VIVASWAT SURESH

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EDUCATION & COURSEWORK

UC San Diego – Computer Science, Mathematics

GPA 3.6

Related Coursework: ML for Physical Applications, Computer Architecture, Advanced Data Structures and Algorithms

EXPERIENCE

FishSense UCSD, San Diego, CA **Jan. 2021- present**

Software Engineer

- Developed a Python software pipeline for novel laser-assisted underwater fish measurement.
- Modeled parallax between laser and camera to automatically detect laser in image RAWs.
- Developed a DSP program to synchronize two GoPro videos based on an impulse noise using matrix profiles to create a stereo camera.
- Leveraged the Eigenface algorithm to implement a non-machine learning approach to fish species identification.
- Gathered data and trained a YOLOv4 Object Detection network using Tensorflow2.0 for the sake of autonomous fish tracking.
- Created and developed a depth-based segmentation algorithm to segment fish within a bounding box using data from an Intel RealSense D455 stereo camera.

Applied Materials, Santa Clara, CA **June 2022 – Dec. 2022**

Machine Learning Intern

- Leveraged unsupervised learning techniques including time series analysis and matrix profiles, on semiconductor wafer data in order to detect discords and motifs within expansive datasets.
- Implemented a fast similarity search algorithm to quickly comb through decades of data to find similar subsequences to trace anomalies through time.

Argovis Project, La Jolla, CA **Feb. 2021 – Feb. 2022**

Software Developer

- Worked on the development of Argovis, argovis.colorado.edu, a web app to visualize and download ocean data received from robotic floats located throughout the oceans.
- Created UI changes in Typescript using Angular for oceanographers to better model data on argovis servers.
- Leveraged PyMongo to upgrade outdated algorithm for storing data in MongoDB documents for ease of developer understanding and future development.

Projects

Semantic Segmentation for Autonomous Vehicles, Python, Tensorflow 2.0, Keras

- Implemented multiple Machine Learning segmentation models using the Cityscapes dataset, namely U-net, U-net++, SegNet, and FCN to compare accuracies of different SOTA segmentation models.

Autoencoder for Anomaly Detection, Python, Tensorflow 2.0, Keras

- Trained multiple different autoencoders for the purpose of anomaly detection in Antarctic seismic data. Trained a 3d convolutional autoencoder that detected all 143 anomalies present in data.

Temperature Prediction with Random Forest Regression, Python, Tensorflow 2.0, Keras

- Implemented a machine learning random forest regression model on NOAA data to predict temperature and precipitation at different weather stations across the world and compared these results with a polynomial regression model.

Publications

- P. Tueller *et al*., "FishSense: Underwater RGBD Imaging for Fish Measurement," *OCEANS 2021: San Diego – Porto*, San Diego, CA, USA, 2021, pp. 1-5, doi: 10.23919/OCEANS44145.2021.9705929.
- MobiCom Conference publication, pending review

ADDITIONAL INFORMATION

- Tools/Languages: Python, Java, C, C++, Typescript, Matlab, Bash, Git, Docker, MongoDB, Angular.
- In my spare time, I enjoy swimming, singing, camping, and climbing. Sometimes all at the same time!