Scott M. Shaw

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Education

Northeastern University, Boston, MA
Khoury College of Computer Sciences
Bachelors of Science in Computer Science | AI Concentration | Mathematics Minor **Expected June 2023**
GPA: 3.70/4.00, Dean's List
Related Coursework: Algorithms and Data, Artificial Intelligence, Machine Learning and Data Mining I/II, Robotic Science and Systems, Object-Oriented Design, Software Engineering, Numerical Analysis, Multivariable Calculus, Linear Algebra, Probability and Statistics
New College of the Humanities, London, UK
Northeastern University Study Abroad Program - Fall Semester 2019, Computer Science
The Haverford School, Haverford, PA

Work Experience

National University of Singapore: Multi-Agent Robotic Motion Laboratory (MARMoT Lab)
Student Researcher | Gait Design and Transitions **January 2021 - September 2021**

- Implemented online, real-time gait transitions on a hexapod robot while ensuring stable locomotion and forward progression using a central pattern generator (CPG)-based controller
- Used gait transitions to support versatile applications on the robot, such as mobile manipulation
- Developed skills with Gazebo/ROS & PyBullet to simulate experiments on the robot
- Worked remotely with students in the lab to collaborate on research and run on-robot experiments
- Participated in weekly lab meetings to share progress and collaborate with other students

Student Researcher | Gait Generation and Leg Breakage **January 2022 - September 2022**

- First author on contribution accepted for CDC 2022, detailing methods and results from previous research
- Created an algorithm to inexpensively generate stable gaits online to adapt to single or multi-leg breakages
- Enabled reactive transitions to generated gaits to respond to leg breaks online for continuous locomotion
- Adapting gait generation to other projects in the lab to work towards another publication
    - Idea: adapt gait to produce adequate footfalls for the environment whenever not currently possible

Projects

Autonomous Q-Learning Agent to Play Greed (viewable on github)

- Created an autonomous agent using Epsilon-Greedy Q-Learning to play the game, Greed
- Learned about basics of reinforcement learning, specifically, Q-Learning
- Took advantage of decaying Epsilon to support early exploration and better final performance
- Compared the performance of Q-Learning agent to other agents with various static strategies
- Gained knowledge about creating good reward functions and improving performance of RL-based agents

Skills & Knowledge

Programming Languages: Python, C++, C, JavaScript, Typescript, Java, HTML, CSS
Software: Solidworks & Fusion 360, Cura (slicer), Adobe Photoshop & Illustrator, Office Suite (text, sheets, slides)
Operating Systems: Linux (mostly Debian-based) and Windows, capable with MacOS
Other Skills:

- Experience with 3D printing (FDM printers w/ PLA and ABS) and laser cutting
- Machine and workshop skills (bandsaw, drill press, soldering iron, etc.)