Romir Sharma

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Education

The University of Texas at Austin May 2027
B.S. in Computer Science, Turing Scholar *Austin, TX*

Relevant Coursework: Data Structures, Probability, Linear Algebra, Discrete Math, Multivariable Calculus, Real Analysis

Experience

Research Intern April 2022 – Present
Arizona State University *Tempe, AZ*

- Worked on reinforcement learning based improvements to sim2real traffic optimization under Dr. Hua Wei.
- Developed Uncertainty-Aware Grounded Action Transformation to only transform actions if the confidence in the action exceeds a dynamic threshold, achieving a 40% delay reduction over GAT.
- Currently working on using LLMs to better model transformations in situations outside of training data.

Research Scholar July 2023 – August 2023
NJ Governor's School in the Sciences at Drew University *Madison, NJ*

- Involved in quantum computing research focused on quantum cryptography, quantum optimization algorithms and quantum error correction algorithms.
- Developed proficiency in the Qiskit quantum programming framework.
- Continued researching independently past the program, published paper on a new quantum key delivery algorithm using packeting to IEEE MIT URTC 2023.
- Courses Taken: Medicinal Chemistry, Data Analytics, Modern Physics, Cellular Automata

Publications

Longchao Da, Hao Mei, **Romir Sharma**, Hua Wei, *Sim2Real Transfer for Traffic Signal Control*, IEEE International Conference on Automation Science and Engineering (CASE) 2023.

Romir Sharma, Winston Wang, *PaQKD: Optimizing Qubit Retention in Quantum Key Distribution using Packeting*, IEEE MIT Undergraduate Research Technology Conference (URTC) 2023

Longchao Da, Hao Mei, **Romir Sharma**, Hua Wei, *Uncertainty-aware Grounded Action Transformation towards Sim-to-Real Transfer for Traffic Signal Control*, IEEE Conference on Decision and Control (CDC) 2023.

Selected Projects

JumpyBall| *Python, Pytorch, Pygame*

- Created a Flappy Bird style game using pygame.
- Implemented varying difficulties and low memory replays capable of saving and updating without notable lag.
- Trained a DDQN reinforcement learning model capable of playing the game in the background of the home screen.

BubbleScan| *Python, OpenCV*

- Created a OpenCV based image processor to scan and process student scantrons for a teacher.
- Allows the user to choose the formatting of the scantron, as well as provides data including averages, graphs of trends for individual students, as well as groups in the class, and sorting by name, score, or class.

MIT Battlecode| *Java*

- Worked in a team of 3 to design an AI bot to play against other teams in a real-time strategy game hosted by MIT
- Iteratively improved on bot over a month through feedback from scrimmage testing against other teams
- Utilized artificial intelligence, pathfinding, distributed algorithms, and communications to optimize the bot's strategy
- Placed 6th/104 high school teams and 25th/419 overall teams

Technical Skills and Awards

Proficient: Java, Python, LaTeX, Linux Shell, Git, Pytorch, Pandas, Numpy, MatPlotLib, OpenCV, Qiskit

Familiar: Docker, C++, SQL

Awards: USA Math Olympiad Honorable Mention - Spring 2023, USA Junior Math Olympiad Qualifier - Spring 2022, USACO Gold Division - Spring 2022, USAPhO Silver Medalist - Spring 2024, USAPhO Bronze Medalist - Spring 2023