


Yusen Peng

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<https://scholar.google.com/citations?user=T5s5wNgAAAAJ&hl=en> 

Education

The Ohio State University

August 2022 – May 2026

*B.S. in Computer Science and Engineering with Artificial Intelligence Specialization
graduating with Honors Research Distinction*

- Undergraduate Research Scholarship 2025: awarded based on Honors Thesis proposal
- AI Coursework: Natural Language Processing, Computer Vision, Machine Learning, Data Mining
- GPA: **4.00**/4.00; Summa Cum Laude expected

Research Interest

Vision-Language Models (VLMs), Multimodal Learning | Computer Vision | Natural Language Processing

Research Publications

CE-Bench: A Contrastive Evaluation Benchmark of Interpretability with Sparse Autoencoders

Alex Gulko*, Yusen Peng*, Sachin Kumar

arXiv preprint [arXiv:2509.00691](https://arxiv.org/abs/2509.00691) ; accepted at EMNLP 2025 BlackboxNLP Workshop

- Co-developed a contrastive, LLM-free interpretability benchmark of sparse autoencoders
- Assisted in designing evaluation metrics that consider both contrastive and independent activations
- Helped with dataset curation and human evaluation of story subjects scraped from the WikiData
- Directed extensive experiment design and detailed analysis with comprehensive ablation studies

CascadeFormer: Two-stage Cascading Transformer for Human Action Recognition

Yusen Peng, Alper Yilmaz

arXiv preprint [arXiv:2509.00692](https://arxiv.org/abs/2509.00692) ; under review at ICLR 2026

- Developed CascadeFormer, a two-stage cascading transformer for skeleton-based action recognition
- Achieved competitive results on Penn Action, N-UCLA, and NTU RGB+D 60 without graph structures
- Conducted extensive ablation studies on architecture design and pretraining/finetuning strategies
- Open-sourced all code and model checkpoints to promote reproducibility and community adoption

Lower-quality public housing corresponds to elevated flood risk and social disadvantage

Woi Sok Oh, Kelsea Best, Meri Davlasheridze, Yusen Peng.

Under review at Earth's Future

- Collaborated in analyzing public housing and flooding datasets advised by Dr. Kelsea Best
- Assisted in detailed data analysis with correlation visualization and regression model tuning


Ongoing Research

DRIP: Dynamic token Reduction vIision transformer via Pooling for efficient multimodal learning

Advisor: Dr. Sachin Kumar; <https://github.com/Yusen-Peng/DRIP> 

- Develop DRIP, an efficient vision transformer powered by dynamic image token pooling techniques
- Pretrain DRIP under Open-CLIP framework and report both zero-shot performance and GFLOPs
- Finetune pretrained DRIP on both ImageNet Classification and LLaVA visual instruction tuning
- Investigate different strategies in developing data-adaptive boundary rates for dynamic token pooling

SVD- π 3: Efficient Visual Geometry Learning via Singular Value Decomposition

Mentor: Haoxuan Wang; Advisor: Dr. Yan Yan; <https://github.com/Yusen-Peng/SVD-Pi3> 

- Develop SVD- π 3, an efficient feed-forward network for 3D attribute inference using SVD techniques
- Apply truncation-aware data whitening on a calibration dataset and perform LoRA finetuning

CascadeFormer-based Agentic Anomaly Detection (Undergrad Thesis)

Advisor: Dr. Alper Yilmaz; <https://github.com/Yusen-Peng/CascadeFormer-AD-Agent> 

- Build an action anomaly detection agent using my previous work, CascadeFormer, as the backbone

Academic Service

Conference Reviewer: reviewed 3 papers at NeurIPS 2025 Mechanistic Interpretability Workshop

Campus Poster Presentations

SIGNAL: A Comprehensive Time Series Analysis Library

The DATUM Lab | Advisor: Dr. John Paparrizos; [Poster Scan](#) [🔗](#)

- Adapted and integrated sklearn/PyTorch implementation for 15/57 time series classification algorithms
- Adapted and integrated sklearn/PyTorch implementation for 11/32 time series clustering algorithms
- Tested 33/57 classifiers with 20 UCR datasets per classifier and verified their test results
- Tested 15/32 clustering models with 20 UCR datasets per model and verified their test results
- Refactored 30/93 time series forecasting neural network models with careful hyperparameter tuning
- Presented the project at the [CSE Annual Research Expo 2025](#) [🔗](#) at The Ohio State University

A Comparison of CSV, HDF5, Zarr, and netCDF4 in Performing Common I/O Operations

Advisor: Dr. Suren Byna; [Poster Scan](#) [🔗](#); <https://github.com/Yusen-Peng/File-IO-Benchmark> [🔗](#)

- Developed benchmarks to compare file I/O performance of 4 data formats advised by Dr. Suren Byna
- Processed and visualized timing data with CSV files and plots using Python, pandas, NumPy, matplotlib
- Designed 20 large-scale test cases and collaborated in composing a technical report of 13 pages
- Presented the project at the [CSE Annual Research Expo 2024](#) [🔗](#) at The Ohio State University

AI/ML Competitions

NASA Airport Throughput Prediction Challenge 2024 ([Leaderboard](#) [🔗](#))

- Collaborated on designing and implementing a pipeline to predict the number of flight arrivals
- Led data cleaning, feature extraction (flight + time), and model selection (cross-validation)
- Boosted the accuracy score to 78.7% and ranked 9th out of 51 teams in the final/private leaderboard

Teaching

Teaching Assistant for CSE 2331: Data Structures and Algorithms

Aug 2024 – Present

Teaching Assistant for CSE 2221: Software Components

Aug 2023 – Dec 2023

Internships

Software Engineer Intern | Next.js

San Dimas, CA (remote)

Thaddeus Resource Center

May 2025 – Aug 2025

- Developed, tested, and maintained well-functioning, responsive, and updated official Thaddeus website

Software Engineer Intern | Microsoft Azure

Boise, ID (remote)

Y STEM and Chess Inc

Jan 2025 – Apr 2025

- Collaborated on renewing security certificates and deploying code base using Microsoft Azure

Website Frontend Intern | HTML, CSS, WordPress

Gloucester, MA (remote)

National STEM Honor Society

May 2024 – Sept 2024

- Collaborated in developing, improving, testing, and maintaining the National STEM official websites

Mobile Frontend Intern | HTML, CSS, JavaScript, React Native

Tampa, FL (remote)

Resilience, Inc

Dec 2023 – Aug 2024

- Collaborated in developing and testing a mobile app called AIMEE with tools to learn emotional intelligence

Extra-curriculars

Competitive Programming Club (CPC) @ The Ohio State University

Feb 2023 – Feb 2025

- Coordinated with other club officers and helped out with weekly presentations and competitions