

Publications

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Works submitted and awaiting review or publication

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Julien Nembrini and Alan FT Winfield, Emergent Swarm Morphology Control of Wireless Networked Mobile Robots, submitted to Morphogenetic Engineering: Toward Programmable Complex Systems, eds. R. Doursat, H. Sayama, O. Michel, Springer/NECSI "Studies on Complexity" Series.

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Harper C, Giannaccini M, Woodman R, Dogramadzi S, Pipe T and Winfield A, Environmental Survey Analysis – A new hazard identification process for autonomous mobile robots. Abstract (refereed) for Human Friendly Robotics Workshop (HFR 2011), University of Twente.

Griffiths F, Bown J, Durie R, Sutcliffe A, Jackson JT and Winfield A (2011). Embodied Simulation of Social Interaction, poster (refereed) at European Conference on Complex Systems (ECCS'11), Vienna, September 2011.

Woodman R, Winfield AFT, Harper C, and Fraser M (2011), Online Hazard Analysis for Autonomous Robots, poster (refereed) at Towards Autonomous Robotic Systems (TAROS 2011), Sheffield, September 2011.

Liu W and Winfield AFT (2011), abstract (refereed) for ECAL11 workshop on Morphogenetic Engineering, Paris, August 2011.

Winfield AFT, Sutcliffe AG, Griffiths FE, Durie R, Bown J, Tennant Jackson J, Erbas MD, Wang D, Bhamjee S and Guest A., First steps toward Artificial Culture in Robot Societies, Poster presented at Future Emerging Technologies (FET11), Budapest, May 2011. (Poster abstract refereed).

Grand A, Bultitude K, Wilkinson C and Winfield A, 'Muddying the waters or clearing the stream? Open Science as a communication medium', In Proc. Int. Conf. on Public Communication of Science and Technology (PCST 2010), New Delhi India, 6-10 December 2010. (extended abstract refereed.)

Woodman R, Winfield A, Harper C and Fraser M, 'Safety Control Architecture for Personal Robots: Behavioural Suppression with Deliberative Control', In Proc. 7th IARP Workshop on Dependable Robots in Human Environments, Toulouse, June 2010. (extended abstract refereed)

Clare Dixon, Alan Winfield and Michael Fisher, 'Verification of Swarm Robots: the Alpha Algorithm', In Proc. Automated Reasoning Workshop 2010 – Bridging the gap between theory and practice (ARW 2010), University of Westminster, pp 15-16, 30-31 March 2010.

Nembrini J and Winfield A, '[Intelligence Collective pour Robot Multi-Cellulaire](#)', Art and Biotechnology colloquium, Montreal, October 2004 (in French).

Qiao F, Zhu QM, Winfield A and Melhuish C, 'Adaptive Sliding Mode Control Based on Fuzzy Logic Scheme', Proceedings of the 6th International Conference on Adaptive Computing in Design and Manufacture (ACDM2004), Poster Presentation, Bristol, England, pp. 31-34, April, 2004.

Qiao F, Zhu QM, Winfield A and Melhuish C, 'Design of Takagi-Sugeno Fuzzy Model Based Sliding Mode Controllers for Nonlinear Systems', Proceedings of the 2nd Postgraduate Student Conference in CEMS, UWE, Bristol, England, pp. 31-34, October, 2003.

Ellery, A., Ball, A., Coste, P., Dickensheets, D., Hu, H., Lorenz, R., Nehmzow, H., McKee, G., Richter, L. and Winfield, A., A Robotic Triad for Mars Surface & Sub-Surface Exploration. Poster EU-23 at the 7th International Symposium on Artificial Intelligence, Robotics and Automation in Space, Nara, Japan, 19-23 May 2003.

Winfield AFT, 'Linux: an Embedded Operating System for Mobile Robots', *invited paper*, IEE Embedded and Real-time Systems Professional Network colloquium on Developing Embedded Real-Time Systems, London, May 2003.

