Curriculum Vitae

NICHOLAS ROBERT JENNINGS

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I. PERSONAL

Appointments

2016-	Vice-Provost (Research and Enterprise), Imperial College London
2016-	Professor of Artificial Intelligence, Imperial College London
2016-	Visiting Professor, Electronics and Computer Science, Univ. of Southampton
2015-16	Head of the Electronics and Computer Science Department, Univ. of Southampton
2014-16	Regius Professor of Computer Science, Univ. of Southampton

(a post bestowed by Queen Elizabeth II on her Diamond Jubilee to "recognise exceptionally high quality research")

2010-15	Chief Scientific Advisor for National Security to the UK Government
2010-17	Distinguished Adjunct Professor at King Abdulaziz University, Saudi Arabia
2008-10	Associate Dean (Research and Enterprise), Faculty of Engineering, Science and Mathematics, Univ. of Southampton
2000-14	Professor, Electronics and Computer Science, Univ. of Southampton
1998-99	Professor, Electronic Engineering, Queen Mary Univ. of London
1995-98	Reader, Electronic Engineering, Queen Mary Univ. of London
1989-95	Lecturer, Electronic Engineering, Queen Mary Univ. of London
1988-89	Research Assistant, Electronic Engineering, Queen Mary Univ. of London

Qualifications

1992	PhD Artificial Intelligence, Queen Mary University of London
1988	BSc (Hons.) Computer Science (First Class), University of Exeter

National Honours

2016	Companion of The Order of the Bath (CB)
	"For services to Computer Science and National Security Science"

Fellowships and Professional Society Memberships

- Fellow of the Royal Society of Arts (2018)
- Fellow of the German Research Centre for Artificial Intelligence (2012)
- Fellow of the Association for the Advancement of Artificial Intelligence (2010)
- Fellow of the Institute of Electrical and Electronic Engineers (2008)
- Member of Academia Europaea (2008)
- Fellow of the Society for the Study of AI and Simulation of Behaviour (2006)
- Fellow of the Royal Academy of Engineering (2005)
- Fellow of the Institution of Engineering and Technology (2004)
- Chartered IT Professional (2004)
- Fellow of the British Computer Society (2003)
- Fellow of the European Artificial Intelligence Association (2003)
- Chartered Engineer (2003)

II. RESEARCH AND SCHOLARSHIP

My research focuses on developing artificial intelligence (AI) systems for large-scale, open and dynamic environments. I focus on how to endow individual autonomous agents with the ability to act and interact in flexible ways and with effectively engineering systems that contain both humans and agents.

My main scientific contributions are in three areas. First, in the analysis and design of automated negotiation strategies; including argumentation-based models for persuasive encounters and computationally-tractable strategies for complex and uncertain settings such as bilateral encounters and various types of online auction. Second, developing new mechanisms and algorithms for inter-agent cooperation and coordination. This includes coalition formation techniques based on game theory, message-passing algorithms that rely on decision and information theory to achieve effective coordination in resource-constrained environments and principled models of trust and reputation. Third, in the establishment and development of the discipline of agent-oriented software engineering. This includes laying out the key tenets of the field of agent-based computing to be considered as a serious paradigm for building complex software systems and developing associated software engineering methodologies.

I am passionate about the real-world impact of research. I was the lead system architect for one of the world's first industrial deployments of multi-agent technology, in the area of electricity transportation, and have subsequently been involved with deployments of agent-based solutions for: environmental sensor network monitoring in the Briksdalsbreen glacier in Norway and in the River Solent in Southampton; controlling Daimler-Chrysler's engine manufacturing production lines; workforce scheduling within BT; interpreting seismic data for oil exploration with BHP Billiton; managing supply chains and providing in-theatre situational awareness with BAE Systems; assessing and predicting race conditions for the 2012 British Olympic sailing team; disaster assessment and response planning with Rescue Global; analysing and predicting home energy use for those in fuel poverty with the Centre for Sustainable Energy and scheduling the repair of aircraft engines with Rolls-Royce. All these systems have been deployed — saving and improving lives, protecting the environment, making business processes more efficient, providing insights on complex data science problems, and helping to win gold medals.

