Joakim Pettersson

Senior Embedded & Control Systems Engineer – Automotive, Energy & eMobility

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PROFILE

- Embedded software developer with 14+ years of experience designing, integrating, and debugging distributed control systems in automotive, energy and e-mobility applications.
- Combines hands-on embedded C/C++ and Python development with deep understanding of real-time communication, sensor integration and low-power control.
- Skilled in bridging hardware and software domains to ensure reliable, reproducible system behaviour from prototype to production.

CORE COMPETENCE

Hardware Architectures:

• *PowerPC* • *ARM* • *Intel x86* • *Altera* • *Xilinx*

Software & Systems:

• *Embedded C/C++* • *Python* • *RTOS (FreeRTOS)* • *CAN / J1939 / CANopen* • *BLE / Wi-Fi* • *UDP / TCP/IP*
• *MQTT / CoAP / REST* • *Low-power distributed control* • *AI/ML* • *DevSecOps* • *EMC*

Key expertise:

• *Real-time control* • *Connectivity* • *Sensor fusion* • *Algorithm integration* • *Cloud & mobile interaction*

EXPERIENCE

Elonroad (2025) – Software Developer, Lund

- Collaborated with firmware, electronics and control engineers to improve **real-time performance and timing guarantees** in motion-control and sensors for electric-road charging infrastructure.
- Introduced **SI-unit scaling and coordinate consistency** across software and hardware to align motion tracking, communication and physical geometry.
- Integrated the **J1939 CAN framework** to synchronize tracker, charger and vehicle communication, and redesigned harness and switch placement to reduce EMI and cabling cost.

Technology: C, *Python, CMake, STM32CubeMX, CANopen, J1939*

→ **J1939 signaling in heavy vehicles**

Sandvine / Dover / Assa Abloy / deWiz / Blodtrycksdoktorn / ESS (-2024) – Dependable systems engineer

- Other assignments within telecom and sensors, enabling reliable signaling and automated test/CI.

SiB Solutions (2022–2023) – Technical Lead, AI Camera Systems

- Re-engineered AI/ML pipeline on EdgeTPU for small-object detection; automated deterministic model training and CI testing.

Technology: *TensorFlow, Python, Docker, Git*

→ **Detect objects in objects (2023)**

MyFC (2022) – Senior Embedded Developer – Fuel-Cell Electronics

- Implemented synchronous ADC sampling and cell-group self-identification logic for safe and stable fuel-cell stack control.
- Contributed to EMC- and thermally-informed layout decisions, improving measurement reliability.

Technology: *C, FreeRTOS, Python, Altium, KiCad*

Join Business & Technology (2011–2018) – Systems Engineering Consultant, Lund

- Delivered embedded control and measurement systems for **Orbital Systems**, **Baxter**, **Sensefarm**, **Luda.farm**, **ETAS** and **Swegon**.

Technology: *Micropython, C/C++, LabVIEW, Make, Git, Excel automation*

→ **Fluid Test Bench (2014)**

→ **SE542440C2 – Sound valve speaker for regulating pressure (2020)**

Ericsson Group (2000–2010) – Senior Systems Engineer, Lund / Stockholm / Montréal

- Designed, simulated and verified Bluetooth radios and ASIC interfaces, then advanced from ad-hoc network performance (Bluetooth, Wi-Fi) through cellular performance (2G/3G) to product-level performance such as 911 location latency.
- Collaborated with global design, compliance and manufacturing teams to stabilise system behaviour.

Technology: *C, C++, Python, LabVIEW, VHDL, Matlab, RF design, Bluetooth, GSM/GPRS, Java, Jython, Excel, Project, Jira*

→ **Bluetooth Programmable Logic Device (2002)**

→ **First 911-certified advanced camera phone (2008)**

Volvo Technological Development (1997–2000) – Research Engineer, Göteborg

- Early work in algorithmic evaluation of driving comfort and energy storage laid foundations for later e-mobility drivetrain design.

Technology: *C, Matlab, LabVIEW, AI/ML, Sensor fusion, Vehicle dynamics*

→ **Quality assurance of driver comfort for automatic transmissions (2000)**

→ **Hydrogen storage alternatives (1999)**

EDUCATION & RESEARCH

Ph.D. studies in Applied Solid-State Physics – Chalmers University of Technology, Gothenburg (1992–1996, unexamined)

- Conducted doctoral research on nano-fabrication, quantum waveguides and single-electron transistors within the Low-temperature Physics group.

→ **Conductance oscillations in quantum dots,, Phys. Rev. B / Physica B (1994–1996)**

→ **Extending the high-frequency limit of a single-electron transistor, Phys. Rev. B (1996)**

→ **Submicron air-bridge interconnection process for complex gate geometries, J. Vac. Sci. Technol. B (1997)**

M.Sc. Engineering Physics – Chalmers University of Technology, Gothenburg (1986–1992)

- Thesis on nanofabrication with studies spanning mathematics, physics, chemistry and medicine.

MENTORSHIP & COLLABORATION

- Collaborative, analytical and dependable in cross-disciplinary environments.
- Prefers small reproducible setups, clear interfaces and measurement-driven validation.
- Bridges hardware, embedded and data teams so decisions remain explainable across domains.

PERSONAL

- Based in southern Sweden and living an RnDIY life in Dalby. Father of three daughters (12, 18 and 23).
- Enjoys hands-on projects, sailing, cycling a Quattrovelo, and playing string instruments.
- Values craftsmanship, sustainability and curiosity — the same principles that guide professional work.