F. Qiao, Q.M. Zhu, A. Winfield, and C. Melhuish, A Novel Neuro-Fuzzy State Estimator For Nonlinear Systems, Proceedings of the Postgraduate Research Conference in Electronics, Photonics, Communications and Software (PREP), Exeter, England, pp. 224-225, April 14-16, 2003.

Ellery, A., Ball, A., Cockell, C., Coste, P., Dickensheets, D., Edwards, H., Hu, H., Lammer, H., Lorenz, R., McKee, G., Richter, L., Welch, C. and Winfield, A., Vanguard - A Proposal for a European Post-Beagle 2 Robotic Mars Mission. Presented at the 7th ESA Workshop on Advanced Space Technologies for Robotics and Automation, ESTEC, 19-21 November 2002. Slides in: van Winnendael, M. (Ed.), ASTRA 2002, pp. 159-170. ESA-WPP 204, 2002.

Randall MJ, Winfield AFT, Pipe AG, 'Kinematic Gait and Foot Trajectory Generation for a Biologically Inspired Autonomous Hexapod Robot', IEE Colloquium on Information Technology for Walking and Climbing Robotics, IEE Digest no. 96/167, October 1996, Portsmouth.

Scanlan JP, Smith G and Winfield AFT, 'Project Management for Simultaneous Engineering', IEE Colloquium on Concurrent Engineering, London, June 1995.

Harper C and Winfield AFT, 'A behaviour-based approach to the design of safety-critical systems', IEE Colloquium on Knowledge based systems for safety critical applications, London, May 1994.

Winfield AFT, 'Preparing EC Research and Development Proposals: A University Experience', IMEchE symposium: EC R&D Contracts '93, London, February 1993.

Goodman RMF and Winfield AFT, 'Forth Primitive Pairs Profiled,' Proceedings of the 7th Annual FORML Conference, Asilomar, California, USA, November 1985.

Winfield AFT, Goodman RMF and Pountain RJ, 'Profiling FORTH', Rochester Forth conference, Rochester NY, June 1985.

Winfield AFT, 'FORTH - a new language for software engineering?', IEE colloquium on languages for programming microprocessors, Digest no 1982/65, London, Oct. 1982.

Commissioned popular journal articles

Winfield AFT, 'Rise of the LinuxBot', Linux Format, Issue 11, Feb. 2001, pp14-20.

Winfield AFT, 'Pascal in Forth', SOFT, Vol 1, no 4, Sept. 1983, pp59-63 and Vol 1, no 5, Oct. 1983, pp46-51.

Winfield AFT, 'Inside the interpreter', Personal Computer World, Vol 5, no 1, Jan. 1982, pp79-83.

Other public output

Alan Winfield (2011). Roboethics – for humans, New Scientist, 210 (2811), 32-33.

Preface for: Light-speed, Gravitation and Quantum Instantaneity, AD Osborne and NV Pope, Philosophical Enterprises, 2007.

Book Review: Almost Human - Making Robots Think, Times Higher Education Supplement, 20 July 2007.

Ellery A, Barnes D, McInnes C, Winfield A and Nehmzow U, 'Space and Planetary Robotics', in Paul Newman and Lionel Tarassenko (eds) Robotics and Cognition, Foresight Cognitive Systems Project Research Review, Nov 2004.

Ellery A, Barnes D, Buckland R, Welch C, Garry J, Zarnecki J, Gebbie J, Green A, Smith M, Hall D, McInnes C,

Winfield A, Nehmzow U and Ball A, 'The Multi-Disciplinary Field of Space Robotics Comes of Age in the UK', IEEE Computing and Control Technical Articles online, 2002.

LinuxBot Library HOWTO v1.0, Technical Report, Intelligent Autonomous Systems lab, UWE Bristol, 2001.

Winfield AFT and Channon R, 'Mobile Robots Travelling on Powered Floor', PCT Patent Application, IPN WO 01/41976, June 2001.

Rascal/LinuxBot Slackware v3.1 Installation Manual v1.0, Technical Report, Intelligent Autonomous Systems lab, UWE Bristol, 2000.

