VIVASWAT SURESH

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WORK EXPERIENCE

◉ DeepWater Exploration Inc. – San Diego, CA   January 2024 – present 📅
Founding Engineer
- Architected DeepWater Exploration's C++ computer vision SDK with full backend and GPU support, enabling seamless plug-and-play integration with DWE cameras and reducing customer integration time from several weeks to hours. Sold to major ROV companies. Projected to make $10M ARR by 2028.
- Trained a deep learning stereo vision model on the cloud to deploy locally, using synthetic underwater data and custom CUDA/TensorRT optimizations. Achieved the fastest, most power-efficient underwater stereo system in the world with 1% error at 5 m at 30 FPS.
- Engineered a CUDA-optimized Semi-Global Matching implementation with cooperative threading and aggressive CUDA optimizations, achieving 60 FPS on 8 SMs vs 1–2 FPS in OpenCV.
- Designing a deep learning–based SLAM system for underwater imaging with multithreaded C++ and CUDA-accelerated 3D reconstruction. Enables real-time mapping for autonomous navigation and marine applications.
- Built a deep learning–based underwater segmentation system to remove noisy background water, resolving customer issues with poor reconstructions and improving 3D vision accuracy.
- My computer vision prototypes were key to gathering $1.8M in seed round funding.

◐ FishSense – San Diego, CA   January 2021 – January 2024 📅
Software Developer
- Developed a Python pipeline for laser-assisted underwater fish length measurement, deploying 7 prototypes in Florida with the Reef Environmental Education Foundation. Significantly improved accuracy and reduced costs by over 90% compared to other techniques.
- Constructed a program to synchronize two GoPro videos using impulse from their audios, resulting in a cost-effective solution for underwater stereo cameras and addressing the limitations of expensive commercial options.
- Gathered data and trained a YOLOv4 Object Detection Network to automatically detect fish for autonomous fish tracking.

⊜ Applied Materials – Santa Clara, CA   June 2022 – December 2022 📅
Data Science/ML Intern
- Leveraged unsupervised machine learning techniques on semiconductor wafer data with the aim of rapidly identifying anomalies in wafer manufacturing machines to swiftly detect process issues and save valuable time and resources.
- Implemented a fast similarity search algorithm, enabling the assessment of historical occurrences of specific anomalies within extensive datasets to trace the history of certain anomalies.

PUBLICATIONS

- P. Tueller, R. Maddukuri, P. Paxson, V. Suresh, A. Ashok, M. Bland, R. Wallace, J. Guerrero, B. Semmens, and R. Kastner. Fishsense: Underwater rgbd imaging for fish measurement. In *OCEANS 2021: San Diego – Porto*, pages 1–5, 2021

PROJECTS

Medical data research on INSPIRE dataset
- Evaluated methods of integrating time series data intraoperative data with tabular preoperative data, benchmarking leading tabular methods against a concatenated MLP + LSTM model for prediction of postoperative AKI, MACE, PNA, and other clinically important outcomes.

EDUCATION

University of California - San Diego, San Diego, CA   **Major:** B.S. Computer Science, Mathematics

SKILLS

- C/C++ , CUDA, GCP, ONNX, TensorRT, GoLang, Python, Java, Bash, TypeScript, PyTorch, Tensorflow 2.0, Keras, Stumpy, OpenCV, Git, Docker, MongoDB, Angular