James Ngai

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Education

Carnegie Mellon University
Bachelor of Science in Computer Science — *Aug 2022 – May 2025*
GPA 3.88/4.0

Experience

Undergraduate Researcher — Jan 2023 – Present
Carnegie Mellon ZUZ Lab — *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** for simulating **real-world** trade scenarios
- Enhanced reliability of **60,000 parameter model** testing on **Google Cloud** by **implementing a ledger system** to restore progress in case of failures
- Reduced convergence time on average 43% and increased model accuracy 26%

Teaching Assistant — Feb 2022 – Sept 2022
Expii/Daily Challenge/Po Shen-Loh — *Remote*

- Co-teached classes of **40** students for **AMC** and **MATHCOUNTS** competitions
- **Mentored** 10 junior TAs during monthly meetings for **improved team integration**

Software Developer — Jun 2018 – Jun 2022
Allstate Hale Insurance — *Seattle, WA*

- Led development of mailer ad software for **70,000** prospective clients saving $5000 annually
- Worked with **REST APIs** to retrieve and display data from **databases** in **Python**
- Improved **Ad Efficency by 27%** and speed through optimization techniques by **75%** with **multithreading**

Projects

TartanHacks: CMU Marketplace — *React.js, Firebase, Git, Algorand* — Source Code

- Developed an intuitive bidding interface on **React** that enables participants to easily place bids on items of interest
- Created secure bidding platform on **Algorand Blockchain**

ScottyLabs: CMU Lost and Found — *React.js, MongoDB, Node, Git, TypeScript* — Source Code

- Modified **MongoDB** database to store admin emails for streamlined return experience
- Updated **Front-End** to optimize information clarity for Carnegie Mellon admins

Technical Skills

Technologies : Python, C, Java, JavaScript, NumPy, SciKit, MatPlotLib, TensorFlow, PyTorch, MongoDB

Relevant Coursework

15-122 Data Structures & Algorithms, **15-251** Theoretical Computer Science, **21-241** Linear Algebra, **21-266** Vector Calculus

Awards

- **National Science Foundation** Undergraduate **Research Fellow**
- AMATYC Student Math League **4th in Nation**
- DECA ICDC Certificate of Excellence — **Top 1% in world** at Financial Decison Making