Piet De Vaere
Electrical Engineer with a PhD in Network Security

I have a passion for embedded devices and operational technology. I also enjoy designing elegant systems and managing projects. If you are looking for an engineer with strong analytical skills, but who also doesn't mind to roll up his sleeves, do get in touch!

piet@devae.re — Zürich/Brugg area, CH — References on request·

Work and Education

Lecturer and Postdoc   Since Summer 2023 at **ETH Zürich**, CH
Lecturing in the Network Security course and providing scientific support to the research group.

Freelance Engineer   Since 2020 at **De Vaere Solutions**, CH
Electrical engineering and PCB design services

PhD in Network Security   2018 to Summer 2023 at **ETH Zürich**, CH
Advised by Prof. Adrian Perrig at the Computer Science Department
Thesis: "Fine-Grained Access Control for Sensors, Actuators, and Automation Networks"

As the head assistant of the Network Security course, I held final responsibility for all non-lecture aspects of the course, e.g., exams, exercises, and project work. In this role, I initiated and oversaw a significant course redesign.

MSc in Electrical Engineering   2016 to 2018 at **ETH Zürich**, CH
GPA: 5.92/6 — with Distinction — ESOP Excellence Scholarship
Thesis: "Adding passive measurability to QUIC"

BSc in Electrical Engineering   2013 to 2016 at **TU Delft**, NL
GPA: 9.5/10 — Cum Laude — Honours Programme — Challenge Programme

Selected First-Author Papers

Hey Kimya, Is My Smart Speaker Spying on Me?   USENIX Security 2023
Taking Control of Sensor Privacy Through Isolation and Amnesia
Ideally, smart speakers should only be able to listen when they are spoken to ("*Hey Siri!*"), but if so, how could they hear us call out to them? Kimya is a low-level framework that ensures that stand-by smart speakers cannot leak audio data and must forget what they heard immediately.

The SA^{4}P Framework: Sensing and Actuation as a Privilege   Under submission
IoT devices interact with the physical world through sensing and actuation. Because of that, their presence introduces real privacy and safety risks. SA^{4}P enables fine-grained control over which devices are allowed access to the physical world, and at which times. It also motivates developers to sense or actuate not more than needed.

Hopper: Per-Device Nano Segmentation for the Industrial IoT   ASIACCS 2022
Hopper protects industrial networks by placing each device in its own virtual mini network. This minimizes an attacker's ability to infect or hop between devices. We show how to achieve this without modifying the underlying network routes or structure. We include implementations on both general-purpose and embedded hardware.

Tableau: Future-Proof Zoning for OT Networks   CRITIS 2021
We analyze how and why today's industrial network defenses are reaching their limits. Tableau is an exploratory, new, and IEC 62443-compatible approach to structure these networks that is based on modern assumptions and technologies.

Languages   (ILR scale)

English, Full professional proficiency   **German**, Professional working proficiency
French, Elementary proficiency   **Dutch**, Native

Miscellaneous

Things I like: C, Python, Embedded Programming, PCB Design, (SMD) Soldering, MCUs, Teaching, Mountaineering, Hiking, Packrafting, (Power) Tools, Logistics, Physical Infrastructure, Bicycles, Car Mechanics, KISS Principle, Graphs & Charts, . . .

Third place in ESU & BBC **Public Speaking Awards**, 2013 Belgian national finals

(Historic) project blog on `https://devae.re/projects/`