Will Heitman

will@*heit.mn* | 225.362.0089 | in */willheitman*

Education

Master of Science in Robotic Systems Development, Carnegie Mellon University   Pittsburgh, PA
Relevant coursework: May 2025

Manipulation, Estimation and Control   Computer Vision   Robot Autonomy
Systems Engineering and Management for Robotics   Intro to Robot Learning
Human Robot Interaction   Robot Mobility on Air, Land, & Sea   Robotics Business

Bachelor of Science in Computer Engineering (with honors), University of Texas at Dallas   Dallas, TX
- Finalist for Outstanding Undergraduate Student Award (out of 21,500 students).   May 2023
- National Merit Scholarship Program within Hobson Wildenthal Honors College.

Skills

Languages: français (level B2), C++, Python, Typescript, etc. **Tools:** ROS, Docker, CARLA, Unity, Colcon, MATLAB, Fusion 360. **Concepts:** SLAM, computer vision, ML, reinforcement learning, firmware, electrical & electronic design, mechanical fabrication, UX design, full-stack web apps, control theory, inverse kinematics, planning, localization, sensor filtering, networking protocols, project management.

Projects, Work Experience, and Research (*much more available at* *heit.mn/projects*)

Automated reforestation using a ground robot, *project manager, software lead,* Oct. 2023 – Nov. 2024.
Developing a complete robotic system to reforest marginal pastureland conveniently and inexpensively.

- Manage a team of hardware and electronics specialists using Agile methodologies.
- Developing a custom, photorealistic forest simulator with Unity.
- Collaborating with state and local governments to achieve public deployment (starting Oct. '24).

CNN-based soil spectroscopy analysis, *research fellow*, USDA AI Center of Excellence, summer 2024.

- Designed and open-sourced a SOTA soil analysis tool that gives results in seconds instead of weeks.

Open-source autonomous driving platform & research group, *founder and team lead,* 2019 – 2023.
Built custom AV hardware and software. Drove our car autonomously on 6+ km of public roads.

- Led approx. 20 student researchers with custom training, documentation, and mentorship.
- Advised local governments and non-profits to advance real-world AV deployments.
- Architected and delivered a highly complex, safety-critical software/firmware/hardware system.
- Designed custom path planner derived from RRT, along with coupled actuator PIDs.
- Developed and leveraged custom simulation workflows using CARLA.
- Wrote a full-stack, real-time web dashboard using websockets, Three.js, rosbridge, and Tailwind.

Simulation of efficient SLAM using constrained zonotopes, Ruths Lab at UTD, 2022 – 2023.
Applied constrained zonotopes to express SLAM as a linear optimization, which is more efficient than factor graph-based optimization while offering comparable accuracy in simulation.

NSF REU on point matching optimization, Ruths Lab at UTD, summer 2021.
Implemented, tested, and deployed point matching state estimation algorithms, including ICP, NDT, and GICP, along with factor graph-based LIO-SAM, onto a real vehicle.

UT Dallas Environmental Conservation Organization, *president*, 2020 – 2021.
Organized volunteer activities, hosted talks by prominent authors and scientists, advised campus policymakers.