I have been involved with a number of start-ups. At Aerogility, formerly Lostwax, I helped with the design and roll-out of a decision support tool suite that optimises the scheduling and maintenance activities for fleets of aircraft and allows forward simulation of strategic policy and resourcing choices. This system has been used by: BAE Systems for the Tornado, Harrier, Typhoon, Nimrod and Hawk fleets; Lockheed Martin for the F-22 Raptor and F-35 fleets; Sikorsky Aerospace Services for the S-92 fleet; and Boeing for the TLCS UK Chinook fleet. At Mentat, I advise on machine learning technologies for real-time analysis of sensor data for enterprise applications. At Contact Engine, I advise on using artificial intelligence techniques to help improve and personalise consumer interactions. At Crossword and Reliance Cyber Science, I provide strategic advice on a broad range of cyber security challenges and opportunities.

Citations

- 650 publications, including 8 books, 175 journal articles and 375 conference papers
- 73,000 citations and h-index = 115 (Google Scholar, April 2018)
- ISI Web of Science "highly cited" in both the Computer Science and the Engineering categories
- Top 25 in the world for h-index for Computer Science (www.cs.ucla.edu/~palsberg/h-number.html)

Awards

- *Int. Foundation for Autonomous Agents and Multi-Agent Systems Influential Paper Award* for "Developing multiagent systems: The Gaia methodology" ACM Trans. on Software Engineering and Methodology (2018)
- *IJCAI-JAIR Best Paper Prize* (Honourable Mention) for "Theoretical and Practical Foundations of Large-Scale Agent-Based Micro-Storage in the Smart Grid" (2016)

- *The Engineer's "Collaborate to Innovate" Award* for ORCHID (2016)
- *The Engineer's Award for Best Aerospace and Defence Project* for ALADDIN (2009)
- *BAE Systems Chairman's Award* for ALADDIN's Technology Transfer activities (2009)
- *Int. Conf. on Autonomous Agents and Multi-Systems Best Industrial Demonstrator Award* (2008)
- *Int. Foundation for Autonomous Agents and Multi-Agent Systems Special Recognition Award* for "Intelligent agents: theory and practice" The Knowledge Engineering Review (2008)
- *The Engineer's Award for Large Company/Univ. Collaboration* for ARGUS II (2007)
- *ACM Autonomous Agents Research Award* (2003) for contributions to agent-based computing
- *IEE Achievement Medal* (2000) for contributions to agent-based computing
- *Computer and Thought Award* (1999) for contributions to multi-agent systems. [The most prestigious award for a young AI researcher and first time in the award's 40-year history the recipient was based in Europe]
- Winner of ten best paper awards at international conferences; including AAMAS (x3), ISWC and IAT and twelve honourable mentions (AAAI, AAMAS (x4) and ECAI (x6))

Research Fellows and Students

- <u>Current</u>:

    PhD students: A. Augustin (14-), F. Bi (17-), E. Manino (15-), R. Pruna (14-), N. V. Q. Truong (15-)

    Research Fellows: Y. Luo (17-)

- <u>Previous</u>:

    Research Fellows: A. Byde (Royal Society Industrial Fellow) (06-09), R. Cavalcante (09-11), G. Chalkiadakis (06-11), A. Chapman (09-10), V. D. Dang (04-06), R. K. Dash (05-07), E. David (03-06), P. S. Dutta (05-06), E. Elkind (RCUK Fellow) (07-09), A. Farinelli (07-09), P. Faratin (95-00), E. Gerding (05-07), S. Ghosh (10-13), M. Gibney (97-00), M. He (04-06), G. Hines (11-13), L. M. J. Hogg (98-01), M. Johnson (94-95), N. C. Karunatillake (06-09), A. Lomuscio (99-00), X. Luo (01-06), T. Michalak (09-11), E. Munoz de Cote (08-10), V. Naroditskiy (09-14), T. J. Norman (96-99), P. Panzarasa (99-02), S. Paurobally (02-05), M. Polukarov (07-10), J. Pople (91-93), Z. Rabinovich (07-10), T. Rahwan (06-13), S. D. Ramchurn (04-09), V. Robu (09-14), A. Rogers (03-06), C. Skinner (09-10), J. Stein (94-95), S. Stein (07-15), R. Stranders (10-12), W. T. L. Teacy (06-09, 12-15), L. Tran-Thanh (11-15), P. Turner (95-03), L. Z. Varga (91-93), M. Venanzi (14-15), I. A. Vetsikas (05-11), M. Vinyals (12-14), T. Voice (09-12), P. Vytelingum (06-11), S. Williamson (09-10), F. Wu (11-14), D. Yuen (05-07), D. Zhao (14-16).

