

Curriculum Vitae for Dr. Simon Colton

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I am an AI researcher and academic in the Department of Computing of Imperial College, London. I lead the Computational Creativity research Group (ccg.doc.ic.ac.uk). We study how to build software which can take on some of the creative responsibility in arts and science projects. To this end, we have built and experimented with various software systems which can: form theories and make discoveries about domains of pure mathematics; help video game designers build games; generate abstract and representational art; and produce poetry. Our work is very much application driven, and we have worked with artists, designers and video games companies. We also study more philosophical aspects of Computational Creativity research, including how to assess the creativity of systems, the value of Turing tests in this field, how to hand over creative responsibility to software, and how to describe the software we produce to a general audience. This has led us to the development of Computational Creativity Theory, a formalism for the field which will enable us to demystify aspects of creativity in general, and compare and contrast creative systems on a strong theoretical footing.

Academic History: 2011 – present: EPSRC Leadership Fellow
2010 – present: Reader in Computational Creativity, Department of Computing, Imperial College, London
2010 – present: External Examiner, Department of Computing, Goldsmiths, University of London
2008 – 2010: PhD Examiner, Universities of Bristol, Leeds, UC Santa Cruz
2002 – 2010: Lecturer, Senior Lecturer (2007), Department of Computing, Imperial College, London
1999 – 2002: Research Associate, EPSRC project GR/M9801: “Automated Conjecture Making”
1996 – 1999: PhD. in Artificial Intelligence, University of Edinburgh

PhD Students: Alison Pease: 2002 – 2006 “A Computational Model of Lakatos-Style Reasoning”
John Charnley: 2005 – 2009 “A Global Workspaces Approach to Combined Reasoning”
Ning Jiang: 2004 – present “Boosting Descriptive and Predictive ILP”
Pedro Torres: 2005 – present “Automated Meta-Theory Formation”
Robin Baumgarten: 2007 – present “Automating Game Playing Avatars”
Ramin Ramezani: 2008 – present “Automated Problem Reformulation”
Michael Cook 2010 – present “Simultaneous Evolution for Arcade Game Design”
Stephen Tavener 2010 – present “Monte-Carlo Tree Search for Ludic Board Game Design”
Flaminia Cavallo 2011 – present “Psychologically Plausible Concept Formation Techniques”

Roles: Organiser of the EPSRC AI and Games Industry/Academic Research Network (www.aigamesnetwork.org)
Steering group member, Creativity Industries KTN Beacon Group on the Future of Digital Tools, 2010
Executive Board Member, The International Federation for Computational Logic
EU ICT Call 5 and Call 8 reviewer (technology enhanced learning panel) and FP7 FET reviewer
Canadian Excellence Research Chairs grant review panel, 2009
AISB society committee member: 2001 – 2007, AISB convention chair 2001 (203 delegates)
Steering committee: International Conference on Computational Creativity, 2002 – present
Automated Reasoning Workshop committee: 2003 – present, workshop chair 2007 (40 delegates)
Editorial board: International Journal of Computer Games Technology
Guest editor: AISBJ (2001 & 2003), Machine Learning (2008), AI Magazine (2009), IEEE TCIAIG (2012)
Chair/co-chair of 11 international workshops, at ECAI, ECCBR, CADE, IJCAI, AISB, CICM and AAAI
EU representative for: Cost Action 282 (Computational Creativity), Calculemus and PASCAL networks
Funding Council Reviewer: EPSRC and BBSRC (UK), NSERC (Canada), NDRC (Ireland), Harvard
Journal Paper Reviewer: AIJ, MLJ, ETAI, JAR, JMLR, KAIS, KBS, NGC, IEEE
Organising Committee for: IJCAI 2005, ILP 2006, IEEE-GIC, 2009, IJCCC 2010
Programme Committee member for more than 100 international workshops and conferences

Prizes and Awards: Nominated for best paper prize: EvoMusArt workshop 2008; EvoGames workshop 2010
BCS Machine Intelligence Prize, 2007, along with Maja Pantic and Michel Valstar
BCS/CPHC distinguished dissertation prize, 2001
AAAI best paper award, 2000, along with Alan Bundy and Toby Walsh (only UK team to win this award)

Invitations: Invited to present a Whitehead Lecture in Cognition, Computation & Creativity, Goldsmiths College, 2012
Invited lecturer: Computational Creativity PhD Autumn School, University of Helsinki, 2011; Mathematics and Art Summer School, University of La Rioja, 2011
Invited talk at the Ion Asset Architecture Seminar Series, 2010
Keynote talks at: 6th Mexican International Colloquium in Computational Creativity, 2011; GAMEON, 2010; British Council 70th Anniversary AI event, 2010; 10th UK Workshop on Computational Intelligence, 2010; 4th International Workshop on Modular Ontologies, 2010; 5th International Conference on Model-Based Reasoning, 2009; AAAI fall symposium on automated scientific discovery, 2008; DIMACS workshop on computers and discovery, 2004
Invited tutorial, Electronic Visualisation and the Arts Conference, 2009
Invited to attend the Dagstuhl seminar on Computational Creativity, 2009
Invited talks: British Computer Society specialists' group executive committee, 2008; Symposium on computational approaches to creativity in science, 2008; BCS Computer Art Society, 2007; Argonne Labs AWARD workshop, 2004; Machine Intelligence Workshop, 2000; Automated Reasoning Workshop, 1999
Invited virtual talk at the Nature Network's Second Nature forum, inside Second Life, 2008
Invited demonstration at the Shrewsbury Darwin Symposium, 2007

