Charles Davis
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Experience

- Systems Engineer, Site Reliability Engineering—Google, LLC Mar 2016 - Feb 2018
  - Helped maintain several internal Google systems, including DHCP, DNS, a load balancer, and a software-defined network
  - Sped up a critical process ~five-fold
  - Wrote a dashboard in Python and JS for monitoring a software load balancing suite
  - Wrote most of a DHCP configuration database app in Go
- Wine Developer—CodeWeavers, Inc. July 2018 – Mar 2022
  - Helped port Final Fantasy XIV to modern macOS and Metal
  - Developed a special version of Clang to support 32-bit applications on 64-bit macOS
  - Implemented many new features and extensions in MoltenVK, including support for tessellation
  - Improved support for D3D11 games on macOS
- Independent contractor June 2022 – Oct 2022
  - Fixed 61 Vulkan CTS test failures in MoltenVK
  - Helped integrate [REDACTED] into Unity
- Senior Software Developer—Holochip Corp. Oct 2022 – June 2023
  - Fixed further 89 Vulkan CTS test failures in MoltenVK
  - Sped up Image Streams tests in the OpenCL CTS ~1.1x
  - Helped integrate [REDACTED] into Unity and Unreal Engine

Professional Skills

Programming

- Advanced C/C++/Objective-C, Java, C#, Go, Rust, Swift and Scheme programming skills
- Graphics programming: OpenGL, Vulkan, Metal, all versions of Direct3D
- Working knowledge of Win32, NT Kernel, UNIX/Linux, Linux kernel and Mac OS X
- Proficient in Perl, Python, Ruby Scripting and UNIX Shell Scripting

Web Design

- Experienced with HTML/XHTML, JavaScript, XML, CSS, XSLT and PHP

Database Administration

- Adept in MySQL

Systems Administration

- Skilled in the advanced operation of MS Windows, OS X, Linux, FreeBSD and Solaris
- Knowledgeable in the administration of a DHCP network

Special Projects

Google Summer of Code **2010 and 2012**

- 2010: Support for multiple C++ ABIs in Clang, including Microsoft Visual C++
- 2010: Support for name mangling in the style of Microsoft Visual C++ in Clang
- 2012: Continued the project began in 2010

Contributor to LLVM **2009 – present**

- 2015-2020: Enhanced support for MinGW cross compilation in Clang
- 2013-2016: Support for the Win64 calling convention on non-Windows, and vice-versa (`ms_abi`/`sysv_abi` GCC attributes)
- 2011-2012: Win64 SEH support in LLVM
- 2010: Fixed handling of GCC-style attributes in a function declaration specifier
- 2010: GCC-compatible structure alignment in Clang
- 2010: Improved `extern inline` support in Clang
- 2010: Added support for stack alignment attribute to LLVM and `force_align_arg_pointer` GCC attribute to Clang
- 2010: Improved support for function calling convention attributes in Clang

Contributor to Wine **2008 – present**

- 2020-Present: Support for layer-backed views in the Mac OS graphics driver
- 2014-2016: Added support for 64-bit applications on Mac OS X
- 2010-Present: Miscellaneous bug fixes
- 2011: Slight modernization of Core Audio support
- 2010-2011: Improved support for case-insensitive file systems on Mac OS X
- 2009: Fixes for blitting to Enhanced Metafiles
- 2008-2010: SCSI support on Mac OS X
- 2008-2012: Improved optical disk support on Mac OS X

Contributor to MoltenVK and SPIRV-Cross **2018 – present**

- 2019-2023: Vulkan CTS conformance work
- 2020-2021: Worked on Vulkan 1.2 support
- 2018-2020: Implemented Vulkan 1.1
- 2019: Added support for tessellation shaders
- 2019: Supported texture buffers, HDR output
- 2018: Manually implemented arbitrary swizzles of image data
- 2018: Implemented manual decompression of compressed 3D textures
- 2018-Present: Miscellaneous bug fixes

Education

Colorado School of Mines **Golden, CO**

B.S. Computer Science August 2012