# Keith Bauer

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I've written graphics engines, compilers, user-facing GUIs, interactive multimedia experiences, bit-level testing of floating-point arithmetic precision, and more. I'm perfectly at home in Swift, Rust, Objective C, C++, Ruby and others, and I can't wait to learn the right tool for the next job.

I find challenge in whatever work I'm doing, and am never happier than when solving a thorny technical problem, or speculating on an elegant solution to a tricky piece of software design.

## Employment

**Xero** **2014-**

Software engineer on the Xero iOS app. The app allows Xero customers to access the accounting service on the go, including creating invoices and expense claims, doing bank reconciliation, and managing their business contacts. The app is a hybrid of new Swift and legacy Objective C code that we are constantly modernizing. We use standard Apple technologies for the UI, including UIKit and Storyboards. The app talks JSON over HTTPS to an API shared between the iOS and Android clients.

**Apple** **2008-2014**

Software engineer on Apple's shading language compilers. From 2008-2010 we completely rewrote the existing OpenGL Shading Language compiler to fix intractable correctness issues inherited from 3DLabs' original code. From there, we extended the compiler to support the ever-increasing number of language versions and extensions. The OpenGL source-base is largely C. From 2013, I worked on the Metal shading language compiler, which is a fork of clang.

[Self-Employed Contractor to] **Gibson Group** **2007-2008**

Lead software engineer for an interactive installation displayed at Te Papa Museum of New Zealand. The main drawcard was an 18m-long "wall" on which users could interact with user-submitted images & video using Wii-like wands. We used Objective C, OpenGL, QuickTime, BSD Sockets, MySQL, and many others. The installation was decommissioned in 2014.

**Datacom** **2006-2007**

Software engineer on a major new version of the Reserve Bank of New Zealand's share trading and foreign exchange software. We implemented an automatic translator from Oracle PL/SQL and Forms to Java/Swing, to port their existing code with perfect feature-parity. We then designed new Swing UI with more modern sensibilities for their most common workflows. We used Java, Swing, ANTLR, and Oracle.

**Metservice** **2001-2006**

Software engineer on Weatherscape XT, a real-time TV weather graphics system designed to run on consumer hardware, as opposed to its precursor which ran only on expensive SGI O2 machines. We used C++, OpenGL, Qt and others. The system was written 3-way cross-platform but only ever deployed on Linux and Windows.

# Education

**Victoria University of Wellington** **1998-2001**

BSc, Mathematics & Computer Science
BSc with Honours, First Class, Computer Science
My focus was on discrete mathematics and formal methods of computer science. My Honours thesis involved using the automatic theorem prover PVS to show correctness of various multithreaded algorithms.