Research Grants	2011 – 2016	EPSRC EP/J004049/1	£1,178,138
Principal Investigator:	“Leadership Fellowship: Computational Creativity Theory” with many project partners		
	2010 – 2013	EPSRC EP/I001964	£546,000
	“UCT for Games and Beyond”, with the Universities of Bradford and Essex		
	2009 – 2011	TS/G002886	£265,556
	“AI Social Agents”, with Emote Games Ltd.		
	2008 – 2011	TS/G002835	£435,775
	“Computer-aided game design”, with Rebellion Developments Ltd. and the University of York		
	2008 – 2009	EPSRC EP/F067127	£119,464
	“Enhancing Objet Trouve Methods in Graphic Design” (Digital Economy Feasibility Study)		
	2008 – 2011	EPSRC EP/F036647	£78,885
	“A Cognitive Model of Axiom Formulation and Reformulation with Application to AI and Software Engineering”, with the University of Edinburgh and Heriot-Watt University		
	2007 – 2010	EPSRC EP/F033834/1	£99,686
	“An Industry/Academia Research Network on AI and Game Technologies”		
Co-Investigator:	2011 – 2015	EPSRC EP/J001058/1	£1,398,457
	“Platform grant: The Integration and Interaction of Multiple Mathematical Reasoning Processes”		
	2007 – 2011	EPSRC EP/E005713/1	£928,224
	“Platform grant: The Integration and Interaction of Multiple Mathematical Reasoning Processes”		
	2003 – 2006	EPSRC GR/S31099/01	£274,157
	“Automated Discovery in Mathematics”		
	2002 – 2006	EPSRC GR/S01771/01	£426,265
	“Platform grant: The Integration and Interaction of Multiple Mathematical Reasoning Processes”		
	2002 – 2003	EPSRC GR/R84559/01	£58,897
	“Applying HR to the Study of Zariski Spaces”		
	1998 – 2003	EPSRC GR/M45030/01	£914,659
	“Computational Modelling of Mathematical Reasoning”		
Art Exhibitions:	Sony Computer Science Laboratory 15 th Anniversary Event, group exhibition, La Maison Rouge, Paris, 2011		
	Computational Aesthetics art programme, group exhibition, Lisbon, 2008		
	Imperial/AISB computer generated art group exhibition, London, 2006		
	The Painting Fool (online galleries and discussion): www.thepaintingfool.com		
Public Engagement:	Articles covering our work in: New Scientist (1998, 2001, 2008, 2009, 2012), THES (2001, 2010)		
	Interviewed by: Daily Mirror, Metro Newspaper, New Scientist, Psychologie Heute, Channel 4, El País, El Mundo, Naked Scientists (BBC Radio), Leading Edge (BBC Radio), Nature Network		
	Co-organiser of Imperial’s GAME event, 2007 – 2010		
	Invited talk on Evolutionary Art at IBM’s Blue Fusion Event, 2007		
	Co-organiser of Imperial/AISB computer generated art exhibition, 2006		
	Co-organiser/panel member of Imperial’s Industry/Academic workshop on AI and games, 2006		
	Co-organiser of Imperial’s Industry/Academic workshop on Computational Creativity, 2006		
	Invited CyberSalon panel member (on the topic of creative software), Dana Centre, 2005		
	Organiser of a Royal Society of Edinburgh public understanding event “AI in Your Life Today”, 2005		
	AISB committee public engagement officer (2004 – 2007)		
Selected Publications:	C. Browne, E. Powley, D. Whitehouse, S. Lucas, P. Cowling, P. Rohlfshagen, S. Tavener, D. Perez, S. Samothrakis and S. Colton: “A Survey of Monte Carlo Tree Search Methods”, IEEE Transactions on Computational Intelligence and AI in Games, 4(1), Forthcoming, 2012		
	S. Colton, J. Charnley and A. Pease: “Computational Creativity Theory: The FACE and IDEA models”, Proceedings of the International Conference on Computational Creativity, 2011		
	S. Colton: “Stroke Matching for Paint Dances”, Proceedings of Computational Aesthetics, 2010		
	S. Colton, R. Lopez de Mantaras, and O. Stock: “Computational Creativity: Coming of Age”, AI Magazine, 30(3), 11-14, 2009		
	R. Baumgarten, S. Colton and M. Morris: “Combining AI Methods for Learning Bots in a Real Time Strategy Game”, International Journal on Computer Game Technologies, 2009		
	S. Colton: “Creativity versus the Perception of Creativity in Computational Systems”, Proceedings of the AAAI Spring Symposium on Creative Systems, 2008		
	V. Sorge, A. Meier, R. McCasland and S. Colton “Automatic Construction and Verification of Isotopy Invariants”, Journal of Automated Reasoning, 40(2-3), 221-243, 2008		
	J. Charnley, S. Colton and I. Miguel: “Automatic Generation of Implied Constraints”, Proceedings of the 17th European Conference on Artificial Intelligence, 2006		
	S. Colton: “Automated Conjecture Making in Number Theory using HR, Otter and Maple”, Journal of Symbolic Computation, 39(5), 593-615, 2005		
	S. Colton, A. Bundy and T. Walsh: “On the Notion of Interestingness in Automated Mathematical Discovery”, International Journal of Human Computer Studies, 53(3), 351-375, 2000		
	S. Colton: "Refactorable Numbers - A Machine Invention" Journal of Integer Sequences, 2, 99.1.2, 1999		