John Walsh

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Experience

Woods Hole Oceanographic Institution

Software Engineer, AI and Embedded Systems *November 2023 - Present*

- Spearheaded software product combining robotics, machine learning inference, photogrammetry, and 3D web interfaces to monitor ocean ecosystems.
- Developed machine learning models (object detection, semantic segmentation) for analyzing underwater imagery from mobile robotics and underwater camera systems.
- Implemented and productionized 3D reconstruction algorithms, including SFM and NeRFs.
- Built automated pipeline to scale machine learning model training and inference for millions of plankton images.
- Integrated embedded electronics into robotic water sampling system, enabling remote electronic control via ROS.
- Developed photogrammetry product for long-term monitoring and evaluation of underwater objects.
- Functioned as an internal machine learning consultant, successfully building software & machine learning products for 5 research labs in robotics, perception, and acoustics.

Software Engineering Intern (Guest Student) *May 2023 - November 2023*

- Developed and optimized unified data pipeline for depth estimation, image color correction, underwater photogrammetry, and computer vision analysis using Python, C++, and Docker.
- Implemented methods of generating and visualizing computer vision outputs on 3D meshes.
- Trained and deployed neural networks with Pytorch and CUDA for analysis of field robotics imagery.

MORSE Corp.

Python Software Engineer Co-op - DATA Team *January - August 2022*

- Designed and implemented scalable software architecture for Python data augmentation tool containing 10,000+ lines of code.
- Developed Python solutions for image and text processing, code optimization, data provenance, and rigorous automated testing, using tools including Docker, OpenCV, Dask, Pytest, and Jupyter.

Liberty Mutual

Data Science Co-op - Solaria Labs *January - August 2021*

- Designed, implemented, and improved multiple Pytorch machine learning models, computer vision algorithms, and data pipelines to successfully perform automated analysis of imagery.
- Developed and deployed models in an Agile environment utilizing tools such as Python, mlflow, fast.ai, Pytorch, Tesseract, Linux, Git, JIRA, and multiple AWS machine learning services.

Skills

Programming Languages:	Python, C/C++, Javascript, Java, R, SQL, HTML/CSS
Machine Learning:	Pytorch, OpenCV, Keras, nltk, scikit-learn, Detectron2, TorchServe
Software Development:	Docker, Podman, React, Node.js, Express, MongoDB, Redux, AWS, ROS, Pytest, *nix, Git, Prefect, CUDA

Education

Northeastern University *Boston, MA*

Master of Science in Computer Science May 2024

GPA: 3.92/4.0

Bachelor of Science in Computer Science May 2023

Concentration in Artificial Intelligence, Minor in Business Administration

GPA: 3.98/4.0, Dean's List, Northeastern's 2021 President's Award