Winfield AFT, 'Publish or Collaborate: the Academic's Plight', *Invited article: Physics in Business*, Institute of Physics, Feb 1997, No 13, pp 4-5.

'The academic's dilemma: industry versus the RAE', *Research Fortnight*, Vol 3, No 2, October 1996.

Winfield AFT and Goodman RMF, 'Data processing system', United States Patent No 4,974,157, Nov. 27 1990.

Winfield AFT, 'Maximum-Likelihood Sequential Decoding of Convolutional Error-Correcting Codes', PhD Thesis, University of Hull, 1984.

Public and invited lectures (public lectures marked P, academic marked A)

'Directions in Artificial Cognition: new thoughts on thinking', talk for FP7UK Cognitive Systems and Robotics: forthcoming EU research funding event, BIS, London, 2 December 2012 (A).

Jointly with Professor Lilian Edwards 'Regulating Robots: Re-writing Asimov's Laws for the Real World', Lecture to launch the Centre for Internet Law and Policy, University of Strathclyde, 15 November 2011 (P)

'Swarm Robotics: a case study in the Design and Modelling of a Self-Organising system', talk for Doctoral Workshop on Cybernetics, Architecture & Robotics, Royal Academy of Fine Arts School of Architecture, Copenhagen, 8 November 2011 (A)

'Robot Bodies and how to Evolve them', talk for Robots at Bathcamp meeting, Bath, 2 November 2011 (P)

'Robot Bodies and how to Evolve them', keynote for York Doctoral Symposium, University of York, 20 October 2011 (A)

'The Ethical Robotist', IET Public Lecture, Towards Autonomous Robotic Systems (TAROS 2011), Sheffield, 2 September 2011 (P)

'The Ethical Robotist', Inaugural lecture of FET public lecture series, Faculty of Environment and Technology, UWE Bristol, 19 July 2011 (P)

'Artificial Culture in Robot Societies', Philosophy Group, Bath Royal Literary and Scientific Institution, Bath, 5 July 2011 (P)

'Can Robots Teach us anything about Culture?', Bristol Festival of Ideas, Arnolfini, Bristol, 22 May 2011 (P)

'Dances with Robots', Ignite 20x20 talk, Spike Island, Bristol, 12 May 2011 (P)

'Revisiting Asimov: the ethical robotist', talk for Ethical, Legal and Societal Issues workshop, European Robotics Forum, Vasteraas, Sweden, 8 April 2011 (A)

'We can build robot bodies, but can we build robot brains?' One of six short talks for IET public debate 'Pervasive Robots: Where are they?' UWE Bristol, 14 Mar 2011 (P)

Talk for Retired Professional Engineers' Club, Bristol, 9 March 2011 (P)

'Functional and Reliability Modelling of Swarm Robotic Systems', seminar for Automatic Control and Systems Eng. Dept, University of Sheffield, 2 March 2011 (A)

'Let's get Physical: robot bodies and how to evolve them', IoP Physics in Perspective lecture, Royal Institution, London, 22 Feb 2011 (P)

'Can Biology learn anything from Robotics', Technion Isreal Institute of Technology, Haifa, Isreal, 13 December 2010.

'Swarm Robotics: A short review', invited talk for Complex Systems Dynamics (CoSyDy) meeting, University of Warwick, Coventry, 15 November 2010.

Keynote talk for the Association for Science Education meeting for Science Teachers, At-Bristol, Bristol, 13 November 2010.

Jointly with Dr Alon Wolf, Ron Arad lecture for the British Technion Society, Royal College of Physicians, London, 18 October 2010.

'Next Generation Intelligent Robots', talk at Broadlands School Science Technicians Meeting, Bristol, 9 July 2010.

Plenary talk at the 2010 International Workshop on Nature Inspired Cooperative Strategies for Optimization (NICSO 2010), Granada, Spain, 14 May 2010.

