Seaqueue Cheng

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Education

Northeastern University, Portland, ME — Sept. 2024 – May 2026 (expected)
MS in **Artificial Intelligence:** NLP, Machine Learning, Algorithms

Northeastern University, Boston, MA — Sept. 2020 – May 2024
BS in **Computer Science**: OOD, Network and Distributed Systems, Computer Systems, Programming Language, Web Dev

Skills

Languages: Python, Java, Ruby, JavaScript, TypeScript, HTML & CSS, Racket, PostgreSQL, MongoDB, Lean, C, Assembly
Frameworks: Pytorch, OpenCV, Roboflow, NumPy, Pandas, Plotly, CVAT, React, Overleaf
Software: MacOS, GitHub & GitLab, VS Code, Jupyter Notebook, IntelliJ, PyCharm

Research Experience

Shadow Removal via Illumination Spectral Direction(ISD) Estimation – NEU: Demo on GitHub — Sept. 2025 – Present

- Improved pixel-wise ISD map estimation accuracy by designing a customized **MambaVision + FPN like** dense-regression model, achieving >0.97 SSIM and ~1.6° angular error across 12 configurations
- Built a **modular PyTorch training and evaluation** pipeline with benchmarks to validate model performance on augmented and un-augmented test sets.
- Built the visualization tool that removes the shadows in 16-bit linear images using ISD estimation.

Automated Herring Fish Detection & Counting -- NEU & MIT Sea Grant: Demo on GitHub — Sept. 2024 – Present

- Preprocessed 162K fish images including filtering, annotation, augmentation, etc.
- Generated 5k synthetic fish images with **SAM2** models on different backgrounds.
- Fine-tuned pre-trained **Yolov11** on HPC to 90%+ accuracy on Herring vs non-Herring classification.
- Combined Yolov11 **Bot-Sort tracking** with **customized counting algorithm** to count the fish in video inputs.

Multispectral Image (MSI) Segmentation of Blueberry Genotypes – NEU: Demo on GitHub — Feb. 2025 – May 2025

- Preprocessed multi-spectral blueberry field images collected by MicaSense including alignment and annotation.
- Analyzed various model performance on MSI segmentation including SAM, U-NET, YOLO11, and PSFormer.

Industry Experiences

AI Research and Development -- cPort Credit Union, Maine: Aug. 2025 - Present

- Built a live translation product between English and 6 targeted languages using Azure AI Foundry.
- Fine-tuned AI speech models with cPort knowledge base and its targeted clients' needs.

Full-stack Developer (Co-op) -- Global Nursing Talent Inc: Aug. 2023 – Dec. 2023

- Built a Ruby website from scratch to production, integrating PostgreSQL, AWS, and Bootstrap to deliver a bilingual (English/Spanish) recruitment platform for international markets in Mexico, Singapore, and Chile.
- Designed and implemented multi-login dashboards, progress tracking, and admin tools for candidate search, filtering, and access control, streamlining the company's hiring process.

Full-stack Developer (Co-op) -- Seminaut Inc, San Marcos, TX: July 2022 – Dec. 2022

- Upgraded the website with event listings, pagination, badge system, and advanced filtering, integrating user input with a SQLAlchemy database via API calls. Promoted to group leader of 9 teammates.

Selected Projects

Transformer Suite (NLP + Vision): Tasks with Transformer on GitHub

- Built transformer-based NLP & ViT models from scratch for tasks including translation, summarization etc.

OpenCV Image Processing:

- Learned basic image processing techniques, noise reduction, geometric transformations, etc.
- Built a LeNet-5 model from scratch and trained it on the MNIST dataset to classify handwritten digits.