

James Ngai

Personal Website | [LinkedIn](#) | [GitHub](#)

Location: Seattle, WA

Email: jamesdngai@gmail.com | Mobile: (1) 425-429-8347

EDUCATION

Carnegie Mellon University

BS Computer Science

GPA: 3.91/4.0

Aug 2022 – May 2026

WORK EXPERIENCE

Machine Learning Researcher

Carnegie Mellon ZUZ Lab

Jan 2023 – Present

Pittsburgh, PA

- Research under Professor Seth Goldstein in developing pricing algorithms for **multi currency crypto transactions**.
- Develop **Agent-Based Model** with **Reinforcement Learning** and **Game Theory** to simulate **real-world** trading.
- Reduced average **convergence time** by **43%** and increased **model reliability 26%** with Epsilon-Greedy **Q-Learning**.
- Implemented **Linux** script on **Google Cloud** for **automated hyperparameter testing**, improving lab's productivity.
- Named **National Science Foundation** Summer Undergraduate **Research Fellow**, awarded **\$4500 grant** for **Machine Learning** research.

Teaching Assistant

Expii/Daily Challenge/Po Shen-Loh

Feb 2022 – Sept 2022

Remote

- Co-taught classes in **combinatorics** and **algebra** for **40** students doing **AMC** and **MATHCOUNTS** competitions.
- Accelerated TA training by **mentoring 10 junior TAs monthly**, fostering strong team cohesion for classes.

Software Engineer Intern

Allstate Hale Insurance

Jun 2018 – Jun 2022

Seattle, WA

- Led development of mailer ad software for **70,000** prospective clients **saving \$10000 annually**.
- Corrected **15%** of all **ad data** by **cross-validating** SalesGenie housing data with King County **REST APIs** in **Python**.
- Improved **Ad Efficiency by 27%** with **XML Requests** and runtime by **75%** with **multithreading**.

PROJECTS

eBay 2023 Machine Learning Competition

PyTorch, AWS, Google Cloud

[Source Code](#) [Confidential](#)

- Spearheaded **data preprocessing** and cleaning for the **eBay Machine Learning Challenge**, leveraging **Pandas** and **Hugging Face** to ensure **NLP model** compatibility.
- Optimized model training scripts using **LoRA**, **Quantization**, and **Deepspeed** to facilitate **efficient Multi-GPU training**, resulting in a **55% reduction** in memory consumption while preserving competitive performance levels.
- Conducted hyperparameter tuning and **K-Cross Fold Validation** on **11 billion parameter models** in distributed training setups on **AWS EC2** and **Google Cloud**.

11-785 PhD Deep Learning Capstone Project

PyTorch, Reinforcement Learning, Data Preprocessing

[Source Code](#)

- Directed a team of four to construct a **Reinforcement Learning** Agent project to solve Jigsaw reassembly challenges.
- Developed and implemented **PyTorch Dataclasses** and **Datasets**, streamlining code through concise structure.
- Improved model generalizability by integrating a **AlphaZero** and a **discriminator network**, surpassing established benchmarks in **both performance and adaptability**.

TECHNICAL SKILLS

Languages : Python, R, SQL, C/C++, Java, MATLAB, JavaScript, HTML, CSS, Git, Julia, Linux, LaTeX

Technologies : Pandas, Sklearn, GCP, AWS, TensorFlow, PyTorch, CUDA, MongoDB, Kubernetes, Spark

RELEVANT COURSEWORK

11-785 PHD Intro Deep Learning , **15-213** Intro Computer Systems, **21-241** Linear Algebra, **21-266** Vector Calculus