'Swarm Engineering: a bio-inspired approach to resilient multi-robot systems', Invited lecture at workshop on Software Engineering for Resilient Systems (SERENE 2010), Birkbeck College, London, 16 April 2010.

'Functional and Reliability Modelling of Swarm Robotic Systems', University of Wales, Newport, 19 March 2010.

'The Intelligent Robotics Research of the Bristol Robotics Laboratory', Sheffield Hallam University, 22 February 2010.

'Swarm Robotics: Current Potential and Future Possibilities', Culham Science Centre, Oxfordshire, 12 February 2010.

'The Intelligent Robotics Research of the Bristol Robotics Laboratory', Sheffield Hallam University, 22 February 2010.

'Mimesis and Emergence in Robot Collectives', TRANSIT seminar, University of York, Friday 15 January 2010.

'Mimesis and Emergence in Robots', talk at workshop on Mimetic Factors in Health and Wellbeing, University of Warwick, Monday 14 December 2009.

'Intelligent Robots: present reality and future possibilities', Evening Christmas Lecture, Nottingham Medico-Chirurgical Society, Nottingham, Friday 10 December 2009.

'Intelligent Robots: present reality and future possibilities', Durdham Hall, Bristol University, Monday 16 November 2009.

'The Intelligent Robotics Research of the Bristol Robotics Laboratory', Technical Festival, Honda, Swindon, Wednesday 11 November 2009.

'When will we have robot friends and what will they be like?', Ikeda Elementary School, Osaka, Japan, Saturday 7 November 2009.

'The Intelligent Robotics Research of the Bristol Robotics Laboratory', International Robot Workshop, Osaka, Japan, Friday 6 November 2009.

'Intelligent Robots: present reality and future possibilities', Red Maids' School, Bristol, Thursday 22 October 2009.

'Intelligent Robots: present reality and future possibilities', Tomorrow's Technology 2009, Royal Institution, London, Friday 16 October 2009.

'Intelligent Robots: present reality and future possibilities', University of the 3rd Age (U3A), Weston super Mare, Friday 9 October 2009.

'Modelling Emergence in Wirelessly Networked Swarms of Mobile Robots', *invited plenary* at EmergeNet workshop, Warwick, Thursday 24 September 2009.

'Swarm Robotics: models for life, intelligence and culture', Wells Scientific and Engineering Society (SCIENGSO), Wells, Thursday 18 June 2009.

'Grey Walter's Machina Speculatrix: the World's first electromechanical robot', The Bristol Medico Historical Society, Bristol, Monday 15 June 2009.

Robotopia, National Space Centre, Leicester, Saturday 13 June 2009.

Society of Ordained Scientists, Redcliffe, Bristol, Wednesday 27 May 2009.

'Modelling Emergence in Wirelessly Networked Swarms of Mobile Robots', Warwick Centre for Complexity Science, Warwick, Wednesday 13 May 2009.

'First Steps Toward the Emergence of Artificial Culture in Robot Societies', Future Emerging Technologies conference FET'09 parallel session on Collective Robotics, Adaptivity, Co-evolution and Robot Society, Prague, 22 April 2009.

'Intelligent Robots: Present Reality and Future Possibilities', Vietnam National University Hochiminh City University of Science, Vietnam, 17th April 2009.

'Intelligent Robots: Present Reality and Future Possibilities', Portsmouth and District Physical Society, Portsmouth, 11th March 2009.

'Intelligent Robots: Present Reality and Future Possibilities', Royal Institution Science for Schools talk, Disneyland, Paris, 27th January 2009.

'The Potential and the Challenges of Swarm Robotics in Safety Critical Applications', *invited keynote* talk at Robots for risky Interventions and Environmental Surveillance (RISE 09), Brussels, 13th January 2009.

Science Café: Could you ever love a robot?, Arnolfini, Bristol, 5th December 2008.

'Biological Robots, Humanoid Robots and Swarm Robots: the work of the Bristol Robotics Laboratory', talk at Trends in Assisted Living seminar, Taipei, Taiwan, 25th November 2008.

