ShengTse Tsai

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Experience

Junior Software Developer Aug 2022 – Aug 2023

Bright Pattern, Inc. *San Francisco Bay Area, CA*

- Designed and implemented VDI support for contact center software, ensuring compatibility with major operating systems and browsers.
- Optimized desktop app for Apple Silicon by compiling dependencies locally and generating universal binary, enabling a single release for both M1 and Intel Macs.
- Streamlined the C++ backend build system, by implementing dependency checks and error logging, improving SDLC and workflow.
- Benchmarked open-source codecs for contact center software, prioritizing low bandwidth and bitrate to enable scalability across devices and networks.

Undergraduate Computational Researcher June 2021 – June 2022

Center for Quantitative Life Sciences, Oregon State University *Corvallis, OR*

- Contributed to developing a high-performance image segmentation tool based on the Maximally Stable Extremal Regions (MSER) algorithm, leveraging HPC architecture for fast runtimes.
- Conducted comprehensive tests and benchmarks on multiple image segmentation methods, optimizing for precision and recall, reducing false positives outputted. Paper
- Deployed and maintained a CNN image classification pipeline on HPC clusters that processed over 100TB of raw video data per transect captured by underwater imaging system (ISIIS).
- Led the migration and streamlining of data pipeline across different HPC clusters (Pittsburgh Supercomputing Center).

Education

Oregon State University Corvallis, OR

B.S. in Computer Science, Minor in Mathematics *2018 – 2022*

Projects

Wave Energy Visualizer | *TypeScript, Angular, Firebase*

- Developed a web-based tool that visualizes Wave Energy Converter (WEC) data in 3D.
- Integrated backend using Google Cloud Firestore, with an extensible database schema for metadata upload and storage.

Hydrodynamics Data Parser | *Rust, PyO3, Python, numpy*

- Implemented a native Python module using Rust bindings for faster run times.
- Parsed frequency-based hydrodynamics data into time-series using fast Fourier transform.

Publication

- Panaïotis T, Caray–Counil L, Woodward B, Schmid MS, Daprano D, Tsai ST, Sullivan CM, Cowen RK and Irisson J-O (2022) Content-Aware Segmentation of Objects Spanning a Large Size Range: Application to Plankton Images. Front. Mar. Sci. 9:870005. doi: 10.3389/fmars.2022.870005

Technical Skills

Programming Languages: C++, C, Python, Rust
Tech/Tools: Linux, bash, gdb, OpenMP, Jenkins, docker, slurm, OpenCV, numpy, pytorch, Git
Natural Languages: English and Mandarin (bilingual proficiency)