Sebastian Theiler

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EDUCATION

Washington University in St. Louis (2023-2027) *St. Louis, MO*
B.S. in Electrical Engineering *GPA: 3.75*
Second Major in Computer Science + Mathematics; Minor in Robotics

Relevant Coursework: Signals and Systems, Circuits, Digital Logic, Data Structures and Algorithms,
Intro to Quantum Electronics, Formal Languages & Automata, Linear Algebra, Vector Calculus

TECHNICAL SKILLS

Programming Languages: C++, Python, C, JavaScript/TypeScript, HTML/CSS, Java, MATLAB
Technologies: Linux, Git, ROS1, ROS2, Raspberry Pi, ESP32, Arduino, Mathematica
Relevant Skills: CAD (SolidWorks, Onshape), 3D Printing, Soldering, PCB Design (Altium, KiCAD)

EXPERIENCE

Swarm Robotics Team Captain — WashU Robotics Club *Sep 2023 - Present*
- **Leadership** Directed a team of 20 software, electrical, and mechanical engineers to build a swarm of modular, self-assembling, and self-replicating robots for future research. Using industry-standard version control practices, agile workflow, and test-driven development to increase team efficiency.
- **Control Algorithms** Architecting and implementing multi-agent control algorithms in C++ with ROS2, enabling complex formation of modular structures from individual robots.
- **Computer Vision** Used VSLAM to localize individual robots. Programmed an extension to ORB SLAM3 to allow multiple agents to share map localization and point cloud information. Developing Kalman filters with sensor fusion for tracking of robots from an overhead camera.
- **Sustainable Automation** Engineering a small-scale factory plant to recycle autonomously collected plastic waste into new robot chassis. Using OnShape for 3D modeling and layout and Altium for custom PCB design.
- **Technologies** ROS2, C++, Python OpenCV, Raspberry Pi, Altium, 3D printing

Research Assistant — Kantaros Autonomous Controls Lab *Jul 2024 - Present*
- **Project** Implementing VSLAM-based path planning and control algorithms with ROS2 for autonomous exploration with a Unitree Go2 quadruped robot. Integrating state-of-the-art libraries for semantic mapping and planning to enable novel research with large language models for autonomous navigation and task completion.
- **Skills** ROS1/2, VSLAM, MAVLink, C++, Python, OpenCV, PX4

High-Voltage Devices Circuits Design *Jul 2024 - Present*
- **Description** Designed and soldered circuits for various high voltage devices such slayer exciters. Creating a PCB for a solid-state Tesla coil. Adhered to strict safety practices when working with high voltage. 3D modeled and programmed a machine to aid in constructing large inductors.
- **Skills** PCB design (Altium), high voltage electronics

AluLearn.com — Ed-tech Startup *Sep 2021 - Dec 2023*
- **Impact** Founded an ed-tech startup to empower high school students to excel in AP exams. Scaled from local high school to over 1,000 students nationwide. Monetized with Stripe and Google Ads.
- **Operation** Designed an intuitive UI with React and TailwindCSS to allow students to study course content. Programmed a backend in Next.js and PostgreSQL to manage authentication and payment information and scale to 100,000+ spaced repetition flashcards.
- **Technologies** React, Next.js, Django, Stripe, TypeScript, PostgreSQL, TailwindCSS, System Administration

Assistant to Instructor — Washington University in St. Louis *Sep 2024 - Present*
- **Senior Design ROS2 Assistant** Assisted electrical and computer engineering students in using ROS2 for their senior design projects. Individually tutored students in principles of ROS2, Linux, and Raspberry Pis.

AWARDS

- Toshiba & NSTA Exploravision National First-Place Winner (2023): Researched and proposed a novel system for using specialized bacteria and fungi to remove perchlorates from Martian regolith and enable agriculture. Won first place nationally against over 14,000 students.
- StackOverflow 2400+ Reputation: Provided solutions to complex technical challenges, actively assisting the developer community in overcoming practical and advanced programming issues. Top 5% globally in Python and Git tags.