Dr Spencer Angus Thomas: Curriculum Vitae

I am seen as a highly competent problem solver with a PhD in computational intelligence and a first class Masters of Physics degree. Currently I am employed as a Research Fellow developing techniques and software for mathematical analysis of behaviour in non-linear, stochastic and complex systems. This is a role that combines detailed planning with agile software development to incorporate and assess features dynamically, and as a consequence requires systematic updates and continuous integration tools. My numerical skills include statistical analysis, optimisation, machine learning and bifurcation analysis. These developed during my PhD when I used evolutionary algorithms to analyse noisy time series data and infer the underlying network providing significant insight into the system. My research was supervised by a world leader in artificial intelligence and optimisation, thereby exposing me to the majority of optimisation and machine learning algorithms. I have experience with a large number of programming languages, including Java, C++, R, SQL and Unix scripts, and use them to tailor solutions to specific problems. My computational abilities, together with my numerical skills, have provided me with strong algorithm design capabilities. I have used Unix based systems, both macintosh and Linux, for the last 8 years. My strong mathematical and analytical skills coupled with my programming experience enable me to solve an eclectic range of problems. My multidisciplinary background evidences my ability to rapidly adapt and integrate in to a new environment and team. In addition to these skills I have a number of highly transferable 'soft' skills. My strong leadership skills are evidenced by my roles as Committee Chair for the University of Surrey's Postgraduate Research Conference, President of the Physics Society and present role as a student Mentor. Numerous presentations at international conferences and publications demonstrate my ability to communicate scientific research findings to wide audiences. Furthermore, my current role is part of a large inter-disciplinary team requiring constant communication and balancing many parallel collaborative projects. These collaborative projects expose me to new areas such as graph and control theory, network analysis and policy making.

Contact Information

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Employment History

2014 - *Research Fellow in Applied Mathematics, Department of Mathematics, University of Surrey*
Creation and development of a Java tool for systems analysis and data extraction, providing quantitative and qualitative insight into systems where traditional analysis techniques are not available. Developing this tool require diverse skills such as incorporating existing mathematical techniques with novel algorithms in an efficient and generic program. The latter requiring computer science and software developing skills such as encapsulation, object-oriented design, agile methodologies, test driven development and continuous integration tools. At present the tool has provided unique insight in to several systems and can be applied to generic systems.
Other projects include analysis of real-world complex systems using network and control theory.

2010 - 2014 *PhD in Computational Biology and Computational Intelligence*
Reverse engineering of real-world biological network structure and parameters directly from noisy experimental time series data sets. Combining exiting libraries for machine learning with novel optimisation algorithms in C++ enabled the inference of a network containing over 900 genes, much larger than current methods.

2010 - 2012 *Nuclear Astrophysics Undergraduate Tutor, Department of Physics, University of Surrey*
Assisting undergraduate nuclear astrophysics and quantum mechanics tutorials

2010 - 2012 *Computational Physics Tutor, Department of Physics, University of Surrey*
Assisting undergraduate computational physics for a number of physical problems

2009 - 2010 *Research Scientist, Department of Nuclear Astrophysics, University of Notre Dame, USA*
Experimental nuclear physics research using 11MV Tandem accelerator

Programming Experience

Java, C++, R, Matlab/octave, python, SQL, Fortran, Netlogo, UNIX scripts, GitLab, LaTex

Education

2010 - 2014	PhD Computational Biology and Computational Intelligence, University of Surrey, UK
2006 - 2010	MPhys (Hons.) Physics - 1st class, University of Surrey, UK and University of Notre Dame, USA
2005 – 2006	Warlingham Sixth Form, Warlingham, Surrey, UK
2001 – 2005	Warlingham School, Warlingham, Surrey, UK

Notable Achievements

2015	Named researcher on a £900,000 grant proposal on modelling the sleep-wake cycle in humans
2013	Postgraduate Researcher of the Year nominee, Department of Computing, University of Surrey
2013	Best Research Paper prize, Annual Computing Department Conference, University of Surrey
2012	Full funding award to attend Worksop on "e-Science for Bioenergy Research", Sao Paulo, Brazil
2008	Nuffield Foundation funding award for research into material properties, University of Surrey

Roles and Responsibilities

2014 -	Postgraduate Student Mentor, Surrey STARS Mentoring Programme
2014 - 2015	A-Level Mathematics Tutor, Tutor Doctor
2014 - 2015	Examination and Assessment of MSc Systems Biology Students
2013 - 2014	Co-Editor and Publication Chair IEEE 2013 13th UK Workshop on Computational Intelligence
2012 -	Reviewer for several scientific publications (available on request)
2010 -	Committee member for a number of international conferences (available on request)
2010 - 2013	Youth Worker, Disability Challengers, Guildford, Surrey
2010 - 2012	Chair of University of Surrey's Postgraduate Research Conference committee
2006 - 2008	President of the Physics Society, University of Surrey

Notable Presentations

2015	21st International Congress on Modelling and Simulation Brisbane, Australia
2015	The 4th Joint BMC & British Applied Mathematics Colloquium, Cambridge
2013	13th UK Workshop on Computational Intelligence, Guildford, UK
2013	7th International Conference on Evolutionary Multi-Criterion Optimization, Sheffield, UK
2012	Sao Paulo School of Advanced Science on e-Science for Bioenergy Research, Sao Paulo, Brazil
2012	12th Parallel Problem Solving in Nature, Taormina, Italy
2012	9th Computational Intelligence in Bioinformatics and Computational Biology, San Diego, USA

Relevant Publications

SA Thomas and Y Jin, "*Reconstructing Biological Gene Regulatory Networks: Where Optimization Meets Big Data*", Evolutionary Intelligence, 7(1):29-47, 2014 (review paper)

SA Thomas *et al.*, "*Modelling Dynamic Expression in Streptomyces coelicolor: Comparing Single and Multi-objective Setups*", Evolutionary Computation in Gene Regulatory Network Research, John Wiley & Sons, i*n press*

SA Thomas and Y Jin, "*Evolving Connectivity Between Genetic Oscillators and Switches Using Evolutionary Algorithms*", Journal of Bioinformatics and Computational Biology, 11(3):1341001, 2013

SA Thomas *et al*, "*Reconstructing Regulatory Networks in Streptomyces using Evolutionary Algorithms*", UK Workshop on Computational Intelligence, 2013

M Notani et al., "Correlation between the 12C+12C, 12C+13C, and 13C+13C fusion cross sections", Physical Review C, 85(1):014607, 2012

Personal Interests

Outside of working life I enjoy most sports, both participating and watching. I am particularly interested in basketball and currently play for the Yately Silverbacks in the Wessex League. I also enjoy running and physical challenges, completing 'Tough Mudder' in 2013 and 2014. Other interests include playing the guitar, cycling and National Trust walks. I am passionate about charitable work, having raised funds for Cancer Research UK, Children in Need, Help for Heroes and Disability Challengers.

Reference

Professional and personal references are available on request.