    PhD students graduated:
    1. P. Faratin (2000) "Automated service negotiation between autonomous agents"
    2. L. M. J. Hogg (2001) "Control of social reasoning in resource bounded agents"
    3. S. Kalenka (2001) "Modelling social interaction attitudes in multi-agent systems"
    4. C. B. Excelente-Toledo (2003) "The dynamic selection of coordination mechanisms in multi-agent systems"
    5. P. Anthony (2003) "Bidding agents for multiple heterogeneous on-line auctions"
    6. S. K. Bussmann (2003) "An agent-oriented design methodology for production control"
    7. M. He (2004) "Bidding strategies for autonomous trading agents" [Nominated for European AI Association's Distinguished Dissertation award]
    8. V. D. Dang (2004) "Coalition formation and operation in virtual organisations"
    9. S. D. Ramchurn (2004) "Multiagent negotiation using trust and persuasion"
    10. Y. Z. Wei (2005) "A market-based approach to recommender systems"
    11. T. D. Nguyen (2005) "A heuristic model for concurrent bilateral negotiations in incomplete information settings"

12. P. S. Dutta (2005) "Adaptive distributed resource allocation using cooperative information-sharing"
13. R. K. Dash (2006) "Distributed mechanisms for multi-agent systems: analysis and design" [Winner BCS Distinguished Dissertation award]
14. Y. K. Penya (2006) "Optimal allocation and scheduling of demand in deregulated energy markets" (registered at Technical University of Vienna)
15. T. D. Huynh (2006) "Trust and reputation in open multi-agent systems"
16. N. A. Haque (2006) "Resource allocation in networks using market-based agents"
17. N. C. Karunatillake (2006) "Argumentation-based negotiation in a social context"
18. P. Vytelingum (2006) "The structure and behaviour of the continuous double auction"
19. J. Patel (2007) "A trust and reputation model for agent-based virtual organisations"
20. W. T. L. Teacy (2007) "Agent-based trust and reputation in the context of inaccurate information sources"
21. T. Rahwan (2007) "Algorithms for coalition formation in multi-agent systems" [Winner BCS Distinguished Dissertation award]
22. V. Narayanan (2008) "A learning-based approach to modelling bilateral, adaptive agent negotiations"
23. S. Stein (2008) "Flexible provisioning for service workflows" [Honourable mention for European AI Association's Distinguished Dissertation award]
24. I. Ponka (2009) "Commitment models and concurrent negotiation strategies in dynamic service markets"
25. M. Allen-Williams (2009) "Bayesian learning for multi-agent coordination"
26. J. Kho (2009) "Decentralised control of wireless sensor networks"
27. A. C. Chapman (2009) "Control of large distributed systems using games with pure strategy Nash equilibria"
28. R. C. Kota (2009) "Decentralised methods for self-adapting agent organisations"
29. S. A. Williamson (2009) "Valuing communication in multi-agent coordination"
30. A. Papakonstantinou (2010) "Mechanism design for the elicitation of costly probabilistic estimates in next generation citizen sensor networks"
31. R Stranders (2010) "Decentralised coordination of information gathering agents" [Nominated BCS Distinguished Dissertation award]
32. B. Shi (2011) "Analysis and design of competing double auction marketplaces"
33. H. S. Packer (2011) "Evolving ontologies with online learning and forgetting algorithms"
34. A. M. Sykulski (2011) "The exploration-exploitation trade-off in sequential decision making problems"
35. K. S. Macarthur (2012) "Multi-agent coordination for dynamic, decentralised task allocation"
36. L. Tran-Thanh (2012) "Budget-limited multi-arm bandits" [Runner-up BCS Distinguished Dissertation award & Honourable mention for European AI Association's Distinguished Dissertation award]
37. F. M. D. Fave (2012) "Theory and practice of coordination algorithms exploiting the Generalised Distributive Law"
38. C. Williams (2013) "Practical strategies for agent-based negotiation in complex environments"
39. O. Pryymak (2013) "Achieving accurate opinion consensus in large multi-agent systems"
40. J. McInerney (2014) "Intelligent agents for mobile location services"
41. M. Venanzi (2014) "Trust-based algorithms for fusing crowdsourced estimates"
42. C. A. Baker (2015) "A combined mechanism for UAV explorative path planning, task allocation and predictive placement"
43. T. Panagopoulos (2016) "Efficient control of domestic space heating systems and intermittent energy resources"
44. Z. Beck (2016) "Collaborative search and rescue by heterogeneous robot teams"
45. E. Alkayal (2017) "Agents for cloud computing applications"
46. A. Zenonos (2017) "Coordinating measurements for participatory sensing applications"

