

Expertise:

I am a strong analytical thinker with 5 years' experience developing high performance, scientific software, targeting both cutting edge research and standard, enterprise solutions, with a particular proficiency in Fortran, Tcl, and Python. My Python implementation of a weighted covariance calculation forms part of the popular Numpy package.

I have founded, managed and sold a big data, news monitoring startup company, and am co-owner of a successful audio plug-in company, giving me a broad experience of the many different aspects of contributing to and running small startups. These ventures have exposed me to a multitude of different technologies, including building and deploying web services in Python, relational database schema design, DSP algorithms and wrapping audio plug-in SDKs in C++, cross-compilation of native installers for desktop software, and digital audio production techniques.

Experience:

Materials Design
Development Scientist

January 2015 – Present
San Diego, USA (Remote)

Materials Design produces software, designed for materials engineers and scientists, that predicts the properties of materials using simulations based on quantum mechanics, statistical thermodynamics and classical mechanics. Working remotely as their sole UK-based employee, part of a team distributed across Europe and the US, I develop their primary, cross-platform product, MedeA. Whilst predominantly a technical specialist I am also responsible for many other aspects of scientific software development, including conceiving new functionality, maintaining interfaces to existing scientific codes, managing build infrastructure and product deployment, liaising with external contractors, and assisting the customer support team.

Fielding DSP
Co-owner

November 2012 – Present
Heidelberg, Germany (Remote)

Fielding DSP is a small, privately held company, operated by a team of three scientists and musicians, with a highly acclaimed, flagship product - Reviver. Fielding DSP's software is both cross-platform (Windows, Mac OS X, Linux) and cross-interface (VST, VST3, AU, Jack, AAX), with all permutations cross-compiled from a single codebase. My responsibilities cover all aspects of running a small software company, encompassing business strategy, feature development and algorithm design, and customer support.

Elsevier/Mendeley
Developer

January 2015 – March 2016
London, UK (Remote)

At Elsevier I worked remotely as part of the small team responsible for integrating the Newsflo service into their Mendeley product.

Newsflo
Developer

December 2012 – December 2014
London, UK

Newsflo, which was founded by a group of researchers at Imperial College, secured funding from the Digital Science arm of Macmillan Publishers to create an online platform where academics could monitor how their work was reported in the news. Whilst simultaneously completing my PhD research, I designed and created a system for large-scale content acquisition and indexing capable of processing 500k news articles per day. The resulting software was acquired by Elsevier near the end of 2014.

Academia:

Imperial College London
PhD

October 2011 – December 2014
London, UK

Research based on designing and improving algorithms for calculating the quantum properties of materials, with a specific focus on obtaining energy derivatives from Quantum Monte-Carlo simulations via algorithmic differentiation and correlated sampling. My bespoke software used modern Fortran to efficiently exploit tens of thousands of parallel computing cores, and produced the largest ever atomic force calculations of their type.

Imperial College London
MSc, Theory and simulation of materials (First)

October 2010 – October 2011
London, UK

A broad foundation in theoretical materials physics and its implementation in computer simulations.

Durham University
MPhys, Theoretical Physics (First)

October 2006 – June 2010
Durham, UK

Awarded the Students in Residence Scholarship for 2009/10, the Durham Physics Award for Outstanding Achievement in consecutive years between 2007 and 2010, and the J A Chalmers Prize in Physics for achieving the highest overall degree examination score.