

Matthias Grabner

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Skills

Microcontrollers: ESP32, FreeRTOS, CAN FD

Robotics: ROS, NVIDIA Jetson, GStreamer, Betaflight

Programming Languages: C, C++, C#, Java, Python

Experience

Thesis on Certificate Chains, Fraunhofer AISEC – Berlin, DE

Apr 2025 – Jul 2025

- Developed an app to automatically extract and transmit certificate chains
- Used a custom test bench to analyze 47 android devices
- Found several suspicious values, one of which was the 4 year old boot patch level at the time of device release

Robotics Software Engineer Intern, AIR6 SYSTEMS – Klagenfurt, AT

Aug 2024 – Sep 2024

- Implemented a video pipeline for a drone-mounted NIR camera using GStreamer
- Developed a charge estimation tool for the UT inspection rover
- Automated various startup and maintenance tasks for NVIDIA Jetson

Software Engineer Intern, dotparc IT – Klagenfurt, AT

Aug 2019 – Sep 2019

- Software prototyping using C# for Wertholz GmbH
- Deployed relational database schemas using SQL
- Documentation of a customer management software in UML

Projects

Avionics Developer, BEARS e.V. – Berlin, DE

github.com/bears-space/vigilant-engine

- **CAN FD:** I am designing and constructing the endpoint of the telemetry pipeline of our latest rocket Aerobear
- **FreeRTOS:** I utilized FreeRTOS throughout all parts of developing time-critical code
- **ESP32:** The flight controller is a custom PCB developed by our avionics team based on the ESP32 architecture

Security Research

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- **IoT Security:** Researched IoT security in smart homes and wrote a review on the current state of research
- **Cache Attacks:** Wrote a survey on side-channel vulnerabilities in ARM-based mobile devices
- **Hardware Security:** Implemented various attacks on hardware components, including an EMFI attack that breaks a widely-used Hierarchical Signature System

Self-Hosting

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- I self-host and maintain a number of services, including, but not limited to:
 - **SearXNG:** A public instance of the metasearch engine
 - **Piped:** A public instance of the alternative YouTube frontend equipped with blocking evasion
 - **Overleaf:** A semi-public instance of the collaborative LaTeX editor
 - **Nextcloud:** A private instance of the privacy-focused cloud for friends and acquaintances

Education

Technische Universität Berlin – MSc. Computer Science

Oct 2025 – Present

Freie Universität Berlin – BSc. Informatik

Oct 2022 – Jul 2025

International School Carinthia – Bilingual IB Diploma

Oct 2014 – Jul 2022