LUCAS POON

+1 (631) 820-5997 ⋄ Madison, WI ⋄ lucaslfpoon@gmail.com ⋄ linkedin.com/in/lucaspoon ⋄ github.com/poonlucas

EDUCATION

University of Wisconsin-Madison   September 2022 - Expected December 2024
Bachelor of Science in Computer Science with Honors   GPA: 3.895, Dean's List
(Undeclared) Mathematics for Programming and Computing

Relevant Coursework
Grad Level ML, Undergrad Level AI, Data Structures, Algorithms, Discrete Mathematics, Data Structures, Graph Theory and Combinatorics.

TECHNICAL SKILLS

Languages	Java, C/C++, C#, MySQL, Javascript/Typescript, Python, HTML/CSS
Libraries/Frameworks	NumPy, SciPy, SciKit-Learn, Matplotlib, PyTorch, React, .NET, Docker, Apache Storm
	GitLab CI/CD, Bash, Git, Stable-Baselines, Gym

RESEARCH EXPERIENCE

Research Assistant   October 2023 - Present
University of Wisconsin - Madison   *Python*

- Currently working as research assistant for Brahma Pavse on unbounded state spaces. Using **stable-baselines** and **gym** environment, training with **high throughput computing**.

Reinforcement Learning Practicum   Sept 2023 - Present
University of Wisconsin - Madison   *Python*

- One of 5 selected undergraduate to participate in practicum with Professor Josiah Hanna. Currently working on hierarchical reinforcement learning for partial observability in the robot soccer environment.
- Experimenting with policies (observation spaces, action spaces and reward function) in reinforcement learning for Proximal Policy Optimization algorithm using Badger-RL lab's abstract robot soccer environment simulators with **stable-baselines** and **gym** environment.

WORK EXPERIENCE

Summer Internship (Data Acquisition)   May 2023 - August 2023
Autotoll Limited, Hong Kong   *C#, MySQL, Typescript*

- **Implemented** and **optimized** the use of daily historical data **(consisting of more than 750,000 raw data records)** to improve the precision of fuzzy logic in the spatial matching algorithm, increasing the overall accuracy **from 95% to over 98%**.
- Developed a program to analyze spatial matching algorithm accuracy and detailed statistics to spot areas of improvement for specific traffic patterns. Developed monitoring using react for spatial matching program and ETL program and catering for contraflow tunnel arrangements.
- Optimized performance and refined ETL by batching and implemented exactly-once semantic using Apache Storm Trident. Deployed Apache Storm cluster architecture to coordinate ETL task executions in worker topologies. Currently used in the Cross Harbour Tunnel, Western Harbour Crossing and Eastern Harbour Crossing processing **more than 500,000 transactions per day**. Also implemented CI/CD.

Internship   May 2022 - August 2022
ZENS, Hong Kong

- Participated in the **HKEx** (The Stock Exchange of Hong Kong Limited) relocation project, including server mounting and dismounting, data degaussing, and preparing the degaussing report. Experienced **large-scale data centers** and servers

ACTIVITIES

ACM International Collegiate Programming Contest   September - November 2023
Competitor, *Madison WI*   *C++*

- Competing as a team of 3, we used algorithms such as dynamic programming, computational geometry, tree search.
- North Central Regional (Nov 4, 2023): Ranked **#5** (5/129), solved 7/12 questions.
- North America Qualifier (Sept 30, 2023): Ranked **#4** (Top 4) at UW Madison, solved 11/12 questions.

PROJECTS

Machine Learning Implementations   Started March 2023
https://github.com/poonlucas/CS760   *Python*

- Implemented **Decision Trees** with gain ratio, **kNN**, **Logistic Regression**, **Naïve Bayes Classifier**, **Neural Network** with feed forward and back propagation, from scratch using python, pytorch and numpy.