Matěj Schrödl

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Experience

- **C++ Firmware Developer - Prusa Research** — On-site/Remote
  Firmware Developer — *January 2025 - now*
  - **Developing and maintaining firmware for 3D printers**: Enhancing printer performance by optimizing C++ code for real-time processing and hardware interaction.

- **C++ Student Developer - Siemens Mobility** — On-site/Remote
  Student Developer (Part-time) — *November 2023 - December 2024*
  - **C++**: Event-driven C++ programming focused on safety and usability.
  - **Module Ownership**: Managed two core modules of a complex project, ensuring seamless communication and functionality across the system.

- **Java Junior Developer - Trixi s.r.o** — On-site/Remote
  Student Developer (Part-time) — *February 2023 - September 2023*
  - **Spring & Hibernate**: Developed database-driven applications using Spring Framework and Hibernate with PostgreSQL.

Skills Summary

- **Languages**: C, C++,Verilog, Python, Java, Scala, Racket, SQL, Bash
- **Tools**: make, Docker, GIT, PostgreSQL, SQLite, LaTeX
- **Languages**: Fluent in English, Czech (Native Speaker)

Education

- **Faculty of Information Technology, Czech Technical University** — Prague, Czech Republic
  Software Engineering Bachelor's Degree — *September 2021 - now*

  Courses: *Operating Systems, Data Structures, Linear Algebra, Mathematical Analysis, Graph Theory, Analysis Of Algorithms, Programming Paradigms, CI/CD , Networking, Databases, Compiler Construction and Design*

Projects

- **Space Invaders - (classic 80's game created using C++ and DirectX library)**: High-level graphics library, a lot of focus on managing memory. Tech: C++, DirectX, Visual Studio, Doxygen, make
- **Tower Defense (NCurses library deep-dive)**: C/C++ project using low-level TUI POSIX library NCurses. Tech: C++, make, Doxygen
- **Railway visualization (Unity Engine, C#, GIS databases)**: Used the Unity Engine and C# to create a dynamic visualization of a railway system. My primary role was to develop a procedurally generated terrain that could be accurately integrated with deterministic railway routes extracted from a real-world database.
- **Benchmarking tool for SMT solvers**: I studied SMT solvers, software verification (mainly bounded model checking) and a lot of other theoretical fields so I can contribute to a Selfie project created and maintained by professor Christoph Kirsch. I am currently working on creating a benchmarking tool that is able to produce models parse-able by mainstream SMT solvers using Rotor to produce data about the efficiency of these solvers. I am also helping with porting Rotor tool itself from C* to Python. Rotor is able to produce models from C source files.
- **Other smaller projects**:
  - **Graphical Engine:** Implementing my own simple graphics engine similar to OpenGL (in progress)
  - **Selfie:** Contributing and learning about an educational software system of a self-compiling C compiler made by professor Christoph Kirsch
  - **Design of simple RISC-V processor:** Created my own working design in Verilog of a RISC-V processor with a RV32I instruction set.
- **Additional information**: I like to solve algorithmic problems (graph theory, game theory, dynamic programming etc.) mostly in C++/Scala, you can look at some of my solutions on LeetCode