'Towards an Engineering Science of Robot Foraging', *invited plenary* talk at DARS 2008, Tsukuba, Japan, 19th November 2008.

Seminar at DISAL, École Polytechnique Fédérale de Lausanne, Switzerland, 6th November 2008.

'Intelligent Robots: Current Reality and Future Possibilities', talk for Tiverton & Mid Devon Astronomy Society, 3rd October 2008.

'Symbrion: from Swarm to Multi-cellular Organism', invited talk at ANTS 2008, Brussels, September 2008.

'The Robots of the Bristol Robotics Lab', talk for Creative Technology Network event 'Real Robots', The Watershed, Bristol, September 2008.

'The Problem of Modelling Adaptive Foraging in a Robot Swarm', seminar at IRIDIA, Université Libre de Bruxelles, Brussels, September 2008.

'Intelligent Robots: Current Reality and Future Possibilities', talk for Open University Residential School, University of Bath, August 2008.

Invited public debate with Noel Sharkey on Robot Ethics, Cheltenham Science Festival, June 2008.

Café scientifique, Festival of the Mind, Devizes, June 2008.

'Intelligent Robots: Current Reality and Future Possibilities', South West Institute of Physics (IoP) Festival of Physics, Redland Green School, Bristol, March 2008.

'Intelligent Robots: Current Reality and Future Possibilities', The Women's Institute, Warwickshire Federation, Warwick, February 2008.

'The Bristol Robotics Lab Ecobot: towards true energy autonomy', Dana Centre, London, January 2008.

'Specification and Modelling of Emergence in Swarm Robotic Systems', *invited talk* Bristol Centre for Complexity Science, November 2007.

'From Behaviour-based Control to Modelling of Emergence in Swarm Robotic Systems', *invited talk* Bristol Neuroscience Mathematical Models of Cognitive Behaviour Workshop, November 2007.

'Specification and Modelling of Emergence in Swarm Robotic Systems' and 'Swarm Engineering for Real-World Applications', *invited talks* EAIA'07 Summer School on Collective Robotics, Lisbon, August 2007.

'Intelligent Robots: Current Reality and Future Possibilities', U3A, Bath, July 2007.

'Artificial Hermeneutics: are you *sure* you know what your robots are doing?', Workshop on the Practices of Anthropomorphism, Maison Francaise D'Oxford, May 2007.

'Walking with Robots: A new kind of engagement between robots and people', Hewlett-Packard Science Lecture, HP Labs, Bristol, January 2007.

'Swarm Intelligence: realities, possibilities and ethics', invited talk at the BCS SGAI workshop on the Ethics of

AI, Peterhouse College Cambridge, December 2006.

'Specification and Modelling of Emergence in Swarm Robotic Systems', invited lecture at the Vrije Universiteit Brussel (VUB), November 2006.

'Please don't switch me off!', evening talk at Bristol Science Café, November 2006.

Invited Keynote talk, ROBOFESTA annual meeting, Open University, Milton Keynes, November 2006.

Invited Plenary address, IEEE RO-MAN conference, University of Hertfordshire, November 2006.

'Biological Robotics research at the Bristol Robotics Laboratory', *invited talk* at the Laboratory of Complex Systems and Intelligence Science, Institute of Automation, Chinese Academy of Sciences, Beijing, June 2006.

'Specification and Modelling of Emergence in Swarm Robotic Systems', *invited talk* Beijing Institute of Technology, Beijing, June 2006.

'W Grey Walter's Machina Speculatrix: the world's first electromechanical robot', *invited talk* at the Centre de Recherches sur la Cognition Animale (CRCA) at the Université Paul Sabatier, Toulouse, March 2006.

'[Robot Swarms: constructionist science or real-world engineering?](#)', *Invited talk*, Bath Royal Scientific and Literary Institution, February 2006.

'Intelligent Robots: from lab to Science Centre', *Invited talk*, BCS SGAI Workshop 'Reaching out with Intelligent Robots', Cambridge, December 2005.

