

# Ulysse Corne

[ucorne@andrew.cmu.edu](mailto:ucorne@andrew.cmu.edu) - [linkedin.com/in/ulysse-corne](https://www.linkedin.com/in/ulysse-corne) - [github.com/ulysssecrn](https://github.com/ulysssecrn)

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## EDUCATION

### Carnegie Mellon University

Master of Science in Electrical and Computer Engineering, Advanced Study | GPA: 4.0/4.0

Pittsburgh, PA

December 2027

Relevant Courses: Embedded Real-Time Systems, Embedded ML, Computer Systems, Mobile Robots

### CentraleSupélec

Bachelor's Degree in Engineering | GPA: 3.79/4.33

Paris, France

July 2024

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## EXPERIENCE

### CMU MetaMobility Lab | Graduate Researcher | Pittsburgh, PA

Sept. 2026 - Present

- Designing common sensing hardware and embedded firmware for hip, knee and ankle exoskeletons, with on-device real-time ML inference on IMU and motor sensor streams.
- Porting ~90k-parameter ML inference from a Jetson Orin Nano to the Teensy running the control loop.

### Tornyo (YC F25) | Hardware Engineering Intern | Paris, France

May 2026 - Aug. 2026

Autonomous drones for mosquito interception.

- Designed a 22×22 mm Betaflight flight controller PCB around an STM32G473, with an integrated high-speed gyro and custom ESCs (EFM8BB51, flashed over C2), supporting both 1S LiPo and 2S supercapacitor power.
- Built a custom 20 A supercapacitor charging circuit around the BQ25820 with STM32 bring-up firmware over I2C, cell balancing and controlled charge voltage, moving the drone from 3 min flight per 15 min recharge on LiHV to 90 s per 90 s.
- Integrated a VL53L9CX ToF sensor over I2C on an STM32N6, adapting ST's drivers and extending on-NPU inference firmware from sonar to lidar for autonomous flight.
- Modified a GRU flight model's input layers and retrained it in the team's RL framework on noise-modeled lidar: 90% obstacle avoidance, 4 min flight among cars and trees.

### Withings | R&D Engineering Intern | Paris, France

Feb. 2025 - July 2025

Low-power snoring-detection add-on for a sleep apnea study, on an existing nRF52 smartwatch.

- Developed C drivers for an Asahi Kasei AK5707 low-power audio ADC, interfacing it with the nRF52 over I2C (control) and I2S (audio) and driving an analog microphone.
- Devised a duty-cycled wake-on-sound pipeline: the ADC's acoustic activity analyzer listens 30s out of every 120s and wakes the MCU only on detected snoring, cutting the feature's battery cost from 15 days to 1.7 on a 30-day watch.
- Recovered usable audio through the watch's sealed watertight casing with a 400 Hz high-pass and an adaptive threshold, validated against a Withings sleep mat over 3 overnight tests.

### Withings | Industrialization Engineering Intern | Paris, France

Sept. 2024 - Jan. 2025

- Built Python/OpenCV pipelines catching cartridge defects the existing station missed, deployed on a Pi station on the line in China, then added a TensorFlow Lite autoencoder.
- Engineered an automated jig for battery-life stress-testing, simulating daily device usage via a Pi-controlled pump and current-measurement framework.

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## SKILLS

**Programming:** C (Embedded), Python, Bash, C++, SQL

**Embedded & Firmware:** STM32 (incl. N6/NPU), nRF52, Teensy, Jetson, I2C · SPI · I2S · UART, bare-metal firmware, FreeRTOS, interrupt-driven low-power design, SWD (ST-Link), C2 (EFM8)

**Hardware & Lab:** PCB design (KiCad), LTspice, oscilloscopes, logic analyser, power analysis, Fusion 360, Onshape

**Software & ML:** Linux, Raspberry Pi, Git, TensorFlow (Lite), Keras, OpenCV, NumPy/Pandas

**Languages:** English (C1+, TOEFL 106), French (native)