

Tony Wasserka

Systems Programmer

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📄 neobrain.github.io

Professional Experience

- May 2018 – now **Sole Proprietor of Mikage**, Berlin
- Development of the emulator *Mikage* of the Nintendo 3DS system:
- Implemented a just-in-time binary recompiler from ARMv6 to LLVM IR
 - Modeled the 3DS graphics chip using a Vulkan-based renderer
 - Implemented a compatibility layer to emulate the *Horizon* kernel on Unix-like systems
 - Gave related conference talks on advanced C++ development in systems programming
- Sep 2019 – Dec 2019 **Freelance Consultant at Thales**, Berlin
- Continued development of the data production tool ARAMIS-I:
- Optimized throughput time for exporting projects by a factor of 50
 - Designed and implemented an internal unit test setup
 - Converted the build system from QBS to CMake
- Sep 2018 – Dec 2018 **Freelance Consultant at GSP Sprachtechnologie**, Berlin
- Continued development of the train information software FIS with focus on the back office communication component:
- Debugged and fixed software bugs
 - Extended the software by new data entries as per protocol specification
 - Integrated the back office component into the internal testing framework
- Nov 2016 – Apr 2018 **Software Design Engineer at Imagination Technologies**, London (UK)
- Worked on the Vulkan driver for PowerVR graphics chips across 3 release cycles:
- Identified and fixed issues throughout various components of the driver stack, including hardware design flaws
 - Implemented new features such as Clip Distance or Indirect Draws according to Khronos specifications
 - Redesigned the synchronisation subsystem
 - Some exposure to shader compiler, firmware, and simulator code

Selection of Personal Projects

- May 2014 – Nov 2015 **Citra** (Founder), <https://citra-emu.org>
- An emulator for the Nintendo 3DS handheld game console.*
- Designed and implemented the GPU emulation core from scratch, featuring a software renderer and a Qt-based graphical debugging interface
 - Selected and set up initial project infrastructure (source repository, issue tracker, developer documentation) and defined the development workflow
- Apr 2010 – Sep 2014 **Dolphin** (Contributor), <https://dolphin-emu.org>
- An emulator for the Nintendo GameCube/Wii game consoles.*
- Maintained GPU subsystem. Implemented a Direct3D 11 rendering engine
 - Fixed emulation issues across the entire game library
 - Improved overall software quality by establishing code reviews and introducing a unit test framework
 - Managed two major version releases
- Nov 2007 – Aug 2010 **Wine** (Contributor), <https://winehq.org>
- A compatibility layer to run Windows applications on Linux and other OSs.*
- Initiated support for the Direct3D9 extension library (D3DX9)
 - Continued development funded as part of *Google Summer of Code 2009*
- Other projects:** <https://github.com/neobrain>

Conference Talks

- May 2018 **C++Now, NDC Oslo, CppCon:**
- Sep 2018 „Generative Programming & Declarative Interfaces: Emulating the Nintendo 3DS“
- Sep 2018 **CppCon, Meeting C++, C++ on Sea:**
- Feb 2019 „Teaching Old Compilers New Tricks: Transpiling C++17 to C++11“
- Sep 2019 **CppCon:**
- „Reading Binary Data with Style: A Serialization Framework for C++17 “

Skills

- Languages Proficient in C, C++, Haskell, LaTeX, awk, Assembler
Basic knowledge of Python, Scala, Rust, Bash
- Tools GDB, Valgrind, Git, Subversion, Perforce, Make, CMake, Doxygen, radare2, Docker
- Libraries STL, POSIX, Qt, LLVM, OpenGL, Direct3D, Vulkan, SDL, Boost, Catch (Unit Testing)
- Platforms Linux, Android, ARM, PowerPC, ESP32, Arduino

Spoken Languages

- German Native speaker
- English Full professional proficiency

Education

- Oct 2010 Student at *Friedrich-Alexander-Universität Erlangen-Nürnberg*
- Apr 2016 Master of Science with Honors in Physics