

Simon Foster

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Personal	<p>Full Name Dr. Simon David Foster Date of Birth 25th of August, 1983 Nationality British Current Role Post-doctoral Research Associate, University of York</p>
Academic Qualifications	<p><u>2009</u> PhD, Computer Science, University of Sheffield <u>2005</u> MComp (Hons) Computer Science (First Class), University of Sheffield <u>2001</u> A-Levels: Computing, Mathematics, and Physics</p>
Education & Employment	<p><u>Apr 2015 –</u> Research Associate, EU H2020 ICT-1 Project “Integrated Tool Chain for Model-based Design of Cyber-Physical Systems” (INTO-CPS) University of York under Prof. Jim Woodcock, http://into-cps.au.dk</p> <p><u>Oct 2014 – Mar 2015</u> Research Associate, QinetiQ sponsored Modular Safety Cases for the Generic Vehicle Architecture University of York under Prof. Tim Kelly</p> <p><u>Mar 2012 – Sep 2014</u> Research Associate, EU FP7 Project 287829 “Comprehensive Modelling for Advanced Systems of Systems” (COMPASS) University of York under Prof. Jim Woodcock. http://www.compass-research.eu</p> <p><u>2009-2012</u> Research Associate, EPSRC Project EP/G031711/1 “Higher Order Refinement Techniques for the Model Driven Architecture” University of Sheffield under Prof. John Derrick</p> <p><u>Summer 2009</u> Short-term Research Assistant on “Bridging the Gaps” investigation “Resource optimisation for modular speech recognition systems” Principal Investigator: Dr. Thomas Hain</p> <p><u>2005-2009</u> PhD, University of Sheffield, funded by Departmental Scholarship “A Compositional Semantic Theory for Service Composition” Supervisor: Dr. Mike Stannett</p> <p><u>2001-2005</u> MComp (Hons) Computer Science, University of Sheffield</p>
Training & Experience	<p><u>Jan 2015</u> Proposal writing on two bids under JLR-EPSRC TASCC funding scheme “Towards Autonomy – Smart and Connected Control” (pending)</p> <p><u>Nov 2014</u> EU project review in Brussels, Refinement Tool Deliverable (accepted)</p> <p><u>Aug 2014</u> Assistant Lecturer at Marktoberdorf Summer School on Dependable Software Systems Engineering. Co-lecturing “Electronic UTP: Mechanised Unifying Theories of Programming” with Prof. Jim Woodcock.</p> <p><u>Sep 2014</u> Headed a EU H2020 FET-Open project bid “CyVeriPhy” (pending)</p> <p><u>May 2014</u> Lecturer at FM Tutorial Series, Singapore. Co-lecturing “Unifying Theories of Programming in Isabelle/HOL” with Prof. Jim Woodcock.</p> <p><u>Apr 2014</u> Proposal writing and administrative support for two EU H2020 proposals under ICT1 (one of which, INTO-CPS, was a successful bid)</p> <p><u>Nov 2013</u> EU project review in Brussels, Theorem Prover Deliverable (accepted)</p> <p><u>Aug 2013</u> Lecturer at ICTAC School on Software Engineering, Shanghai. Teaching course on <i>Unifying Theories of Programming in Isabelle</i>.</p> <p><u>Aug 2011</u> Visiting Researcher at McMaster University. Host Dr. Wolfram Kahl.</p> <p><u>Apr 2006 and 2007</u> Midlands Graduate School in Foundations of Computer Science</p> <p><u>Jun 2006</u> Visiting Researcher at Knowledge Media Institute, Open University</p> <p><u>May 2010</u> Workshop on Automated Theory Engineering Workshop organised by Tony Griffin, Mike Gordon, Tony Hoare and Georg Struth.</p> <p><u>1998</u> Work Experience: Software Engineer at MHG Systems Ltd.</p>

	Maintenance of hardware and software for electronic point of sale (EPoS) systems Programming Languages: Java (incl. Eclipse SDK), Scala, Haskell, Isabelle/HOL, Agda, Python, PHP, HTML, Unix Shell Scripting	
Research Interests	Theorem Proving (Isabelle/HOL) Unifying Theories of Programming Formal Methods (Z, VDM, Circus) Formal Semantics Functional Programming Type Theory	Algebra Mechanisation Web service composition Systems of Systems Safety Engineering Model-Driven Architecture Process Algebra
Publications	<p><i>On the Fine-Structure of Regular Algebra</i> Simon Foster and Georg Struth <i>Journal of Automated Reasoning</i> 54:2. February 2015</p> <p><i>Contracts in CML</i> J. Woodcock, A. Cavalcanti, J. Fitzgerald, S. Foster, P. G. Larsen 6th International Symposium on Leveraging Applications of Formal Methods, Verification, and Validation (ISoLA). LNCS. October 2014</p> <p><i>An approach for managing semantic heterogeneity in systems of systems engineering</i> S. Foster, A. Miyazawa, J. Woodcock, A. Cavalcanti, J. Fitzgerald, P. G. Larsen IEEE 9th International System of Systems Engineering Conference. June 2014</p> <p><i>Isabelle/UTP: A Mechanised Theory Engineering Framework</i> Simon Foster, Frank Zeyda, and Jim Woodcock 5th International Symposium on Unifying Theories of Programming. LNCS 8963. May 2014</p> <p><i>Towards Verification of Constituent Systems through Automated Proof</i> Luis Diogo Couto, Simon Foster, and Richard Payne Workshop on Engineering Dependable Systems of Systems (EDSoS). April 2014</p> <p><i>Unifying Theories of Programming in Isabelle</i> Simon Foster and Jim Woodcock ICTAC School on Software Engineering. 2013. LNCS 8050</p> <p><i>Automated Analysis of Regular Algebra</i> Simon Foster and Georg Struth 6th International Joint Conference on Automated Reasoning (IJCAR). 2012. LNCS 7364</p> <p><i>Correctness of Object Oriented Models by Extended Type Inference</i> Simon Foster, Ondrej Rypáček, and Georg Struth 9th Intl. Colloquium on Theoretical Aspects of Computing (ICTAC). 2012. LNCS 7521</p> <p><i>Dependently Typed Programming Based on Automated Theorem Proving</i> Alasdair Armstrong, Simon Foster and Georg Struth 11th Intl. Conference on Mathematic of Program Construction (MPC). 2012. LNCS 7342</p> <p><i>Automated Engineering of Relational and Algebraic Methods in Isabelle/HOL</i> Simon Foster, Georg Struth, and Tjark Weber Invited tutorial, 12th International Conference on Relational and Algebraic Methods in Computer Science (RAMiCS 12). LNCS 6663</p> <p><i>Integrating an Automated Theorem Prover into Agda</i> Simon Foster, Georg Struth 3rd NASA Formal Methods Symposium (NFM 2011). LNCS 6617</p> <p><i>Composition and Semantic Enhancement of Web Services: The CASheW-S Project</i> Simon Foster, Andrew Hughes, Barry Norton Young Researchers workshop on Service Oriented Computing (YR-SOC 05), 04-2005</p> <p><i>A Compositional Operational Semantics for OWL-S</i> Barry Norton, Simon Foster, Andrew Hughes</p>	

