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 – 2,555 offered out of 12,664 applicants

University of Illinois at Urbana-Champaign May 2021
Bachelor of Science in Mechanical Engineering GPA: 3.97/4.00
Minor in Computer Science
Chancellor's Scholar – 125 offered 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

- Track local free space perceived from a laser scan using Kalman filters to plan collision-free trajectories using MPC onboard a Turtlebot and Unitree A1 quadruped through ROS
- Apply primitive shapes-based synthetic data generation policies to train a segmentation model in PyTorch to identify steppable and crouchable regions from depth images
- Leverage an offline behavior library to solve an interleaved graph search and nonlinear trajectory optimization-based footstep planner using A* and SQP onboard a Unitree Go2

Institute for Human and Machine Cognition Pensacola, FL
Software Engineering Intern June 2021 – Sept 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 the Boston Dynamics Atlas hydraulic 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 in the PyBullet physics engine to select and refine modules to append to a robotic arm design in order to reach a goal position
- Implemented the actor-critic reinforcement learning algorithm SAC to optimize continuous design variables such as length for modules attached to a robotic arm design

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 that detailed the manufacturing, assembly, and experimental validation of proposed circumferential pneumatic actuators

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

- Designed user studies for comprehending mechanisms and perceptions of two separate, multidisciplinary methods of mapping task-level and joint-level commands to a robot
- Authored an accepted conference paper that analyzed findings from user studies

Projects

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

- Integrated neural network-based wheelchair obstacle detection using RGB and depth image streams onboard a microcontroller
- Developed 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

- Built a device that constrained, moved, and sliced a vegetable using one 12 V DC motor through the application of rigid body kinematics theory and mechanism design

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 faculty 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

Max Asselmeier, Dhruv Ahuja, Abdel Zaro, Ahmad Abuaish, Ye Zhao, and Patricio A. Vela. Dynamic Gap: Safe Gap-based Navigation in Dynamic Environments. *IEEE International Conference on Robotics and Automation (ICRA)*, 2025.

Max Asselmeier, Jane Ivanova, Ziyi Zhou, Patricio A. Vela, and Ye Zhao. Hierarchical Experience-informed Navigation for Multi-modal Quadrupedal Rebar Grid Traversal. *IEEE International Conference on Robotics and Automation (ICRA)*, 2024.

Shiyu Feng, Ziyi Zhou, Justin S. Smith, **Max Asselmeier**, Ye Zhao, and Patricio A. Vela. GPF-BG: A Hierarchical Vision-Based Planning Framework for Safe Quadrupedal Navigation. *IEEE International Conference on Robotics and Automation (ICRA)*. 2023.

Bhavyansh Mishra, Duncan Calvert, Brendon Ortolano, **Max Asselmeier**, Luke Fina, Stephen McCrory, Hakki Erhan Sevil, and Robert Griffin. Perception engine using a multi-sensor head to

enable high-level humanoid robot behaviors. *IEEE International Conference on Robotics and Automation (ICRA)*. 2022.

Max Asselmeier, Julian Whitman, and Howie Choset. Continuous Design Variable Optimization in Modular Robot Design through Deep Reinforcement Learning. *Robotics Institute Summer Scholars Working Papers Journal*. 2020.

Allison Bushman, **Max Asselmeier**, Justin Won, Amy LaViers. 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 (ICRA)*. 2020.

Max Asselmeier, Ross L Hatton, Yiğit Mengüç, Gina Olson. Evaluation of a Circumferential Extending Antagonist Actuator in a Soft Arm. *IEEE International Conference on Soft Robotics (RoboSoft)*. 2020.

Yichen Zhou, **Max Asselmeier**, Amy LaViers. 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 (MOCO).* 2019.

Presentations

Max Asselmeier, Jane Ivanova, Ziyi Zhou, Patricio A. Vela, and Ye Zhao. Hierarchical Experience-informed Navigation for Multi-modal Quadrupedal Rebar Grid Traversal. *IEEE International Conference on Robotics and Automation (ICRA)*, May 2024. Yokohama, Japan.

Max Asselmeier, Ross L Hatton, Yiğit Mengüç, Gina Olson. Evaluation of a Circumferential Extending Antagonist Actuator in a Soft Arm. *IEEE International Conference on Soft Robotics (RoboSoft)*. April 2020. Virtual.

Yichen Zhou, **Max Asselmeier**, Amy LaViers. 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 (MOCO).* October 2019. Tempe, Arizona.