Dávid Juhász | Navigating Complex Systems with Structured Insight, Clarity, and Purpose

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Summary

I am a Compiler & Systems Engineer empowering developer tools, embedded platforms, and complex systems with structured insight, clarity, and purpose. I specialize in code generation, embedded firmware for resource-constrained systems, and hardware-software co-design; bringing a disciplined, systems-driven approach to solving technical challenges and helping teams build reliable, high-impact solutions.

Skills

- Compilers & Tool Development: LLVM, TVM, code optimization, scheduling, code generation, static analysis
- Embedded & Systems Engineering: Hardware bring-up, bare-metal, firmware, RTOS, PCB- and IC-level understanding
- Communication Protocols: UART, SPI, I2C, CAN, Ethernet, TCP, UDP, sockets, custom protocol stacks
- Programming Languages: C, C++, Python, Rust, Assembly
- Toolchains & Build Systems: LLVM, Clang, GCC, Make, CMake
- Debugging & Optimization: GDB, LLDB, hardware probes, waveform analysis, performance profiling and tuning
- Development Tools & Environments: Git, GitHub, Azure DevOps, VSCode, Bash, Linux CLI, SSH, Docker, Podman
- Software Architecture: Resource-constrained, multi-threaded, real-time systems, interpreters, virtual machines
- Modeling & Simulation: Performance modeling, system simulation, hardware-software interaction
- Hardware-Software Co-Design: FPGA integration, hardware acceleration, architecture optimization, embedded AI
- Machine Learning & AI Acceleration: PyTorch, ONNX, TVM, hardware-aware distribution and scheduling
- Technical Leadership & Mentorship: Guiding engineers, fostering knowledge sharing, driving architectural decisions
- Cross-Functional Collaboration: Strategic goal alignment, bridging engineering, product, and leadership teams

Experience

Senior Architectural Modeling Engineer | *FlexAI* | *Paris, France (Remote)* | *July 2024 – November 2024*

- Defined team vision, roadmap, and modeling objectives to support AI accelerator development.
- Led profiling of PyTorch-based LLMs to assess execution time, memory usage, and optimization opportunities.

Expert Software Engineer – Edge and AI Systems | *Imsys* | *Stockholm, Sweden (Hybrid)* | *November 2022 – May 2024*

- Directed embedded software and AI tooling efforts, providing technical leadership and project execution oversight.
- Delivered runtime libraries, simulation frameworks, and code generation pipelines for a custom AI accelerator.
- Contributed to system architecture design for RISC-V integration and evaluated accelerator-software interfaces.

Head of Software Engineering | *Imsys* | *Stockholm, Sweden (Hybrid)* | *March 2021 – October 2022*

- Led software department strategy, recruitment, and cross-functional coordination across embedded and AI initiatives.
- Defined the architectural foundation for an embedded AI platform, including execution model and system co-design.
- Contributed to code generation and simulation tool development enabling early validation of accelerator architectures.

Lead Software Architect | *Imsys* | *Stockholm, Sweden (Hybrid)* | *January 2018 – March 2021*

- Led development of an LLVM-based toolchain and embedded software stacks for custom processor platforms.
- Delivered complete end-to-end tooling solutions: compiler, linker, debugger, and VSCode integration.
- Supervised system architecture, board bring-up, FreeRTOS porting, and low-level driver development.

R&D Software Engineer | *Imsys* | *Stockholm, Sweden* | *August 2014 – January 2018*

- Developed an LLVM-based code generator and supporting tooling for custom embedded architectures.
- Built debuggers, simulators, and assemblers in modern C++ to enhance embedded development workflows.
- Maintained and debugged low-level C/assembly firmware, including communication stacks and kernel components.

Education

MSc and BSc in Computer Science | *Eötvös Loránd University* | *Budapest, Hungary* | *2007 – 2012*

- Graduated with distinction for both degrees.
- Specialized in compilers, formal methods, and programming languages.
- MSc Thesis: Developed an LLVM backend targeting Tile64, a massively parallel VLIW processor.

PhD Graduate Work (Industry-Based, Unfinished) | *Vienna University of Technology* | *Vienna, Austria* | *2016 – 2020*

- Conducted research at the intersection of compiler optimization, machine learning, and embedded systems.
