ELIAS BITSCH

Mechatronics & Robotics engineering student

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I am a pragmatic and goal-oriented Mechatronics & Robotics engineering student with a diverse background in robotics and software engineering. I am passionate about robotics, from hands-on tinkering using ROS/ROS2 and advanced Gazebo/Omniverse simulations to creating hardware prototypes through 3D printing and PCB design. My expertise includes developing projects from concept to deployment, focusing on delivering efficient C++ and Python code, and deploying solutions using Docker and Cloud Computing.

Education & Experience

FH Technikum Wien University of Applied Science **Feb. 2023 -- expected graduation 2025**

Bachelor of Science in Mechatronics Robotics 4. Sem GPA: 1.6

- **Software Engineering in Robotics Development**: Designed and implemented advanced robotics systems utilizing C++, Python, Bash, Linux, ROS/ROS2, Gazebo, Rviz and OpenCV, across multiple platforms using Docker containers.
- **Hardware Design**: Engineered custom hardware solutions, including PCB designs using EasyEDA and CAD tools like SolidWorks, resulting in reliable and cost-effective products.
- **Cybersecurity**: Implemented robust cybersecurity measures using tools like Wireshark, Kali Linux, Nmap, and aircrack-ng.

FH Technikum Wien University of Applied Science **Sept. 2023 – Present**

Leader - Sumo Bot Competition link

- Led a multidisciplinary team of 7 students to design, build, and program a competitive sumo robot, applying principles of mechatronics and robotics.
- Coordinated all aspects of the project, from initial concept and design to final testing and competition.
- Mentored team members in programming, hardware design, and problem-solving.

FH Technikum Wien University of Applied Science **2023 – Present**

Technical guide at open day

- Provided engaging and informative tours of the campus and labs during Open Days at FH Technikum Wien, showcasing the university's cutting-edge facilities and academic programs to prospective students and visitors.

Civilian Service (Diakone Gols) **2021– 2022**
HTL Eisenstadt *Diploma in Mechatronics GPA 1.86* **2016 -- 2021**
Gymnasium Neusiedl am See **2012 -- 2016**

Internships

Mars Incorporated (Bruck a. d. Leitha) link **Aug. 2018** & **Aug. 2019**

Servicing and Maintenance Technician

- Maintained and serviced SCARA robots, including welding robotic parts such as grippers for articulated arm robots.

Skills

- **Programming Languages & Tools**: C, C++, Python, Bash, Linux, Windows, ROS/ROS2, Docker, OpenCV, Arduino, PLC-programming, MATLAB, Java, JavaScript, TypeScript, HTML, CSS, SCSS, Next.js, React Native, AWS, SQL
- **Hardware Design**: EasyEDA, CAD Design, Fusion360, SolidWorks, Inventor, 3D Printing, Soldering
- **Cybersecurity**: Wireshark, Kali Linux, Nmap, aircrack-ng
- **Software Development**: version control (Git), CI/CD pipelines, agile methodologies

Projects

- Taurob-Tracker: Trained a machine learning model to detect valves in an industrial setting. Integrated the model into a complete arm manipulation pipeline, enabling precise and efficient operation for the EnRicH challenge.
- Sumo-Bot: Designed and programmed a competitive sumo robot, integrating sensors, actuators, and custom algorithms to optimize performance.
- Robot Maze Solver: Developed an autonomous robot in a Gazebo simulation using Python and ROS, capable of navigating a maze via the A-Star pathfinding algorithm.
- Robot Line Follower: Programmed a line-following robot in a Gazebo simulation using Python, ROS, and OpenCV for line detection. Implemented a P-controller and sensor fusion for precise navigation.
- Online ROS Course: Developed a comprehensive, interactive online course on Robot Operating System (ROS), covering core concepts like ROS nodes, topics, and services. The course includes hands-on tutorials with simulations using Gazebo and practical examples, enabling learners to build and control their own robots with ROS/ROS2.

Certifications

- Dassault Systèmes: Certificate for Mechanical Design (UAS Technikum Wien, 2023)
- Certificate of attending Summer School “Quantum Technologies” (UAS Technikum Wien, 2023)

Languages

- German: Native
- Englisch: Fluent