Maxwell Thomas Asselmeier

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Education

Georgia Institute of Technology August 2026
PhD in Robotics GPA: 3.83/4.00
NSF Graduate Research Fellow

University of Illinois at Urbana-Champaign May 2021
Bachelor of Science, Mechanical Engineering GPA: 3.97/4.00
Minor, Computer Science
Chancellor's Scholar – 125 invited out of 7,500 incoming students

Research Experience

Georgia Institute of Technology Atlanta, GA
Graduate Research Assistant Aug 2021 - Present
Advisors: Ye Zhao, Patricio Vela

- Develop a theoretically-grounded framework for perception-informed legged navigation that generates provable guarantees for safety and task completion
- Deploy this legged navigation framework on quadrupedal hardware platforms in previously unseen indoor and outdoor settings

Institute for Human and Machine Cognition Pensacola, FL
Software Engineering Intern June 2021 – Aug 2021
Mentor: Robert Griffin

- Benchmarked state of the art semantic segmentation models for indoor object classification and finetuned pre-trained models using manually labeled door datasets
- Deployed segmentation models on a custom perception engine and sensing suite onboard a Boston Dynamics Atlas robot for high-level task-conditioned object classification including door opening and human following

Carnegie Mellon University Robotics Institute Summer Scholars Program Pittsburgh, PA
Undergraduate Researcher - Biorobotics Lab May 2020 – May 2021
Mentor: Howie Choset Program // Lab

- Trained a Deep-Q neural network to select modules to append to a robotic arm design given a goal position in space to reach in a physics simulation
- Implemented an actor-critic reinforcement learning algorithm to optimize continuous design variables for modules being added to a robotic arm design. Details here.

Oregon State University Robots in the Real World Program Corvallis, OR
Undergraduate Researcher - mLab Jun 2019 – Nov 2019
Mentor: Ross L. Hatton Program // Lab

- Prototyped pneumatic artificial muscles to investigate the implementation of antagonistic actuator systems into soft robotic arms
- Authored an accepted conference paper to detail the primary advances that were made through the work on this project

The Robotics, Automation, and Dance Lab Champaign, IL
Undergraduate Researcher May 2018 – Jan 2020
Mentor: Amy LaViers Lab

- Designed and reviewed user studies to comprehend mechanisms and perceptions of two separate, multidisciplinary ways to map movement commands to a robot
- Authored an accepted conference paper analyzing findings from preliminary user studies

Projects

Senior Capstone Obstacle Detection for Wheelchairs Project Champaign, IL
Team Member Jan 2021 – May 2021

- Integrate RGB and depth cameras on a wheelchair to enable obstacles to be detected through the use of a computer vision-based neural network
- Develop a haptic feedback device to alert the wheelchair user of oncoming obstacles

Automated Vegetable Slicer Course Project Champaign, IL
Team Member Aug 2019 – Dec 2019

- Researched various mechanisms to achieve the motion required to slice a vegetable
- Built a device that constrained, moved, and sliced a vegetable using one 12 V DC motor

Teaching Experience

Engineering Ambassadors (ENG 198) Champaign, IL
President Aug 2019 – May 2020

- Ran weekly class meetings with 35 general members to practice technical communication skills through presentations and discussions
- Led executive board and advisor meetings with eight executive board members and four advisors to establish and organize objectives and events for the semester
- Conducted STEM-focused presentations and hands-on activities to classes of 10 to 50 K – 12 students to foster interest in future engineering careers

Grainger Engineering First-Year Experience (ENG 100) Champaign, IL
Engineering Learning Assistant Aug 2018 – Dec 2020

- Instructed a sixteen-week engineering orientation class twice per week to incoming freshmen to guide in the acclimation to college as well as engineering
- Participated in an eight-week training course to prepare for facilitating classes

Publications

Asselmeier, M., Ahuja, D., Zaro, A., Abuaish, A., Zhao, Y., and Vela, P.A. Dynamic Gap: Safe Gap-based Navigation in Dynamic Environments. *Under Review*. (2024).

Asselmeier, M., Ivanova, J., Zhou, Z., Zhao, Y., and Vela, P.A. Hierarchical Experience-informed Navigation for Multi-modal Quadrupedal Rebar Grid Traversal. *IEEE International Conference on Robotics and Automation*. (2024).

Feng, S., Zhou. Z., Smith, J. S., **Asselmeier, M.**, Zhao, Y., and Vela, P.A. GPF-BG: A Hierarchical Vision-Based Planning Framework for Safe Quadrupedal Navigation. *IEEE International Conference on Robotics and Automation*. (2023).

Mishra, B., Calvert, D., Ortolano, B., **Asselmeier, M.**, Fina, L., McCrory, S., Hakki, S., & Griffin, R. Perception Engine Using a Multi-Sensor Head to Enable High-level Humanoid Robot Behaviors. *IEEE International Conference on Robotics and Automation*. (2022).

Asselmeier, M., Whitman, J., & Choset, H. Continuous Design Variable Optimization in Modular Robot Design through Deep Reinforcement Learning. *Robotics Institute Summer Scholars Working Papers Journal*. (2020).

Bushman, A., **Asselmeier, M.**, Won, J., & LaViers, A. Toward Human-like Teleoperated Robot Motion: Performance and Perception of a Choreography-inspired Method in Static and Dynamic Tasks for Rapid Pose Selection of Articulated Robots. *IEEE International Conference on Robotics and Automation*. (2020).

Asselmeier, M., Hatton, R. L., Mengüç, Y., & Olson, G. Evaluation of a Circumferential Extending Antagonist Actuator in a Soft Arm. *3rd IEEE International Conference on Soft Robotics*. (2020).

Zhou, Y., **Asselmeier, M.**, & LaViers, A. Toward Expressive Multi-Platform Teleoperation: Laban-Inspired Concurrent Operation of Multiple Joints on the Rethink Robotics Baxter Robot in Static and Dynamic Tasks. *6th International Conference on Movement and Computing.* (2019).

Presentations

Asselmeier, M., Ivanova, J., Zhou, Z., Zhao, Y., and Vela, P.A. Hierarchical Experience-informed Navigation for Multi-modal Quadrupedal Rebar Grid Traversal. Paper presented at the IEEE International Conference on Robotics and Automation. May 2024. Yokohama, Japan.

Asselmeier, M., Hatton, R. L., Mengüç, Y., & Olson, G. Evaluation of a Circumferential Extending Antagonist Actuator in a Soft Arm. Paper presented through a pre-recorded virtual presentation for the 3rd IEEE International Conference on Soft Robotics. Apr 2020. Virtual.

Zhou, Y., **Asselmeier, M.**, & LaViers, A. Toward Expressive Multi-Platform Teleoperation: Laban-Inspired Concurrent Operation of Multiple Joints on the Rethink Robotics Baxter Robot in Static and Dynamic Tasks. Paper presented through oral presentation at the 6th International Conference on Movement and Computing. Oct 2019. Tempe, Arizona.