

# Curriculum Vitae

## General Information

Name: William Stevens  
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## Education and Qualifications

1995 - 1998 BSc in Computer Science - First class with honours.

Core subjects:

Mathematics

Maths for Computing, Logic, Formal Specification.

Programming

Software Engineering, Functional Programming, Object Oriented Programming, Compiling Techniques.

Low level

Electronics, Assembly Language Programming, Operating Systems, Parallel Computing, Real Time Systems.

High level

Database Systems, Networks, Expert Systems.

In my third year, I took part in a project to write a Helpdesk system.

I received awards for highest exam performance in my second and third years.

1994	A-Level Maths, Physics, Chemistry AS-Level General Studies	Grade: A Grade: C
1992	GCSE Maths, Science, Computer Science, PEA GCSE English Lang/Lit, CDT: Technology GCSE German, Humanities	Grade: A Grade: B Grade: C

## Clubs and Activities

2007-8 President of Wallingford Rotaract Club.  
2003-8 Occasional volunteering work for Emmaus Oxford.  
2002-9 Treasurer for St Mary Magdalene church, Crowmarsh Gifford.  
2000 Weekend helper at Wick Information Centre, Wick, Littlehampton.  
(Providing information + office/computing facilities to local residents).

University: 1996/7 Secretary for the Computer Society

School: 1993/4 Secretary for school branch of BAYS science society.

I am a member of the Institute of Physics, the British Interplanetary Society and the Association of C and C++ Users.

## Employment History

7/94 - 9/97 (18 months in total) Defence Research Agency, Dorset and Farnborough.  
Assistant Science Officer and Vacation Student  
Various projects including finite element analysis, programming a machine to determine some of the temperature dependent properties of polymers, and writing S-Plus programs related to terrain reference navigation.

8/98 – 6/00 B S Instruments Ltd, Littlehampton.  
Software Engineer.  
Part of a development team for the Instronet Model 2000 Flow Computer.  
Involved in design and implementation of both hardware and embedded software.  
Also responsible for maintaining some of the company's existing products.

6/00 – 4/02 Celoxica Ltd. (formerly Embedded Solutions Ltd), Abingdon.  
Software Engineer.  
Worked on tools supporting the Handel-C hardware compiler and DK1 Design Suite – a system that allows digital hardware descriptions to be written in a high level language.

(During this interval I spent time gaining classroom experience as a volunteer teaching assistant in preparation for a PGCE course)

9/02 – 2/03 PGCE Student at Oxford University Department for Educational Studies. I undertook this course in order to become a secondary school mathematics teacher. During the course I discovered that I could not meet the demands of school teaching, so I withdrew from the course.

(During this interval I was unemployed, and spent the time working on what is now my PhD research project)

9/03 – 4/06 Wallingford School, Oxfordshire.  
Part-time ICT Technician.  
Responsible for helping to support the school's ICT infrastructure. Windows 2000 setup and admin. C++ development, MySQL/Perl development. Linux admin.  
I took this job in order to support myself during a part-time PhD course.

During this period I also ran adult education courses in beginners computer skills and website design using HTML.

4/06 – Now Department of Psychiatry, University of Oxford  
Senior Software Engineer  
Responsible for clinical trial management and data entry software.  
C++/CLI .NET development, SQL server admin, MySQL/PHP development. Linux admin.

## **Personal Statement**

I have had a lifelong interest in computer science, electronics and physical sciences.

I have extensive experience of programming with C++. I have also used many other languages for specific projects including Pascal, C, LISP, Assembly Languages (Z80, 68000, 8051, 8086, PIC), Tcl, Perl, PHP, SQL, C#, Javascript and Visual Basic. I have written compilers, interpreters and assemblers for a variety of languages including C, 8051 assembly language, PIC assembly language, LISP and BASIC.

I have several years experience in embedded systems development using C and assembly language and I often undertake electronics projects in my spare time.

I enjoy mathematics and have a good understanding of most areas of mathematics to graduate level. In 2001 I passed courses in Complex Analysis and Fluid Mechanics with the Open University.

In January 2004 I started a part-time PhD course with the Department of Physics and Astronomy at the Open University in 'Self-Replication, Construction and Computation'. This research involves studying systems of simple interacting parts in order to discover simple systems capable of computation and construction. The main result is a self-replicating programmable constructor in a simulated 3D environment made from six types of simple part. See [www.srm.org.uk](http://www.srm.org.uk) for more details and for a list of publications.

The follow page lists some of the projects that I have completed in my working life and in my spare time. If required, I can demonstrate any of the spare-time projects dated after 1992.

My current interests outside of computing include astronomy, ancient metallurgy, caving, history of science and technology, mathematics, molecular biology, physics, space exploration, stirling engines and wild camping.

The following types of work interest me:

- Working in newly emerging areas of research in computing or science.
- Working at the interface between software and reality.
- Developing systems from scratch.
- Devising solutions to fit available resources.
- Understanding complex systems.

Activity	Years	Description	Technology
Clinical trial management system (Work)	2007-2010	Manages contacts, data entry, medication supply, communications.	Psychiatry Databases Web technologies
Clinical trial tools (Work)	2007	Minimisation algorithm, blind medication pack number allocation	Clinical trials methodology
Prototype activity monitor (Work)	2006	Wearable activity logger based on accelerometer measurements.	Microchip PIC, IrDA protocol
Text message mood rating system (Work)	2006	Collects mood ratings for depression by SMS. Used in Oxford bipolar clinic. Won the national NHS Live award in 2008.	AT commands Mood rating
Automated software installation system (Work)	2005	System to help deploy legacy software across Wallingford School campus.	Databases Job efficiency
Self-Replication, Computation and Construction PhD	2004-Now	Simulation of kinematic self-replicating programmable constructor. 5 peer-reviewed papers	Theory of computing Conferences Publication
Planet finder and sky-map for Palm OS	2003	Astronomy software to help locate stars and planets.	Astronomy Palm SDK
BASIC interpreter for Palm OS	2003	BASIC language interpreter	Palm SDK
Quantum chemistry system	2002	Ab initio calculation of electron configuration of organic molecules.	Biochemistry Physics, Open GL
Logic simulation integration platform (Work)	2001	A hub for connecting simulators at different levels of abstraction.	C++, Handel-C, Modelsim, MATLAB
Hardware Compiler inspired by Handel-C and others	2001	A compiler for a high level HDL based on C. Written using LISP.	LISP, FPGAs
Virtual logic analyser (Work)	2000	A plugin as part of the DK1 Development System, Celoxica Ltd	C++, MFC, Handel-C
Reconfigurable gas flow computer (Work)	1998-2000	B S Instruments Ltd, Significant contributions towards hardware and software development.	Coldfire, PIC, RTOS, Teamwork
Artificial evolution simulation	1998	I developed the 'Nodes' environment for this project, later used for PhD.	C++, Allegro library
Self-replicating machine in a 2D discrete space kinematic simulation environment.	1997	Developed the 'CBlocks' environment. This project later became part of my PhD work, and was published in 2007.	C, Kinematic simulation
Portable Tetris game	1995	Based on 8051 microcontroller and a dot matrix LCD display.	8051 micro. Electronics
Finite Element Analysis software	1995	Dynamic simulation. FE mesh laid out using a Logo-like language.	Borland Turbo Pascal
8051 Microcontroller Development Kit	1995-1999	EPROM programmer, assembler, C-compiler, real-time operating system.	Compiler writing, RTOS
Games and simulations for ZX Spectrum and Atari ST	1987-1994	Classic arcade games, physics and artificial life simulations	Z80, STOS BASIC, C