

# Cristian Francesco Pennino

Software Engineer · Web Developer · Penetration Tester

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## PROFESSIONAL SUMMARY

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Software engineer and full-stack web developer with a strong, competition-proven foundation in cybersecurity and offensive security. Builds production-grade web applications with React, Next.js and TypeScript, and writes secure, low-level systems in C and Python. National-level competitor and award winner across cybersecurity (CyberChallenge.IT, OliCyber.IT), competitive programming (Italian Informatics Olympiad), embedded/IoT (STMicroelectronics) and AI robotics — 1st place nationally at RoboCupJunior 2026 with World Championship qualification. Comfortable across the full stack: from CTF-style penetration testing and reverse engineering to polished, accessible frontend interfaces and cloud-connected hardware.

## TECHNICAL SKILLS

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**Languages:** JavaScript (ES6+), TypeScript, Python, C, C++, SQL, HTML5, CSS3

**Frontend & Web:** React, Next.js, React Native, Tailwind CSS, Framer Motion, GSAP / ScrollTrigger, Vite, responsive design, web accessibility (a11y), REST APIs

**Backend & Data:** Node.js, REST API design, PostgreSQL, Supabase, Stripe API, authentication & sessions, relational data modelling

**Security & Pentesting:** Ethical hacking, OWASP Top 10, web exploitation (SQLi, XSS), cryptography, reverse engineering, Capture The Flag (CTF), Burp Suite, Nmap, Wireshark, Ghidra, Linux

**Networking:** TCP/IP, routing & switching, network analysis, Cisco CCNA, TLS/HTTPS

**Embedded & Robotics:** Embedded C (bare-metal), STM32 (F4 / WL55), ESP8266, SPI / I<sup>2</sup>C / UART, LoRa 868 MHz, RFID/NFC, computer vision (OpenCV, YOLO), pathfinding (DFS/BFS)

**Tools & Practices:** Git & GitHub, version control workflows, CI/CD (GitHub Actions), Docker (basic), unit testing, debugging, data structures & algorithms, Agile teamwork

## SELECTED PROJECTS

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### TechStore — Full-Stack E-Commerce Platform<sup>2025</sup>

*React · Vite · TypeScript · Tailwind CSS · Supabase · Stripe*

- Built an end-to-end e-commerce platform with dynamic product catalogue, real-time search and multi-criteria filtering, and a responsive checkout flow.
- Integrated Stripe Checkout server-side through Supabase Edge Functions, persisting orders to PostgreSQL and sending automated order-confirmation emails.
- Developed an admin dashboard for product CRUD, inventory tracking and order management, with sales analytics (Recharts) and access enforced by PostgreSQL Row Level Security.

[Live demo](#) · [Source \(GitHub\)](#)

### Velvet Pour — Interactive Motion-Design Web Experience<sup>2025</sup>

*React · Vite · GSAP · ScrollTrigger · SplitText*

- Engineered a cinematic, scroll-driven landing page with choreographed GSAP timelines, pinned sections, multi-layer parallax and scroll-synchronized video.
- Solved React hydration conflicts with GSAP SplitText using deferred splitting in useLayoutEffect and a ResizeObserver, sustaining a consistent 60 fps on desktop and mobile.
- Built a fully custom, library-free carousel with drag gestures and synchronized caption animation.

[Live demo](#) · [Source \(GitHub\)](#)

### AuthLog — Secure IoT Access-Control System<sup>2025–2026</sup>

*STM32 · ESP8266 · React Native · Supabase · TLS 1.2 · Embedded C | 3rd “Salvatore Di Bartolo” Award*

- Designed a smart access-control system unifying embedded hardware, cloud and mobile: STM32 handles RFID/NFC acquisition, ESP8266 communicates with a Supabase/PostgreSQL backend over HTTPS (TLS 1.2).

- Implemented sub-second authentication via REST over TLS with automatic logging of every access event; added Time-of-Flight proximity detection for energy efficiency.
- Built a cross-platform React Native app for user enrolment and direct NFC UUID writing from a smartphone, removing the need for physical badges.

[Source \(GitHub\)](#)

### **RoboCupJunior Rescue Simulation — Autonomous Robot**2026

*Python · OpenCV · NumPy · YOLO · Webots | 1st place national — World Championship qualification*

- Developed a fully autonomous robot across four integrated modules (perception, navigation, mapping, communication) fusing LiDAR, GPS and IMU data.
- Implemented DFS for full-area coverage and BFS for optimal return paths, with a proportional heading controller and an incrementally built occupancy-grid map.
- Ran real-time YOLO victim detection in the control loop using asynchronous inference queuing to avoid latency spikes; auto-reported findings via the competition referee API.

### **Smart Packaging & ForestGuard — Embedded / IoT Systems**2024–2025

*STM32 (F401RE / WL55JC1) · Embedded C · SPI/I<sup>2</sup>C/UART · LoRa 868 MHz · Sensor Fusion*

- Smart Packaging: bare-metal firmware with custom SPI/I<sup>2</sup>C drivers, low-power RTC scheduling and wireless telemetry — 3rd place, national STMicroelectronics “Build the Future with STM32ODE” contest.
- ForestGuard: solar-powered LoRa mesh of STM32WL55 nodes for forest-fire and intrusion detection, using multi-sensor fusion and adaptive thresholding to minimise false positives.

## **COMPETITIONS & ACHIEVEMENTS**

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- **RoboCupJunior Rescue Simulation 2026** — 1st place national, qualified for the World Championship (Incheon, July 2026).
- **STMicroelectronics STM32ODE** — 3rd place national (2023/24) and 3rd “Salvatore Di Bartolo” Award (2025/26).
- **OliCyber.IT (national cybersecurity olympiad)** — national finalist 2024 and 2026.
- **CyberChallenge.IT** — selected participant, University of Catania (ethical hacking, cryptography, CTF).
- **Italian Informatics Olympiad (OII / OIS)** — competitor in algorithmic problem solving, individual and team.
- **NXP Summer School 2025** — intensive program in embedded systems and firmware development.

## **EDUCATION**

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### **Diploma in Computer Science & Telecommunications (Perito Informatico)**Expected 2026

ITIS “E. Fermi”, Giarre (CT), Italy — IT specialisation: software development, systems & networks, databases and cybersecurity.

## **CERTIFICATIONS**

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- Cisco CCNA: Switching, Routing & Wireless Essentials (2026)
- Cisco CCNA: Introduction to Networks (2025)
- Cisco IT Essentials (2024)
- Cambridge English — B2 First Certificate (2025)

## **LANGUAGES**

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**Italian** (native) · **English** (C1 listening / B2 — Cambridge certified) · **Spanish** (basic)