

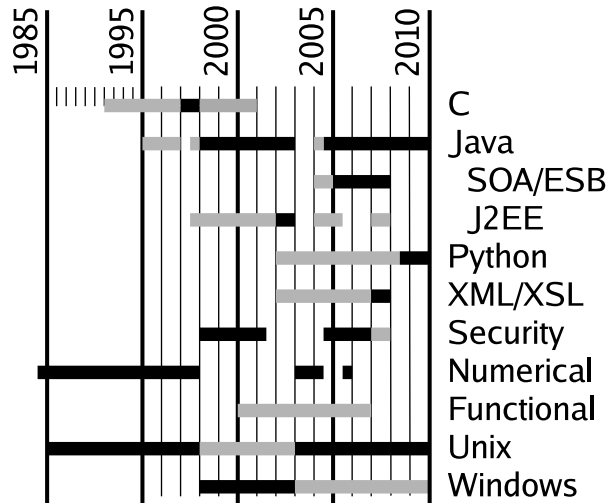
Andrew Cooke

Personal Details

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Place of birth: Harrogate, Yorkshire, UK.
Nationality: British (permanent Chilean resident).
Languages: English; Spanish.

I have broad engineering experience and a strong background in physics. Several of my previous jobs have combined these — I have written numerical software in Java and C — but I also enjoy “technical” challenges, particularly if they involve presenting complex systems in original ways. I favour agile processes (in particular, keeping the client involved) and am very self-motivated, reliable, independent and productive. I also have many years’ experience in telecommuting.

Experience



Languages: Java, Python, C, SQL (some OpenCL, C++, Fortran, ML, Scala).
Platforms: Unix (Linux, (Open)Solaris), Windows 7, XP, 2000.
Process: Agile development; Enterprise Architect (UML).
Web: Django, Spring, JSP, Javascript, YUI, Ajax.
J2EE, SOA: Mule, Spring, JBoss, EJBs (not entity), JMS.
Databases: Oracle, MySQL, PostgreSQL, SQL Server; JDBC, SQLAlchemy.

Summary

Professional Interests

- Domain-specific and ‘little’ languages/parsing/code-as-data/flexible configuration. These ideas often provide a good abstraction layer for building adaptable, maintainable systems.
- Efficient numerical and semi-numerical algorithms. For example, I have developed new, efficient approaches for filtering data in one and two dimensions; more recently I worked on generating correlated, uniformly distributed random numbers.
- How to involve the client in “lightweight” development — balancing iterative, adaptable development with clear estimates and a useful development history.
- LEPL — an opensource recursive descent parser for Python.

Skills

- Experience with Agile, Requirements-Driven and Iconix (UML) processes.
- A decade of OO design experience.
- Strong mathematical and statistical background.
- Self-motivated problem solver.
- Educated to PhD level (Astronomy, Cambridge University).

Work Experience

2008— Senior Software Engineer. ISTI, USA.

ISTI develop custom software for the geophysical research community; they are based in the USA but have engineers in several countries.

Optimisation of numerical Matlab/Octave code using OpenCL. Reduced calculation from 12m (Xeon CPU) to 10s (low cost NVidia GPU), shifting work from “batch processing” to “interactive data exploration”.

Two projects constructing database representations of complex systems and then providing a variety of ways to access and manipulate that data — both directly (HTML, Ajax) and via additional services (REST, XMLRPC). One using Java (Spring/JSP), the other Python (Django/YUI).

Python (WXWidgets) GUI to simplify management of remote data processing (Earthworm) system, including a “map” of interconnected components (auto-layout via simulated annealing).

2007—2008 Software Engineer. MuleSource, San Francisco.

MuleSource is the company formed to support and develop Mule, an open source Enterprise Service Bus (ESB). I was part of a geographically-disperse team maintaining the core system, particularly TCP related transports.

I have also been responsible for the main user-visible change in Mule 2.0: an XML-based configuration system using Spring’s extensible schema.

2003—2007 Scientific Programmer. CTIO, La Serena, Chile.

NOAO Science Archive (NSA).

Enterprise SOA system. Analysis, design, implementation, testing and documentation; particularly for messaging, database and security services.

- Developed a design approach that isolated business logic in POJOs. This separates messaging from the main code and allows services to be ‘plugged together’ for simple, automated integration tests.
- Investigated ESB systems and chose Mule as a solution that provided good scalability, wide compatibility with existing transports, and support for rapid development with Java-based messages — a good, future-proof balance for a SOA that is still largely internal.

Work Experience (cont.)

- Gemini/IRAF GNIRS Package.**
Spectral data processing system.
- Refactored and extended the existing (but incomplete) NIRI package to process data from GNIRS (both IR spectrographs at Gemini). A pragmatic approach was necessary (politically, between NOAO and Gemini; at a personal level, working with busy astronomers; and in the programming, which was largely in IRAF CL/SPP (Fortran))[3].
- 2002—2003 Head of development / Consultant. Webtron Finance, Santiago, Chile.**
Designed and implemented a system to receive and process financial data.
- Learnt, over 7 months, how to develop J2EE-based web applications, in a new language and culture, with no previous application server experience.
 - Started as a single Java programmer writing to a dictated design; finished leading a small team (two programmers and web designer) to beat an impossible deadline with shifting requirements.
- 1998—2001 Software Engineer. Intertrader Ltd, Edinburgh / Leicester, UK.**
- Designed, implemented, documented and maintained a Java interface to the OpenSSL SSL library (written in C) via JNI. MS Windows platforms.
 - For the Intertrader CashBox System I designed and implemented most of the server-side application, combining standard Java components (to become 'J2EE') within a dynamically configurable framework (similar to the 'Spring' framework, although I was unaware of that at the time) to give the flexibility necessary when working for different clients with conflicting requirements.
 - Two years experience telecommuting.
- 1997—1998 Software Engineer. Concept Systems, Edinburgh, UK.**
Responsible for algorithms to calculate the position of long (5km) cables towed behind boats prospecting for oil.
- Developed a novel, fast algorithm for median filtering (using a sorted tree for the data within the window).
 - Helped start an internal discussion group to encourage movement from C to C++.
- 1995—1997 Postdoc. Institute for Astronomy, Edinburgh, UK.**
Numerical analysis (Fortran 77; maximum likelihood estimates; integration; optimisation) of the distribution of Lyman- α absorption lines to estimate the evolution of the ionizing background at high redshifts.
- 1994 Research Assistant. CTIO, La Serena, Chile.**
Analysis of Hubble and ground-based long-slit and Fabry-Perot observations. Fortran (fitting models of gas flow to 3D spectral data) and IRAF.
- 1988—1993 PhD in Astronomy. Institute of Astronomy, Cambridge, UK.**
Voigt profile fitting in Fortran. Observed (mainly echelle spectroscopy) at AAT, CTIO 4m, WHT. Wrote software in Fortran with IRAF / Imfort to do optimal data extraction (not supported in IRAF for echelle spectra at the time) with automatic cosmic ray rejection.
- 1985—1988 BA in Natural Sciences (Maths and Physics); Christ's College, Cambridge, UK.**
First class honours (final result and all intermediate examinations); received various scholarships.
- Technology Apprentice. British Aerospace, Stevenage, GB.**
Workshop training (metalwork, electronics). General work experience within the company.