Resume

David Gonzalez Martin

—— About me ——

I am extremely passionate about systems programming, always eager to learn and self-taught at several areas of computer science in general. I love to invest all my spare time into having a better picture of how computers work and programming my many hobby projects. I care about performance, simplicity and quality.

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Nationality: Spanish.

Current location: Spain.

Languages:

- Spanish (native).
- English (full professional competence, Linguaskill certificate with C1 CEFR level. Score 180+).

—— Professional experience ——

Freelance game programmer (March 2022 - December 2024)

AAA game programming for Casual Brothers with Unreal Engine 4 and 5. I worked on Evil Dead and an unannounced title from Saber Interactive. AI programming and gameplay implementations (animations, movement, collision, navigation mesh, attacks, behavior trees, etc.), bug hunting and performance debugging in C++. Tools employed apart from the engine were Perforce, Visual Studio and several profilers, like Superluminal, Unreal and Microsoft tools.

Embedded software engineer at iGrid T&D (August 2020 - January 2021)

Real-time systems programming. Architectures to be supported were x86 and ARM. The software must run both in desktop and embedded software, meeting the RAM and CPU constraints of the lowest-end hardware. Developed file transfer through serial port communication using IEC 60870-5-103 and REST web services for the software which the protection-monitoring devices in the electrical substations run.

Back-end developer at Koedia (September 2019 - August 2020)

Developed and maintain a hotel booking engine. I was in charge of integrating the driver for the top hotel chain in the UK and did most of the work for the project transition from Ant to Maven. Technologies used: Java, Spring, Tomcat, Hibernate, MySQL, GNU/Linux, Git, Ansible, etc.

—— Most interesting personal projects ——

Compiler from scratch: github.com/birth-software/bloat-buster

Bloat Buster is the latest of several compilers I have developed in my spare time. Both the first and the last utilize LLVM, while the one in the middle was fully implemented from scratch. I have also experimented with C transpilation, primitive register allocation, and basic optimization passes, as well as attempting to vectorize an assembler. The lexer, parser, and semantic analysis were always written manually, without the use of generators. The latest is the most ambitious of them all, currently supporting only x86_64-linux, with the goal of bootstrapping in the near future.

Kernel from scratch: github.com/birth-software/birth

Several very basic kernels written from scratch, from which Birth is the most advanced. It supports x86_64 and aims to be an efficient, simple and secure multikernel. There are plans to port to other mainstream high-performance CPU architectures. Currently it's on hold waiting for the compiler to be ready as the operating system is planned to be rewritten in my own language.

—— Technical skills ——

- I have been programming in C and C++ for over 4 years professionally and 7 years on my spare time as an enthuastic hobby programmer. I aim for simplicity, safety and speed when programming. Fairly good understanding of assembly language (x86-64). Thorough experience integrating and using libraries, such as LLVM, GLFW, Dear ImGUI, STB single-header libraries, sokol, meshoptimizer, Volk, Raylib, Qt, Expat, JSMN...
- Comfortable in both command-line and graphical environments and qualified in systems programming, both Windows (Batch, Win32) and Unix (Bash, POSIX).
- Passionate about data-oriented programming, emphasizing a deep understanding of both the platform and data to develop effective solutions. Strong interest in computer architecture and hardware optimization to maximize performance. Well-versed in object-oriented design, with professional experience applying both object-oriented and data-oriented paradigms in software development.
- Personal experience and in compiler engineering, developing several toy programming languages as a passion project with a focus on minimizing dependencies, maintaining code ownership, and optimizing compile times. I also have contributed to LLVM and Zig.
- Passion for SIMD instruction sets, especially AVX-512. I try to spend time learning how to properly vectorize my code and maximize throughput.
- Very brief personal experience with low-level graphics APIs, such as Vulkan, OpenGL and DirectX (11, 12), having practiced more with the open-source ones. Fairly good understanding of game engines and the GPU pipeline.
- Fairly in-depth understanding of how an operating system kernel works, performance constraints and hardware-software interaction details. Developed some operating system kernels from scratch with very primitive functionality.
- Expertise working with files, parsing and generating them, both text and binary formats.
- Language interoperability based on the C ABI. Binding creation to interoperate between C, C++, Objective-C, Rust and Zig. More than decent understanding of how linkers work.
- API design and project organization.
- Use of build systems like CMake, MSBuild, Makefile, Zig Build, Maven and Ant, both professionally and personally.
- Use of version control systems such as Git, Perforce or CVS, both professionally and personally.
- Experience with other programming languages, like Zig, Java, Rust and Python.

Soft skills

- Fast development and experience having in charge projects started from scratch.
- Quick adaption to new challenges and willingness and ability to learn new development technologies.
- Problem-solving mentality and critical thinking.
- Used to deal with large and legacy codebases.
- Proven ability to work and coordinate with teammates.
- I am known for my consistently cheerful and friendly demeanor.

Education

Bachelor degree in Computer science

(Open University of Catalonia, 2024)

Average score: 7,67 (over 10). Major in Computer Engineering.

Private mentorship with Andreas Fredriksson (2020)

The former Principal Engineer at Unity and Engine Director of Insomniac Games volunteered to mentor me. We discussed professional career and explored low-level programming topics with a focus in speed, data and simplicity. He taught me how to properly face engineering problems that I considered interesting and complicated. In general he made me grow very much as a programmer.