

# Dr William Stevens

## Curriculum Vitae

### General Information

Name: William Stevens  
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### Education and Qualifications

2012 - 2015 (expected) Open University, Masters Degree in Mathematics

2004 - 2009 Open University, Department of Physics and Astronomy  
PhD: Self-Replication, Construction and Computation

1995 - 1998 University of Kent at Canterbury (UKC)  
BSc(hons) in Computer Science

### Awards

I received awards for outstanding exam performance in my undergraduate degree.

Whilst working at Oxford University Department of Psychiatry, I developed and did day-to-day administration for a text-message based mood rating system for bipolar disorder used by the Oxford Bipolar Clinic. This system (and the whole team involved with it) won the 2008 national NHS Live award and the Royal College of Psychiatrists John S Lyon Memorial Prize. The system has since been developed into the TrueColours mood rating system, run by Oxford Health NHS Trust.

In 2008 I won a young author award for a talk/paper at the AROB 2008 conference in Beppu, Japan. (Parts closure in a kinematic self-replicating programmable constructor, Stevens W. M. (2009) Journal of Artificial Life and Robotics, Springer Japan. DOI 10.1007/s10015-008-0618-1)

### Employment History

5/13 - Now Clinical Trials Services Unit, Oxford University  
Programmer/Analyst  
Responsible for transforming clinical trials data to CDISC SDTM and ADaM data standards. C++, Python, SQL, Ingres, XML, XSLT.

7/11 - 3/13 Unconventional Computing Group, University of the West of England, Bristol  
Postdoctoral Research Associate.  
Worked on the last year of the Leverhulme Trust Funded project 'Amorphous Biological Robots'. Also completed several other pieces of work related to Unconventional Computing (see publications list for examples).

- 4/06 – 6/11 Department of Psychiatry, University of Oxford  
Programmer/Analyst  
Responsible for managing a team of upto 3 developers to produce clinical trial data entry, remote data capture and trial management software.  
C++, .NET, SQL Server, MySQL, PHP
- 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. Linux admin. C++, MySQL/Perl.  
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.
- (During this interval I was unemployed, and spent the time working on what is now my PhD research project. I also spent some time volunteering for Emmaus Oxford (a homelessness charity) refurbishing discarded computers)
- 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 spent time gaining classroom experience as a volunteer teaching assistant in preparation for a PGCE course)
- 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 and then programmed into FPGAs.
- 8/98 – 6/00 B S Instruments Ltd, Littlehampton.  
Software Engineer.  
Part of a development team for the Instromet Model 2000 Flow Computer. Involved in design and implementation of both hardware and embedded software based around Microchip PIC microcontrollers and the Motorola Coldfire processor. Also responsible for maintaining some of the company's existing products.
- 7/94 - 9/97  
(18 months  
in total) Defence Research Agency / UKC  
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.

## Clubs and Activities

2013-4	Member of Schola Wessex Chamber Choir.
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.

I am a member of the Institute of Physics, the British Interplanetary Society and the Historical Metallurgy Society

## Selected Publications

*Using Transition Systems to Describe and Predict the Behaviour of Structured Excitable Media*, Stevens W. M. (2012), Natural Computing, DOI: 10.1007/s11047-012-9355-4

*Computing with Planar Toppling Domino Arrangements*, Stevens W. M. (2012), Natural Computing, Vol 11, Issue 4, pages 665-672, DOI: 10.1007/s11047-012-9341-x

*Time-dependent wave selection for information processing in excitable media*, Stevens W. M., Adamatzky A, Jahan I, De Lacy Costello B (2012), Physical Review E 85, 066129 (2012)

*A Self-Replicating Programmable Constructor in a Kinematic Simulation Environment*, Stevens, W. M. (2011). Robotica Vol 29, Special Issue on Robotic Self-X Systems, pages 153-176

*Adapting Gosper's Hashlife Algorithm for Kinematic Environments*, Stevens, W.M. (2010) Proceedings of the 2010 Workshop on Complex Systems Modelling and Simulation (Luniver Press, Frome, UK), pages 75-91.

*The longitudinal course of bipolar disorder as revealed through weekly text-messaging*, Bopp, J.M, Miklowitz, D. J., Goodwin, G. M., Stevens, W., Rendell, J. M., & Geddes, J. R. (2010). Bipolar Disorders Vol 12, pages 327-334.

My role in this work was the design and software implementation of a text-message based mood rating system

*Lithium plus valproate combination therapy versus monotherapy for relapse prevention in bipolar I disorder (BALANCE): a randomised open-label trial*. The BALANCE investigators and collaborators. Lancet 2010; 375: 385-395

My role in this work was data management and software support for the last 3 years of the BALANCE clinical trial.

*A Kinematic Turing Machine*, Stevens, W.M. (2009) International Journal of Unconventional Computing, 2009, Vol 5, Issue 2, pages 145-163.

*Simulating Self-Replicating Machines*, Stevens, W.M. (2007) Journal of Intelligent and Robotic Systems, DOI 10.1007/s10846-007-9132-2

## Projects

The list below shows some of the projects that I have undertaken in my working life and in my spare time, and the various skills and technologies involved.

Activity	Years	Description	Skill/Technology
Clinical trial management system (Work)	2007-2010	Manages contacts, data entry, medication supply, communications.	C++, .NET Databases, SQL, 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. 7 peer-reviewed papers	Theory of computing Conferences Publication
Planet finder and sky-map	2003	Astronomy software for Palm OS	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.	Hartree-Fock method
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, Atmel AT40K 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
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, Allegro library
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