47. M. M. Kahn (2018) "Speeding up GDL-based distributed constraint optimisation algorithms in cooperative multi-agent systems"

Academic visitors: J Campos (94-95), K. Decker (02-03), S. Fatima (08), A. Giovannucci (06-07), K. Larson (08), V. R. Lesser (05), M. Mamokas (17), R. A. Micello (08), E. Oliveira (98), T. Paulussen (02), T. Penya-Alba (13), I. Rahwan (02), C. Sierra (96- 97), N. Stefanovitch (09), M. Vinyals (10), Z. Wei (13-14), Z. Xu (09-10), F. Zambonelli (99-00), Y. Zick (12), C. Zhang (96)

Funding Secured [TOTAL: £25.61M]. Red = current project

Dates	Funding Body	Title	Other Investigators	Value
16-21	MoD and US Army Research Lab	Distributed Analytics and Information Sciences International Technology Alliance	S. Stein	810k
16-21	Royal Academy of Eng. & Roke Manor	Roke / Royal Academy of Engineering Research Chair in Cyber Security	V. Sassone	889k
16-18	EPSRC	Future everyday interaction with the autonomous Internet of Things	E. Costanza, J. Fischer, T. Rodden & S. Ramchurn	806k
15-18	EPSRC	Cyber security solutions for smart traffic control systems	L. Tran-Thanh & B. An	249k
11-16	EPSRC	Human-agent collectives: From foundations to applications (ORCHID)	T. Rodden, A. Rogers, L. Moreau, S. Roberts	6470k
12-16	EPSRC	Distributed sensing, control and decision making in multi-agent autonomous systems	S. Veres, A, Rogers, E. Rogers, J. Scanlan	1316k
13-16	EPSRC	International centre for infrastructure futures	B. Collins, S. Ramchurn, B. Bahaj	322k
10-13	EPSRC	Intelligent agents for home energy management	A. Rogers, N. Stanton, B.Bahaj	813k
09-14	Secure Meters Ltd	Intelligent decentralised energy-aware systems	A. Rogers	1500k
08-10	Systems Engineering for Autonomous Systems Defence Technology Centre	Control and management of mobile sensors	A. Rogers & S. Roberts	367k
05-11	EPSRC / BAE Systems	Autonomous learning agents in decentralised data and information networks (ALADDIN)	Univs Oxford, Bristol & Imperial, BAE Systems	5470k
04-10	EPSRC	Market-based control of complex computational systems	Univs. Liverpool & Birmingham, HP, BT & BAE	689k
08-09	EPSRC	Autonomic supply chains in computational economies	A. Rogers & D. MacBeth	120k
06-09	Data & Information Fusion Defence Technology Centre	Adaptive energy-aware sensor networks	A. Rogers & N. White	508k
06-09	Data & Information Fusion Defence Technology Centre	Self-organising multi-agent systems	General Dynamics, BT, QinetiQ, Imperial College	404k
02-08	DTI / EPSRC / MoD	Decentralised data fusion (ARGUS II)	Univ. Oxford, QinetiQ, BAE Systems & Rolls Royce	436k
04-07	EPSRC	Virtual organisations for eScience	Univ. Liverpool	259k
04-06	EPSRC	Southampton / Chicago Grid activity	L Moreau, D de Roure & I. Foster	40k
03-06	BAE Systems	Engineering practical multi-agent systems using game theory		73k
03-06	Data & Information Fusion Defence Technology Centre	Agent-based control systems		463k
03-06	EPSRC / DTI	Trust & reputation in Grid applications	M. Luck	124k
02-05	EPSRC	Argumentation and social influence	Univs of Aberdeen & Dundee	69k
00-05	Mobile virtual centre of excellence	Agents in future generation mobile communication systems	Many universities and industrial partners	421k
01-05	EPSRC	Mobile handsets in cooperative agent networks	D. de Roure & L. Moreau	214k