'Why Physics isn't finished, a constructionist approach', One-day workshop on Phenomenalism, information science & the interpretation of fundamental physics, UWE Bristol, September 2005.

'From Swarm Intelligence to Swarm Engineering: out of the lab and into the real; world', *Invited lecture*, Summer Research Institute, Ecole Polytechnique Fédérale de Lausanne, July 2005.

'Swarm Intelligence: Research in theory and practice', *Invited talk*, Bath Institute for Complex Systems, Bath University, June 2005.

'Swarm Intelligence: Theory and Practice', *Invited talk*, BAE SYSTEMS Advanced Technology Centre, February 2005.

'Swarm Intelligence: a new paradigm for distributed systems engineering, or, a new constructionist approach to understanding non-linear phenomena?' Department of Engineering Maths, University of Bristol, December 2004.

'Towards Dependable Swarms and a new discipline of Swarm Engineering', *Invited talk*, Swarm Intelligent Systems Research Group, Ecole Polytechnique Fédérale de Lausanne, December 2004.

'A Robot Swarm: Network of Autonomous Agents, or Multicellular Organism?' *Invited talk*, EU IST LEURRE Project Workshop: From solitary animals to social robots, Amsterdam, March 2004.

'W Grey Walter's Machina Speculatrix: the world's first autonomous electromechanical robot', Frenchay Tuckett Society, March 2004.

'Linux: An Operating System for Wireless-Networked Mobile Robots', *Invited talk*, IEE PN Developing Embedded Real-Time Systems Seminar, Reading, October 2003.

'Industrial Robots or Artificial Animals?' *Invited Lecture*, Research Seminar in the Department of Electrical and Electronic Engineering, University of Bath, November 2002.

'Robots or Artificial Animals: the Creatures of the Intelligent Autonomous Systems Laboratory', *Invited Lectures* at the Inaugural workshop of the Hexagram Research Institute for Artificial Life and the Robotic Arts, University of Quebec at Montreal, Canada, November 2002.

'Industrial Robots or Artificial Animals?' *Invited Lecture*, IEE Bristol Branch, Bristol, October 2002.

'The LinuxBot: A Platform for Planetary Rover Development', *Invited talk*, Late Summer workshop of the Space and Planetary Robotics Network, Aberystwyth, September 2002.

'The Application of Wireless LAN Technology to the Control of Mobile Robots', *Invited talk*, SEA UEP Workshop on Wireless Communication, Beckington, July 2002.

'Experimental Collective Robotics at UWE Bristol's Intelligent Autonomous Systems Laboratory', *Invited talk*, Ecole Polytechnique Fédérale de Lausanne, January 2002.

'Electronic Music Synthesis', *Invited Guest Lecture*; IEE Bristol Branch, Bristol, November 2001.

'Industrial Robots or Artificial Animals?: The Engineering of Intelligent Autonomous Systems', *Invited Lecture*, Bristol Scientific Club, December 2000.

'From Complexity to Simplicity: the Engineering of Intelligent Autonomous Systems', *Professorial Lecture*, University of the West of England, May 1998.

'Industrial Robots or Artificial Animals?', *Invited talk*, IEE Western Centre Seminar Programme, April 1997, Bristol.

'Wireless Control of Mobile Robots: a Case Study', *Invited Address*: Digital Equipment Corporation VNP Academy, Amsterdam, March 1997.

'Enabling Industry University Collaboration - A University Perspective', *Invited Address*: AURIL 2nd National Conference on Foresight & Partnership, Keele, September 1996. Also published in *Research Fortnight*, October 1996.

'Biologically Inspired Gait and Foot Trajectory Generation for Hexapod Walking Robots', *Invited Lecture*: California Institute of Technology - Center for Neuromorphic Systems Engineering, April 1996.

'Intelligent Autonomous Systems Research at UWE', *Invited Lecture*: Hokkaido University, Japan, April 1995.

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