

Thomas Scherlis

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EDUCATION

CARNEGIE MELLON UNIVERSITY

Carnegie Institute of Technology
• **Electrical and Computer Engineering**
• **Focus in Robotics**
Expected **May 2021** | Pittsburgh, PA
GPA: 3.88

LINKS

Portfolio: <http://tomscherlis.com>
LinkedIn:// [Tom Scherlis](#)
Github:// [Toms42](#)

TEACHING ASSISTANT

- **Structure and Design of Digital Systems:** Fall 2018
- **Principles of Imperative Computation:** Summer 2018

COURSEWORK

Completed:

- Adaptive Control and Reinforcement Learning (PhD level)
- Planning Techniques for Robotics
- Advanced Mobile Robot Development
- Computer Vision
- Robot Kinematics and Dynamics
- Control Systems
- Embedded System Design
- Artificial Intelligence
- Computer Graphics
- Introduction to Computer Systems
- Signals and Systems

SKILLS

PROGRAMMING

Experienced: Python • Matlab
• C • C++ (modern)

COMPUTING HARDWARE

PCB design and layout • TI and Atmel 32 bit Microcontrollers • Intel FPGA

TOOLS AND FRAMEWORKS

ROS • Qt • FreeRTOS
• Altium Designer • Solidworks
• Linux/Unix • Git • SVN • Agile

EXPERIENCE

ZIPLINE INTERNATIONAL | Embedded Software Intern Summer 2019

- Developed embedded software for the world's largest autonomous drone delivery network.
- Designed a system to allow smart CAN-connected battery docking ports to safely share chargers, increasing charging and logging throughput.
- Created a generic i2c driver as well as device drivers for multiple i2c peripherals.
- Supported the release of Zipline's next generation vehicle, which utilizes a distributed system of microcontrollers each running a real time OS.

CMU PLANETARY ROBOTICS LAB | CubeRover Avionics Team Spring/Summer 2018

- Developed a safe, event-driven embedded flight-software system for a NASA-funded lunar rover using C and FreeRTOS.
- Led development of a custom operator interface GUI using C++ and Qt for remote command and telemetry.
- Designed two printed circuit boards featuring an FPGA and an MCU.
- The rover is an ultra-small, low-cost platform designed with automotive electronics for commercial lunar missions.

ACTIVITIES:

TARTAN AUV | Co-Founder and President

- Led development of an Autonomous Underwater Vehicle (AUV) to compete annually in the international RoboSub competition.
- Maintain an active software repository developed with ROS for python and C++, including guidance, navigation, controls, and perception stacks.
- Design the electrical system controlled by an NVIDIA Jetson.
- Raised and manage \$40k budget for 2020.

CARNEGIE MELLON RACING (CMR) | 2017-2019

- 2018 system lead for the low-voltage electrical system, which includes over 6 custom control boards.
- Create a formula-one style electric racecar each year to compete in the international FSAE competition.

PROJECTS

MODEL BASED CONTROL FOR AGILE DRONE FLIGHT | tomscherlis.com/dronempc

- Optimal minimum snap trajectory generation for drone racing gates.
- Model Predictive Controller (MPC) with differentially flat dynamic model for quadcopter control.

FULL-BODY VR FLIGHT SIMULATOR | tomscherlis.com/quidditch

- Virtual reality "Quidditch" game with full-body tilt-to-steer controls.
- Created procedural real-time terrain generation using Unity 3D.
- Winner of Faculty Choice and Builder's Choice awards at the 2018 CMU Build18 Hackathon.

REAL-TIME FLUID SIMULATOR | tomscherlis.com/lbm

- GPU-accelerated Lattice-Boltzmann fluid simulator written in CUDA-C.

INTERESTS: Robotics • Embedded Systems • Software Engineering