

# Tim Kobler

Robotics Master's Student

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## PROFILE

Microengineering Master student at EPFL. I joined Stérilux as a production technician two years ago and now run their manufacturing. In parallel, I characterize sub-THz modulators at HyLab, design the UHF ground segment for the EPFL Spacecraft Team's CubeSat, and took Durandal, a wireless fencing referee system, through to its first field tests. Outside of that: volunteer firefighter, private pilot (PPL-A), and trumpet teacher.

## PROFESSIONAL EXPERIENCE

**Stérilux** *Renens, Switzerland*

**Manufacturing Manager**

**Feb 2026 – Present · Part-time**

- Managing production of ozone sterilization devices (~300 parts, 4 subassemblies per unit): increased throughput by 60% since arrival. Balancing make-to-stock and make-to-order production, scheduling, and lot disposition.
- Built a QR-based traceability platform tracking each subunit end-to-end (operator, date, test results, stock levels), consolidating scattered records into a single system while maintaining production rate.
- Training and supporting production operators; documenting competencies and coordinating repair/rework activities per quality requirements.
- Participating in Odoo ERP restructuring (~500 references across raw materials, intermediates, and finished goods) to link purchase orders, manufacturing orders, and inventory.
- Contributing to ISO 9001/13485 re-compliance: conducted internal gap audit, mapping production processes to draft WI

**Operations Consultant**

**2025 · Part-time**

- Reorganized the assembly workshop into a sequential station-by-station layout; designed and built custom QC test bench furniture and set up airtightness/ozone calibration test stations.
- Diagnosed production bottlenecks: irregular batch sizing and poor stock management causing 1–5 supply stalls per month and restructured into smaller synchronized batches, nearly eliminating production interruptions.

**Production Technician**

**2024 · Part-time**

- Assembled and quality-controlled ozone sterilization devices on the production line; learned full product architecture.

**Laboratory of Intelligent Systems (LIS), EPFL** *Lausanne, Switzerland*

**Drone Maker – Research Internship**

**Summer 2025 · Internship**

- Built and calibrated 5+ high-end micro-drones (NVIDIA MCU, carbon chassis) for swarm robotics research; contributed to both hardware assembly and MPC controller tuning with camera feed integration.

**Forum EPFL** *Lausanne, Switzerland*

**Logistics Manager**

**2024 · Student Organization**

- Co-led logistics for Europe's largest student-organized career fair (365+ exhibitors, 23,000 visitors, 5 days): venue layout across 3 floors with 5 configurations, supplier coordination, furniture, signage, and transport.
- Co-Managed a team of 4 direct reports plus up to 20 volunteer staff and 15 professional contractors at peak; year-long commitment (~10 h/week).

**EPFL** *Lausanne, Switzerland*

**Teaching Assistant – Electronics**

**2023 – 2025 · Academic**

- Mentored 100+ students through circuit design, hands-on electronics lab and transistor/AOP fundamentals.

## EDUCATION

**EPFL – École Polytechnique Fédérale de Lausanne**

**2024 – 2026**

*MSc in Microengineering — Specialization: Photonics & Semiconductors (in progress)*

*Lausanne, Switzerland*

GPA: **5.43 / 6.0** · 90 / 120 credits · Analog IC Design: 6.0/6 · RF Circuits Design Techniques: 6.0/6 · Products Design & Systems Engineering: 5.75/6 · Evolutionary Robotics: 5.75/6

**EPFL – École Polytechnique Fédérale de Lausanne**

**2020 – 2024**

*BSc in Microengineering*

*Lausanne, Switzerland*

GPA: **4.69 / 6.0** · 180 / 180 credits · Advanced Microfabrication Practicals: 6.0/6 · Mechanism Design II: 5.5/6 · Semiconductor Devices: 5.5/6 · Materials Processing I: 5.5/6

## SELECTED PROJECTS

### UHF Ground Segment · RF Systems Engineer

Spring 2026

EPFL Spacecraft Team · Semester Project (ongoing Spring 2026)

