Joakim Pettersson

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

✉ joakim.pettersson@additude.se   📱 +46 708 29 99 74   🔗 **linkedin.com/in/joakimbits**

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**

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 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 / Sandvine / ESS

- Other assignments within telecom and energy sectors focusing on embedded communication, signal integrity and automated test infrastructure.

Technology: C/C++, Python, Docker, Jenkins, Git

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.
- 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.
- Believes reproducible engineering and curiosity form the best basis for dependable systems.

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.