# Christian Sassi

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## Education

**Master's Degree in Computer Science, Cybersecurity - University of Trento** — Trento, Italy
*Expected graduation in October 2025.* — *Sep. 2023 – Present*

**Bachelor's Degree in Computer Engineering - University of Trento** — Trento, Italy
*Graduated with a final grade of 108/110.* — *Sep. 2020 – Sep. 2023*

## Experience

**Software Engineer Intern - Embedded Systems** — Feb. 2023 – Jun. 2024
*University of Trento* — *Trento, Italy*

- Validated **SPARK SR1020 UWB IoT devices** against their specifications, ensuring reliability and readiness for system integration.
- Enhanced real-time **UWB communication for music streaming** by developing and optimizing **C-based software**, achieving a **50% faster response time**.
- Improved system performance by building a **Python script** to analyze **audio packet behavior**, providing insights to refine the **IoT software**.
- Demonstrated strong **teamwork** and **problem-solving skills** by collaborating with a team of **10 members** in a **multidisciplinary environment** to develop IoT-based solutions.

**Software Developer** — Oct. 2022 – Oct. 2023
*Fiverr* — *Remote*

- Developed custom software applications in **C/C++**, **Python**, and **Java** for different client needs.
- Managed projects for over **60 clients**, ensuring timely delivery and high-quality results.
- Maintained a **100% delivery rate** and a perfect **5/5 customer satisfaction rating**.

## Projects

**MITRE Embedded Capture The Flag (eCTF) Competition** | *C, Python*

- Participated in MITRE's **embedded security competition**, focusing on secure system design and analysis.
- Developed secure firmware for a Satellite TV system using **NaCl signing**, **Blake2b hashing**, **Argon2id key derivation**, and **Monocypher authenticated encryption** to ensure data integrity and confidentiality.
- Performed **reverse engineering** and **vulnerability assessments** on competitors' firmware to identify security flaws.

**Domain Shift Adaptation with MEMO** | *PyTorch, Scikit-learn, NumPy*

- Applied **Test-Time Adaptation (TTA)** techniques to improve the **robustness** of a pre-trained neural network on test images.
- Implemented **Marginal Entropy Minimization (MEMO)**, achieving an improvement of **over 3%** in overall performance.

**Security Testing Analysis for an E-commerce Platform**

- Conducted a comprehensive **static and dynamic security analysis** using **SpotBugs** and **ZAP**.
- Identified and prioritized over **15 potential vulnerabilities**, including **SQL Injection**, **XSS**, and **CSRF**, as part of a structured **vulnerability management process**.
- Provided a working solution for each vulnerability, **improving the platform's security posture** and reducing potential attack vectors.

## Publications

**Real-time Musical Haptics with Ultra-wideband: A Study on Latency, Reliability, and Perception**
*L. Turchet, C. Sassi, D. Vecchia, G. Picco* — Published in IEEE Transactions on Haptics on January 6, 2025.

## Technical Skills

**Languages**: Italian, English
**Programming languages**: Python, C/C++, Rust, Java, JavaScript, HTML/CSS, SQL
**Security Skills**: Injection Attacks, Cryptography, Pwn, Reverse Engineering, Web Security