Nathan Yap

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Education

- **University of Michigan, Ann Arbor** Sep 2025 – May 2026
  M.S.E. in Computer Science, College of Engineering
  - **Graduate Student Instructor – EECS 498 (ML Research Experience):** Sole GSI developing curriculum on foundational ML papers.
- **University of Michigan, Ann Arbor** Sep 2022 – May 2025
  B.S.E. in Computer Science, College of Engineering **GPA: 3.86**
  - **Instructional Aid – EECS 445 (Intro to Machine Learning):** Developed curriculum on SVMs, Vision Transformers, Neural Networks, Random Forests, Reinforcement Learning, and Diffusion.

Experiences

- **Amazon Web Services** May 2025 - August 2025
  Software Development Engineer Intern | *Python* Seattle, WA
  - Working in AWS Incident Response (AIR) to store alarming metric data from services during AWS-wide SEV2 events.
  - Built a data-lake architecture to automate the process of caching service metrics.
  - Developed expertise with AWS services such as Glue, S3, DynamoDB, EventBridge, SQS, and Lambda.
  - Presented potential methods for analyzing metric data using ML algorithms to assist engineers responding to/analyzing events.
- **SportsBoxAI** May 2024 - August 2024
  Machine Learning Intern | *Pytorch, LLM Fine-tuning, QLoRA, Transformers, ViT* Bellevue, WA
  - Developed a Django testing webserver to perform 3D pose estimation on golf swing data and generate visual representations of model accuracy.
  - Generated a dataset of language data from over 11,000 instructional coach videos to fine-tune an LLM.
  - Experimented with a modified vision transformer to acquire semantic understanding of golf swing metrics.
- **University of Michigan: LifeLong Learning Lab** April 2023 - April 2024
  Research Intern | *Django, OpenAI API, Zoom SDK, Research* Ann Arbor, MI
  - Worked under UM faculty researchers to write literature on the efficacy of LLM-generated mind maps.
  - Awarded second authorship on a peer-reviewed paper published at CSCW 2024.
  - Optimized an established API, achieving a 32% improvement in efficiency.
- **LightSphereAI** March 2022 - August 2022
  Backend Developer | *Ubuntu, NLP, AWS S3/EC2* Seattle, WA
  - Integrated new metrics on chronic conditions into an existing fitness AI (Bayesian Model) implemented in Python.
  - Created a internal file syncing system with AWS S3 and Python scripts, this tool reliably handled several TBs of data for several years.

Extracurriculars

- **NASA SUITS Challenge Team** September 2022 - Today
  AI Lead and Board Member (1 of 5) | *Management, Regional Proposal Network, Intent Classification* University of Michigan
  - Constructed a full-stack AR interface using Unity Engine and Microsoft MRTK for astronaut EVAs, tested and presented at Johnson Space Center with Microsoft Hololens 2.
  - Led a 12-member AI subteam to develop a geosample classifier using YOLO and a lightweight transformer model for intent classification of astronaut voice commands.

Awards

- **Cosmocook** 2024
  Gemini 1.5 API, Unity, MRTK 3, Demo Video: youtu.be/1LwnAezJcVE?si=jC_Gupw2KKG0hvGt MHacks x Google Hackathon
  - Developed an augmented reality application for Microsoft HoloLens utilizing multimodal generative AI.
  - Implemented features such as automatic ingredient detection/counting, context-aware cooking assistance, and the ability to send images for visually contextualized questions.
  - Won 1st place in the MHacks x Google AI Hackathon

Technical Skills and Interests

Relevant Coursework: Data Structures (280), Algorithms (281), Intro to Computer Organization (370), Databases (484), Computer Vision (442), NLP (487), Machine Learning (445), OS (482), GPU Programming (471), Science of LLMs (CSE 598), ML Research (498),
Languages: Python (4 years), C++ (2 years), HTML/CSS/JS (3 years), C#, C, SQL
Cloud/Databases: Firebase, AWS Services, Google Cloud Platform, Heroku
Operating Systems: Windows (Advanced), Linux (Ubuntu) (Advanced), MacOS (Intermediate)