

WOOJEH CHUNG

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EDUCATION

University of California, San Diego

Expected Sep. 2024 – Jun. 2026

- Master of Science in Computer Science – Specialization in Machine Learning, MicroMBA

Arizona State University

May 2024

- Bachelor of Science in Computer Science, Minor in Statistics, **GPA: 4.00/4.00** (Summa Cum Laude)

RELEVANT COURSEWORK

Parallel Computation, Robotics, Machine Vision & Pattern recognition, Recommender System & Web Mining, Data Structure & Algorithm, OOP, Database Management, Linear Algebra

EXPERIENCE

Graduate Research Intern – University of California, San Diego | Advisor: Prof. Nikolay Atanasov

Oct. 2024 - Present

- Working on 3D vision and language representation using CLIP and cross-attention for semantic mapping, aiming to enhance efficient environment perception for autonomous scene understanding

Machine Learning Researcher – Alphacore Inc | Advisor: Prof. Suren Jayasuriya

Sep. 2023 - May. 2024

- Advancing **CNN** model adaptation to estimate the refractive-index structure constant (Cn2), employing specialized infrared imaging to analyze atmospheric image disturbances; Partnering with the Imaging Lyceum lab and industry experts to develop a data-driven, real-time Cn2 estimation pipeline, enhancing CNN models' robustness across **3** distinct approaches
- Refining camera configurations and CNN architectures through regular weekly meetings with Alphacore Inc, focusing on distinguishing object motion from atmospheric turbulence in images

Undergraduate Research Intern – Arizona State University | Advisor: Prof. Kookjin Lee

Mar. 2023 - May 2024

- Leading as a research assistant on computer vision tasks focused on **resolution-invariant classifiers**, utilizing datasets of **60,000+** entries. Implemented the Functa concept on the CIFAR-10 dataset, achieving **96.7%** of the SOTA accuracy
- Spearheading the extension of Functa to process and train on at least 4 different resolution-sized datasets, with the goal of creating a model truly invariant to resolution changes; Utilized Implicit Neural Representation to perform on varying resolution images leveraging **tensorflow**, **jax** and neural network principles on ASU's **supercomputer cluster**

UNIUS Co-founder & Developer – TheUnius Inc | [Website]

May 2023 - Present

- Developed and launched on app store across 3 countries, achieving **320+** downloads and generating 500+ daily impressions
- Integrating PostgreSQL and Nest.js for robust data storage and streamlined backend operations, managing 70+ custom APIs and 2,000+ data entries. Implemented image caching and pagination, reducing data loading time by over 50%
- Engaging in ASU's Venture Devils program and successfully conducted 4 VC meetings, securing **\$1000** in funding

Software Engineering Intern - Envy logic ltd | FPGA-based image/video processing company

Jul. 2022 - Aug. 2022

- Collaborated with a team of 8 members, to create a website which displays the processed video employing **JavaScript** and HTTP-based video streaming with collaboration of Linux OS to set up **Node.js server**; Successfully reduced the latency issue by **10%** by optimizing HLS streaming and adjusting file sizes
- Implemented Image/video processing using **OpenCV** in Python. Tasks included object recognition and edge detection via the canny edge detection filter, enhancing data received from various network protocols

PUBLICATIONS

[1] Dehao Qin, Ripon Saha, Woojeh Chung, Suren Jayasuriya, Jinwei Ye, Nianyi Li. Unsupervised Object Segmentation for Video With Atmospheric Turbulence. In European Conference on Computer Vision (ECCV 2024) | [PDF]

SKILLS

Programming languages: Python, PyTorch, Tensorflow, C/C++, ROS, Java, R, JavaScript, Swift, ReactJS, MongoDB, SQL

Tools: SAS, AWS (EC2, Lambda, S3), LaTeX, Docker, Git, Agile, Mac, Linux/Unix, Windows

Soft-Skills: Communication, Project Management, Teamwork, Leadership, Perseverance

PROJECT EXPERIENCE

Long-range Image with Turbulence Segmentation | Python, PyTorch, Supercomputer Cluster | [Website]

- Developed the **Dynamic Object Segmentation in Turbulence** (DOST) dataset, collecting custom imagery and conducting research on an unsupervised motion segmentation algorithm using epipolar geometry
- Achieved an IoU of 0.708 and F1-score of 0.764, outperforming existing methods by over 20% on the dataset, leading to a publication at **ECCV 2024**

Full Stack Web application – Web SNS | JavaScript, Python, HTML, CSS | React, Flask, MySQL, Docker | [Github]

- Developed a full-stack web SNS application using **React** for UI, **Flask** for backend (25+ routes), **MySQL** for database schema, and **Docker** for streamlined deployment improving front-end/back-end communication with Axios, resulting in a **30%** increase in user engagement