Melissa Hazlewood

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Summary

Persistent problem-solver and hard-working optimist; a machine learning engineer instrumental in taking a safety-critical medical device from the research stage to design verification (DV) and successful pre-market approval (PMA) for investigational device exemption (IDE); software engineer with 2+ years experience focusing on deep learning, image segmentation, object detection, machine learning model analysis, and the model pipeline.

Technical Skills

Languages Python, C, C++, Java
Libraries NumPy, Pandas, TensorFlow, SciPy, Scikit-learn, Matplotlib, ROS, Pytest
Operating Systems Linux, Mac OS X, Windows, Ubuntu, Pop!_OS

Experience

Software Engineer, *Bionaut Labs* *October 2022 - Present*

- Owned the model pipeline of a convolutional neural network (CNN), particularly using a simplified UNet architecture, used for the computer vision task central to the Bionaut robotic surgery system.
- Improved the model's accuracy in predicting the two key features by 95 and 92%, while decreasing the training time by 80%, by pivoting strategies for training the CNN model.
- Achieved a 77% reduction in model prediction errors by improving the training datasets, leading to its successful use as the final model release for design verification and the approved IDE submission.
- Successfully demonstrated the Magnetic Propulsion System to investors, leading to millions in funding.
- Designed and built a PyTest plugin for automated testing, allowing faster design verification.
- Conducted a large migration of experiment data to Azure Cloud Storage, reducing storage costs by 98%.
- Optimized high-speed camera to achieve filming rates up to 500 fps, an 8x improvement, by reverse-engineering configuration files and developing custom Python API scripts.
- Implemented new GitHub Actions workflows for automated testing and continuous integration/continuous deployment (CI/CD); debugged and optimized old workflows, saving hundreds of dollars in overage fees and data transfer costs.

Computer Lab Technician, *California State Summer School for the Arts* *July 2022 - August 2022*

- Served nearly 300 artists as the program's first ever technology support specialist, finding solutions to any software or hardware problem, developing a ticketing system, and configuring all lab computers.
- Increased automation in all aspects of the job; for example, Python scripting reduced one of the data entry tasks from multiple days to just minutes.

Education

Computer Science, M.S. *California State University, Long Beach (CSULB)*
Physics, B.A. and Astrophysics, B.A. *University of California, Berkeley (UCB)*

Projects

Facial Recognition using Pre-trained Networks *March 2021 - April 2021*

- Used YOLOFace model to detect faces in a given picture and place a bounding box around each one.
- Applied FaceNet model to cropped faces, outputting an embedding vector representation whose distance when compared to other images' embedding vectors measures the similarity in the constituent faces.

LEGv8 - Processor Simulation in Verilog *August 2020 - December 2020*

- Modeled a processor with a simplified ARM instruction set architecture able to load, store, add, subtract, pass (through the datapath with no action), and apply logical operations to data.
- Incorporated pipeline registers between processing stages (IF, ID, EX, MEM, and WB) to increase throughput.