	<p>Intl. Workshop on Web Services and Formal Methods (WS-FM 05), 08-2005. LNCS 3670</p> <p>HAIFA : An XML based interoperability solution for Haskell Simon Foster Trends in Functional Programming (TFP 2005) preproceedings pp. 103-118, 09-2006</p> <p>Modelling Compensation with Timed Process Algebra Simon Foster Young Researchers workshop on Service Oriented Computing (YR-SOC 07), 06-2007</p>
Theses & Reports	<p>PhD Thesis - "A compositional algebraic theory for service composition and verification"</p> <p>Year 3 Dissertation - "An Interoperability Framework for Haskell"</p> <p>COMPASS Deliverable D33.2 - "Theorem Proving Support", September 2013 http://www.compass-research.eu/Project/Deliverables/D332b.pdf</p> <p>COMPASS Deliverable D33.4 - "Formal Refinement Support", September 2014 http://www.compass-research.eu/Project/Deliverables/D33.4.pdf</p>
Teaching	<p>Formal Specification. I jointly lectured on the Formal Specification course in the Department of Computer Science at the University of York in January 2015. This course trains students in the use of the Z notation for formally specifying and verifying systems.</p> <ul style="list-style-type: none"> ● Postgraduate Schools. I have lectured at postgraduate schools at ICTAC 2013, FM 2014, and Marktoberdorf 2014 teaching on Unifying Theories of Programming and Isabelle/HOL. This included live demonstrations using Isabelle. ● Tutorials. In the context of the COMPASS project I have lead tutorials on modelling using the CML language for our industrial partners, academic partners, and members of the COMPASS Interest Group. ● In addition, I have demonstrated and taught on the following undergraduate courses: ● Foundations of Computer Science, a first year foundation course in propositional logic, set theory, algebra, and proof. <p>Abstract Datatypes (Advanced Functional Programming), which looks at various aspects of functional programming in Haskell, with a particular slant on abstract datatypes. I gave lectures on the following subjects:</p> <ul style="list-style-type: none"> ● Modelling Computation in a functional setting using Monads ● Monadic parsing in Haskell <p>Theory of Distributed Systems, which looks at theoretical representation and verification of concurrent systems in <i>Process Algebra</i>. The course has looked at CCS, π-calculus, CSP and associated model checkers. I took problem and lab classes, as well as leading revision sessions.</p>
Services to Research Community	<p><u>March 2010</u> Co-organiser of Midlands Graduate School in Sheffield</p> <p><u>2005 and 2007</u> Sheffield Theory Special Interest Group organiser</p> <p><u>2006</u> Local co-organiser for International Workshop on Hypercomputation (HyperTrends '06).</p> <p>Paper reviews: Formal Aspects of Computing, Theoretical Computer Science, RAMiCS 2011, "Software Testing, Verification and Reliability", SEEFM 2009, YR-SOC 2007</p>
Presentations	<p>"CyVeriPhy Project Proposal" - internal group seminar on FET-Open proposal, Nov 2014.</p> <p>"The COMPASS Modelling Language" - tutorial at the COMPASS Interest Group meeting, Jan 2014.</p> <p>"Isabelle/UTP: Mechanised Theory Engineering for Computer Scientists" - internal group seminar at University of York, May 2013.</p> <p>"Towards a theorem prover for CML" - tutorial at COMPASS convergence workshop in Trieste, Mar 2013.</p> <p>"CML tutorial" - tutorial on COMPASS Modelling Language, Bremen, Feb 2013.</p>

	<p><i>“Applying Agda in Model Driven Design”</i> - invited talk, McMaster University, Aug 2011.</p> <p><i>“Reflective Equational Proofs in Agda”</i> - Agda meeting, 2011 at Chalmers University.</p> <p><i>“A Compositional Semantic Theory for Service Composition”</i> - internal group seminar, 2009.</p> <p><i>“Service Composition Algebra”</i> - Invited talk at Leicester University, Oct 2007.</p> <p><i>“Behavioural Types for Service Composition”</i> - University of Bamberg.</p> <p><i>“A Formal Model for Web Service Composition”</i> - British Colloquium for Theoretical Computer Science (BCTCS 2006), 04-2006</p> <p><i>“Implementation of a Timed Process Calculus in Haskell”</i> - internal group seminar, 2005</p>
References	Available on request