolutional neural network model on multichannel TIFF inputs to create pixel-wise cell type classifications
- Implemented full-stack plot generation pipeline for analysis of cell classification metrics, the results of which are presented to stakeholders of research services products
- Created functions and fixed bugs in the open-source code base for reading and writing TIFF images and contributed to design decisions on the main multiplexed ion-beam image data-structure used throughout the code base

USC Image Processing and Informatics Lab, Los Angeles, CA

Undergraduate Research Fellow—March 2019–present

- Used image processing techniques (Kirsch kernel and morphological operations) and machine learning (U-net with pretrained VGG16 Encoder) to segment features of retinal images for disease diagnosis and monitoring
- Developed an algorithm for robust blood vessel segmentation in retinal images for improved preprocessing
- Improving code base to include better object-oriented design and consistency with traditional machine learning workflows
- Overseeing underclassman in the lab by delegating tasks, reviewing code, and serving as mentor

Bruker Nano Surfaces, San Jose, CA

Engineering Intern—May 2018–July 2018

- Performed test matrix on different parameters in algorithm on new focus variation microscope
- Built and populated the HTML online help pages for Focus Variation product in MadCap Flare, while applying knowledge of the difference between focus variation and white light interferometry
- Designed icons for imaging software in Adobe Illustrator and helped review new instrument control UI

Other Relevant Projects

Greenmap: Node.js, Express, React, REST API, mongoDB Atlas, Google Maps API

Pacman route planning (in progress): search algorithms, heuristic design

Xv6 (in progress): OS design, system calls

Course Scheduler (in progress): RDS design, Adobe ColdFusion, Docker

Activities

USC Corpus Callosum: club that strives to bridge arts and technology, created music visualizer in p5.js

USC Women's Club Volleyball: Club President 2020-2021, Captain 2018-2021

USC Healthcare Technology and Analytics: club that hosts bioinformatics workshops and speaker series

Tau Beta Pi Honor Society: Invited to join due to academic excellence within the USC Viterbi School of Engineering

Interests: bioinformatics, machine learning, image processing, data analytics/visualization