Joakim Pettersson

Senior Embedded & Control Systems Engineer
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PROFILE

- Consultant and software developer with 14+ years of experience building, integrating and troubleshooting embedded control and distributed systems for automotive, energy and industrial applications.
- Combines hands-on embedded C/C++ and Python development with system-level insight from automotive AI, sensor fusion and real-time architectures.
- Skilled in integrating complex control architectures across embedded and distributed systems, enabling smooth transitions between generations of hardware and software.
- Recognized for dependable integration work, clear communication and collaboration across hardware, software and testing teams.

CORE COMPETENCE

Hardware Architectures:

• PowerPC • ARM • Intel x86 • Altera • Xilinx

Software & Systems:

• Embedded C/C++ • Python • CAN / J1939 / CANopen • Ethernet / UDP / TCP/IP • RTOS • LabVIEW • AI/ML • Distributed Control • KVM / Docker • EMC & Safety

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 sensor systems for electric-road charging infrastructure.
- Introduced SI-unit scaling and a defined coordinate system, aligning motion tracking, communication and physical geometry to achieve reproducible results across roads and vehicles.
- Integrated the J1939 CAN framework to synchronize tracker, charger and vehicle communication with precise timing.

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

→ **J1939 signaling in heavy vehicles**

ESS – European Spallation Source (2023–2024) – Senior Electronics Systems Engineer

- Audited and repaired signal integrity across distributed beam-monitor installations.
- Introduced automated instrument control and reproducible reporting to stabilize maintenance and documentation.

Technology: *Python, QCoDeS, Make, Git, Altium, Ubuntu*

→ **Report arbitrarily nested projects (2024)**

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

- Re-engineered EdgeTPU training pipeline for small-object detection and implemented CI/CD for deterministic model builds and tests.

Technology: *TensorFlow, Python, Make, Docker, Kafka, Git*

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

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

- Implemented synchronous sampling and cell-group self-identification for stack control.
- Contributed EMC and thermal improvements.

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

Sandvine (2018–2021) – Senior Software Developer, Telecom Infrastructure

- Developed distributed packet-processing features with tight latency budgets.
- Researched and prototyped new real-time GDPR compliance techniques.

Technology: *C, C++, Python, Clang, Docker, Jenkins, Ubuntu*

→ **Just Data! (2021)**

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

- Worked across multiple Ericsson organizations, bridging RF, embedded and system-performance teams in Sweden, Canada, the U.S. and China.
- 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 across radio, baseband and software domains from prototype to mass production.

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

- Developed an AI-based expert system (radial-basis neural networks) for gearshift comfort, verified against Volvo's top evaluators.
- The system included a reliability metric that triggered automatic capture of new training data and allowed the test driver to retrain the model in real time with a single numeric key press.
- Led a national hydrogen-storage study for fuel-cell drivetrains, assessing metal hydrides, pressure vessels and cryogenic options for vehicle use.
- Supervised diploma workers on hybrid-drivetrain optimisation; findings led to a recommendation for pure electric drivetrains over hybrids.

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

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

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

→ **Conductance oscillations in quantum dots (1994–1996)**

→ **Extending the high-frequency limit of a single-electron transistor (1996)**

→ **Submicron air-bridge interconnection process for complex gate geometries (1997)**

MENTORSHIP & COLLABORATION

- Guides junior engineers and students through practical experimentation and measurement-driven learning.
- Encourages open documentation and joint problem solving across embedded, mechanical and data-science domains.
- Believing that reproducible engineering and curiosity form the best basis for dependable ssytems.

ECO-VILLAGER

- 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.