Romir Sharma

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Education

The University of Texas at Austin, GPA 4.0/4.0 May 2027
B.S. in Computer Science, Turing Honors Scholar *Austin, TX*

Princeton University, GPA 4.0/4.0 May 2024
Dual Enrollment, Mathematics *Princeton, NJ*

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

Technical Skills

Proficient: Java, Python, C++, C, Linux Shell, Git, Pytorch, Pandas, Numpy, Tensorflow, MatPlotLib, OpenCV, Qiskit, Linux, Docker, AWS, GCP

Research Experience & Awards

RobIn | **Research Intern** September 2024 – Present
The University of Texas at Austin *Austin, TX*

- Focusing on improvements towards speed and efficiency of generalist robot policy models.
- Developed familiarity with large code databases like Octo, OpenVLA, LIBERO, and SimplerEnv
- Created benchmarks and visualizations for RT-1 and Octo models in common setups including Google Robot and WidowX+Bridge
- Working on implementing Foundational Models into IsaacSim

DaRL | **Research Intern** April 2022 – August 2024
Arizona State University *Tempe, AZ*

- Worked on reinforcement learning based improvements to sim2real traffic optimization under Dr. Hua Wei in the DaRL lab.
- 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.
- Latest project involved using LLMs to better model transformations in situations outside of training data.

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

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.

Tetris| *Java, JUnit*

- Created a working GUI and implementation for classical Tetris
- Implemented a Genetic Algorithm from scratch to make a bot capable of playing the game indefinitely on a 10x20 board.
- Created a pathfinder to enable the bot to perform spins and t-flips, allowing it to achieve the same moves as top players.

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