00-04	BT Research	Coalition formation for virtual organisations		138k
00-04	EPSRC / QinetiQ	Mobile agents negotiating for itinerant users in a distributed enterprise	D. de Roure, W. Hall, & L. Moreau	263k
03-04	EPSRC	Adaptive divide and conquer	Univs of Liverpool, Sheffield Birmingham, & Nottingham	60k
00-03	EU	Network of excellence on agent-based computing	M. Luck	502k
00-03	HP Research Labs	Knowledge acquisition for negotiating agents	N. Shadbolt	153k
01-03	EU	Managing intrusivess in pervasive environments	D. de Roure, M. Luck & L. Moreau	187k
98-02	EPSRC	Practical negotiation for electronic commerce	K. Binmore & M. Wooldridge	163k
98-01	DERA	Team-oriented problem solving		98k
98-00	Marconi Comms Systems	Information brokerage		120k
96-00	Nortel Networks	Negotiating agents for telecommunications		150k
97-00	EPSRC	Agent-based connection admission control	L. Cuthbert & J. Griffiths	128k
96-99	EPSRC	Using agents in a virtual laboratory	Univs Durham & Strathclyde	164k
96-99	EPSRC	Practical rationality in resource bounded agents	J. Bell	162k
95-98	BT Research	Negotiating agents for e-commerce applications		45k
96-97	BHP	Feature extraction from large scientific data sets		12k
94-97	DTI / EPSRC	Agent-based business process management	BT, ICI & Univ. Loughborough	220k
94-95	JRC ISPRA	Information economies for sharing earth observation data		10k

Patents

- US patent for negotiation technology with co-inventors at Variab.ly
- European patent for decentralised coordination with co-inventors at BAE Systems
- European and Canadian patent for flexible agent based negotiators with co-inventors at Nortel Networks
- European, US & Japanese patent for autonomous agent architecture with co-inventors at ZUNO
- European and US patent for intelligent agents in business process management with co-inventors at BT Research Labs, ICI Engineering and Loughborough University

Conference Leadership and Participation

- Co-initiator and conference co-chair of 1st Int. Conf. on the Practical Applications of Intelligent Agents and Multi-Agent Systems (1996)
- Co-initiator and conference co-chair for ACM's 1st Int. Conf. on Autonomous Agents (1997)
- Co-initiator Int. Workshop on Agent Theories, Architectures and Languages series. Co-chair 1st (1994), 2nd (1995), 3rd (1996) and 6th (1999) workshops
- Co-initiator and co-organiser of UK Special Interest Group on Multi-Agent Systems (1996-2000)
- Program co-chair 3rd Int. Conf. on Multi-Agent Systems (1998)
- General co-chair 3rd Int. Joint Conf. on Autonomous Agents and Multi-Agent Systems (2004)
- Selected keynote and major presentations:
  - Scientific Discourse, Royal Institution (London, UK) 6/17
  - Ideas Lab, World Economic Forum (Davos, Switzerland) 1/17
  - 7th Int. Conf. on Agents and AI (Lisbon, Portugal) 1/15
  - 3rd Int. Conf. on Computational Sustainability (Copenhagen, Denmark) 7/12
  - Abe Mamdani Memorial Lecture (London, UK) 2/12
  - Patterson Lecture (Warwick, UK) 1/12
  - 1st Int. W. on Uncertainty Reasoning for Sensor Networks (Belfast, Northern Ireland) 6/11
  - 3rd Int. Symposium on Intelligent Distributed Computing (Ayia Napa, Cyprus) 10/09