- Designing and building a complete UHF Tx/Rx ground station for EPFL Spacecraft Team's CubeSat: RF chain (PA, LNA, antenna, switches), GNU Radio modulation pipeline, and REST API mission control interface.
  - Completed BOM, electrical schematics and cad model for electrical cabinet design
  - Initial station API integration: Ground segment now operational for automated satellite Rx pass acquisition (Tx in progress).
- GNU Radio · Python · UHF · SDR · RF Hardware · REST API

### The Guardian Angel · Product Engineer & Team Leader

Fall 2025

EPFL · MICRO-406 (5-person team)

- Designed a privacy-preserving fall detection system for elderly care: mmWave radar for contactless fall detection, PPG/temperature sensors for vitals, React dashboard for caregivers.
  - Architected a dual-database Firebase backend (RTDB for real-time streaming, Firestore for historical queries) with role-based access and patient consent protocol.
  - Prototype at 42 CHF per sensor unit; system targets  $\geq 95\%$  fall detection with  $\leq 5\%$  false positive rate.
- mmWave Radar · ESP32 · FreeRTOS · Firebase · Fusion 360 · React

### Sub-THz Wireless Modulators · Semester Project

Fall 2025

EPFL HyLab

- Characterized 40 antenna-coupled TFLN/TFLT materials modulators across a  $4 \times 5$  geometric matrix (0.5–2.0 mm length, 3–7  $\mu\text{m}$  gap) for 6G applications.
  - Built an automated Python measurement bench with Smart Peak Detection algorithm extracting sidebands to  $-70$  dB noise floor; reduced measurement time by 80%.
  - Co-first-author publication in preparation.
- Python · Anritsu MS9740A · VDI RF Multipliers · Keysight N7776C · TFLN · TFLT

### Durandal — Wireless Fencing Referee System · Product Engineer & Team Leader

2024 – 2025

Entrepreneurial Project

- Pitched and secured initial funding for a wireless, wearable fencing referee system; began field testing with Vaudoise Arena before team dispersed.
  - Engineered full product: custom PCB (ESP32-C3, KiCad), FreeRTOS firmware with DSP-based hit detection (FFT/FIR,  $< 10$  ms latency, FIE-compliant 500 g threshold), and ESP-NOW wireless protocol.
  - Managed end-to-end product scope: user requirements, hardware design, embedded software, and live-environment validation.
- ESP-NOW · ESP32-C3 · FreeRTOS · KiCad · Node.js · WebSocket

## TECHNICAL SKILLS

|                     |                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------------------------------|
| Programming         | C/C++, Python, MATLAB, Verilog-A, JavaScript/TypeScript, Node.js, React                                                |
| CAD & Manufacturing | CATIA V5, Fusion 360, KLayout, SolidWorks, AnyLogic                                                                    |
| Embedded Systems    | ESP32, FreeRTOS, Arduino, Crazyflie, mmWave Radar, PCB Design                                                          |
| Production & QC     | ERP (Odoo), Production Scheduling, QC Testing, ISO 9001 (in progress), Workshop Layout Optimization, Test Bench Design |
| Software & DevOps   | MS Suite, Git, Linux, Firebase, REST API, Docker, LaTeX, Typst                                                         |

## INTERESTS & ACTIVITIES

**Volunteer Firefighter** · SDIS Vaud (2023 – 2026) — Certified Porteur (breathing apparatus carrier); trained in live-fire intervention in simulated residential structures. Active emergency response with SDIS Chamberonne.

**Trumpet Teacher** · Private Instruction (2022 – Present) — Taught trumpet to students across age groups, adapting pedagogy to individual learning profiles.

**Licensed Pilot – PPL(A)** — Private Pilot License, self-funded. Single-engine piston aircraft.

## LANGUAGES

**French:** Native   **English:** Fluent (C1)   **Spanish:** Intermediate (B2)