

Sam Schoedel

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EDUCATION

Carnegie Mellon, Pittsburgh, PA
Master of Science in Robotics

Expected Graduation August 2024
GPA: 4.0

Virginia Tech, Blacksburg, VA
B.S. - Computer Engineering: Controls, Robotics, and Autonomy
Minor - Math

May 2022
GPA: 4.0

RESEARCH EXPERIENCE

Carnegie Mellon REx Lab
Graduate Research Assistant

August 2022 - Present

- Advised by Dr. Zachary Manchester
- Developed a fast solver for model predictive control on embedded systems
- Created a code generation tool for high level languages for ease of use and accessibility

Virginia Tech TREC Lab
Undergraduate Research Assistant

Jan 2019, May 2022

- Advised by Dr. Alexander Leonessa
- Designed prototype PCB shields and programmed microcontrollers to efficiently transfer sensor data and control actuators over EtherCAT
- Started ongoing project to build cheap quadrupeds for swarm and cooperative robotics research
- Developed a grounded force feedback virtual reality system using a PANDA robot arm

Virginia Tech FASER Lab
Undergraduate Research Assistant

Jan 2020, May 2020

- Advised by Dr. Erik Komendera
- Designed electrical subsystems and prototyped PCBs for Stewart platform based robotic manipulators
- Programmed microcontrollers to communicate between lunar assembly robot and manipulators

WORK EXPERIENCE

NASA Jet Propulsion Laboratory
Software Engineering Intern

May - August 2022

- Developed flight software for CADRE, a multi-rover lunar mission launching in 2024
- Wrote data packet management infrastructure to enable rover communication using C++
- Created automated test interface for rover communication software

HaptX
Mechatronics Intern

May - August 2021

- Implemented multi-rate control algorithms for next-generation haptic hardware in C++
- Applied vector math operations and matrix transformations to represent virtual rigid-body contacts in 3D space
- Developed user interface for PLC based hardware life testing platform

ModalAI
Software Engineering Intern

May - Sept 2020

- Modified visual-inertial odometry algorithms for lightweight computing platforms using C++
- Incorporated loop closure program into main VIO software to reduce position estimation drift
- Refactored VIO algorithm to utilize snapdragon GPU, increasing processing speed by 300%

PUBLICATIONS AND PRESENTATIONS

A. Alavilli*, X. Nguyen*, S. Schoedel*, B. Plancher, Z. Manchester, "TinyMPC: Model-Predictive Control on Resource Constrained Microcontrollers", International Conference on Robotics and Automation (ICRA 2024).

S. Schoedel*, A. Fuge*, B. Kalita, A. Leonessa, "Development of an Affordable and Modular 3D Printed Quadruped Robot", International Mechanical Engineering Congress and Exposition (IMECE 2022)

Development of an Affordable and Modular 3D Printed Quadruped Robot, Poster Presented at Virginia Tech Mechanical Engineering Graduate Research Symposium, 2022 (poster)

Embedded Programming for Humanoid Robots, presented at Virginia Tech Undergraduate Research Symposium, 2021 (poster)

AWARDS AND AFFILIATIONS

Tau Beta Pi Engineering Honors Society

Virginia Tech Highest GPA in Electrical and Computer Engineering

Dean's List (8x)

Harry Lynde Bradley M.S. Fellowship Awardee

SKILLS

Programming Languages: C, C++, Julia, Python, MATLAB

Software: Git, OpenCV, PyTorch, Unreal, Unity

Prototyping: 3D modeling with SolidWorks; PCB design with KiCad; soldering and SMD rework; 3D printing; machining (lathe, knee mill, CNC mill, water jet)