JOSEPH MA

📞 (765) 409-1019   ✉ ma562@purdue.edu
in https://www.linkedin.com/in/josephm130   🌐 https://joseph-ma.com/

EDUCATION

Purdue University, College of Engineering – West Lafayette, IN   **Expected: December 2024**
Master of Science in Electrical and Computer Engineering

Purdue University, College of Engineering – West Lafayette, IN   **Graduated: May 2023**
Bachelor of Science in Computer Engineering   **GPA: 3.83/4.00**
Relevant Coursework:
- Artificial Intelligence, Reinforcement Learning, Operating Systems Engineering, Introduction to Computer Security

WORK EXPERIENCE

Purdue University School of Electrical and Computer Engineering – West Lafayette, IN
Undergraduate Teaching Assistant (ECE 20007/ECE 29595 – Electrical Engineering Fundamentals 1 Lab)   **January 2023 – May 2023**
- Conducted biweekly office hours to aid students in understanding electronic measurement and circuit design principles.
- Collaborated during lab sessions on projects including the Wheatstone Bridge and Audio Equalizer.

Undergraduate Researcher – Sequential Task based Reinforcement Learning   **May 2022 – January 2023**
- Sought solutions to increase the efficiency of training an RL agent to perform multiple tasks sequentially.
- Developed a method of keeping track of each possible state using a binary tree of Q tables.
- Attempted to tackle the exponential increase in training time with principles of dynamic programming and memoization.

Undergraduate Teaching Assistant (ECE 264 – Advanced C Programming, ECE 368 - Data Structures)   **June 2022 – December 2022**
- Assisted up to 70 students on weekly homework and debugging programming assignments.
- Familiarized students with using tools such as Git, GitHub, Valgrind and GDB.

Undergraduate Teaching Assistant (ECE 20001 - Electrical Engineering Fundamentals 1)   **August 2021 – December 2021**
- Guided up to 32 students through core concepts of electrical engineering and linear circuits during weekly office hours.
- Graded and returned student assignments in a timely manner.

Preface Coding – Hong Kong   **June 2021 – August 2021**
Full Stack Development Intern
- Rewrote components of the online member web portal to utilize responsive design using HTML, CSS and JavaScript.
- Implemented backend form checking using active record validations through ruby on rails.
- Gained experience on utilizing CRUD operations and testing REST APIs on the Postman API platform.

TECHNICAL SKILLS

Languages: Proficient in Python, Java, C, C++, HTML, CSS, JavaScript, MATLAB, Verilog, Assembly
Tools: Git, GDB, React.js, Excel, Matplotlib, NumPy, Pandas, SolidWorks, EAGLE, Fusion 360, CATIA V5, STM32 ARM microcontroller

PROJECTS

Cat & Mouse – Reinforcement Learning   **December 2023**
- Engineered and created a pursuit-evasion game using Dijkstra's algorithm for a deterministic cat agent, and iterative Q-learning for an adaptive mouse agent, improving their strategies through generational training and dynamic interactions.

Differential Cryptoanalysis – Computer Security   **December 2023**
- Analyzed the PRESENT lightweight block cipher using differential cryptanalysis, focusing on its application in IoT and RFID systems; identified key vulnerabilities and assessed the cipher's resistance to differential attacks.

Boiler Ticket Chain – Blockchain   **May 2023**
- Co-designed key elements of Boiler Ticket Chain, an innovative blockchain-based ticketing system using technologies like Ethereum, Solidity, Hardhat, and IPFS, enhancing security and efficiency in university event ticketing.