

# Simone Calzolaro

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## PROFILE

M.Sc. Computer Science Engineering student with a broad and robust technical foundation across software engineering, machine learning, systems architecture, and cybersecurity. Experienced in full-stack development, low-level programming, data-driven optimization, and hardware/software security through diverse academic and personal projects. Combines strong technical versatility with proven leadership, discipline, and teamwork skills developed as a professional sports team captain and civic volunteer.

## EXPERIENCE

### RomagnaPlus & ParolAperta | Forlì & Milan, Italy

Web Content Manager (2023 – 2024)

- Managed web hosting infrastructure and deployment configurations, ensuring high availability.
- Led website creation, SEO optimization, and content management.

## PROJECTS

**Distributed Multiplayer Game ("MyShelfie"):** Engineered a client-server Java application utilizing raw TCP socket programming. Implemented multi-threading to handle concurrent connections, ensuring message reliability and synchronization.

**Optimized Expressway Route Planning:** Developed a route planning and fuel optimization algorithm entirely in C.

**Martian Terrain Semantic Segmentation:** Implemented an enhanced U-Net deep learning pipeline in Python to segment high-resolution satellite imagery into terrain classes.

**Cancer Blood Cell Classification:** Developed custom Convolutional Neural Networks (CNNs) using TensorFlow/Keras to classify medical images, achieving over 99% validation accuracy.

**Machine Learning for Side-Channel Attacks:** Conducted hardware-level analysis on microcontrollers by collecting Electromagnetic (EM) traces during AES-128 encryptions. Trained ML models to detect key-dependent leakage and recover secret keys.

**Unikernel-Based Real-Time Virtualization:** Researched the deployment of Unikernels on the Xen hypervisor to optimize resource isolation and derive worst-case response times for safety-critical Cyber-Physical Systems.

**Offensive Security / CTFs:** Active competitor in Capture The Flag events (CrateCTF, Cicada Detroit, Flare-On, NTT Data& Toyota Automotive security Hackaton), utilizing Linux CLI tools to analyze binaries and debug memory errors.

## EDUCATION

### Politecnico di Milano – Milan, Italy

- M.Sc. in Computer Science Engineering (2024 – Present) - *Expected Graduation: July 2026*
- B.Sc. in Computer Science Engineering (2021 – 2024)

## RELEVANT SKILLS

**Programming Languages:** C, C++, Java, Python, JavaScript, SQL, Bash, Assembly.

**Machine Learning & Data:** TensorFlow/Keras, PyTorch, NumPy, Pandas, Scikit-learn, Python-MIP.

**Systems & DevOps:** Linux (Debian, Ubuntu, Kali), Git, Docker, TCP/IP Networking, Virtualization.

**Security:** Cryptography fundamentals, Reverse Engineering, Binary Exploitation, Vulnerability Analysis.

**Languages:** Italian – Native Speaker; English – C1; German – A2