- o The BCS Computer Journal Lecture (London, UK) 6/09
- o 1st Int. Conf. on Visions of Computer Science (London, UK) 9/08
- o 22nd Int. Sym. on Computer and Information Science (Ankara, Turkey) 11/07
- o 8th Int. Conf. on Business Information Systems (Karlsruhe, Germany) 03/07
- o 33rd Int. Conf. on Current Trends in Computer Science (Horrachov, Czech Republic) 01/07
- o 18th Belgium-Dutch Conf. on AI (Namur, Belgium) 10/06
- o 5th IEEE/WIC/ACM Int. J. Conf. on Web Intelligence (Compiegne, France) 9/05
- o 1st Int. Workshop on Autonomous Intelligent Systems (St. Petersburg, Russia) 6/05
- o PriceWaterhouseCoopers E-Business Lect. (Leuven, Belgium) 4/05
- o Int. Workshop on Intelligent Information Management Systems (Shanghai, China) 3/05
- o 2nd Int. Conf. on AI in Engineering and Technology (Kota Kinabulu, Malaysia) 8/04
- o 1st Int. Conf. on Autonomic Computing (New York, USA) 5/04
- o The BCS Sidney Michaelson Memorial Lecture (Edinburgh, UK) 4/04
- o German Nat. Conf. on AI (Hamburg, Germany) 9/03
- o ACM Autonomous Agents Research Award Lecture (Melbourne, Australia) 7/03
- o Int. Conf. on Intelligent Information Technology (Beijing, China) 9/02
- o IFIP Intelligent Information Processing Conf. (Montreal, Canada) 8/02
- o 2nd Multiagent Systems Workshop of Central & Eastern Europe (Krakov, Poland) 9/01
- o 4th Pacific Rim Int. Workshop on Multi-Agent Systems (Taipei, Taiwan) 7/01
- o 2nd Int. Conf. on Intelligent Data Engineering (Shatin, Hong Kong) 12/00
- o 16th ACM Conf. on Object-Oriented Programming, Systems, Languages, & Applications (Minneapolis, USA) 10/00
- o 6th Pacific Rim Conf. on AI (Melbourne, Australia) 9/00
- o 1st Int. Workshop on Group Decision and Negotiation (Glasgow, UK) 7/00
- o 15th European Conf. on Cybernetics and Systems Research (Vienna, Austria) 4/00
- o 5th Int. Conf. on Practical Aspects of Agents & Multiagent Systems (Manchester, UK) 4/00
- o 18th Humphrey Davis Lecture (London, UK) 3/00
- o Distinguished Lecture Series in Software Engineering (Austin, USA) 2/00
- o 19th Int. Conf. on Expert Systems and Applied AI (Cambridge, UK) 12/99
- o 4th Int. Conf. on Cooperative Information Systems (Edinburgh, UK) 9/99
- o Computers and Thought Lecture (Stockholm, Sweden) 8/99
- o 9th European Workshop on Multi-Agent Systems (Valencia, Spain) 6/99
- o 12th Int. Conf. on Industrial and Engineering Applications of AI (Cairo, Egypt) 6/99
- o 1st Catalonian Conf. on Artificial Intelligence (Taragona, Spain) 10/98
- o European IT Conf. (Brussels, Belgium) 11/97
- o 5th Int. Conf. on Cognitive Science (San Sebastian, Spain) 7/97
- o 1st Int. Conf. on Practical Aspects of Agents & Multi-Agent Systems (London, UK) 4/96
- o 1st Int. Conf. on Multi-Agent Systems (San Francisco, USA) 6/95
- o 2nd Int. Conf. on Cooperating Knowledge Based Systems (Keele, UK) 6/94
- o Int. Conf. on Solving Complex Problems with Agent Systems (Bielefeld, Germany) 2/94
- o 1st Int. Workshop on Cooperative Knowledge Processing (Trento, Italy) 6/91
- Member steering committees for: Int. Workshop on Agent Theories, Architectures and Languages (1994-2007; chair: 2004-2007); Int. Conf. on Autonomous Agents (1997-2006); Int. Conf. on Multi-Agent Systems (1996-98); European Workshop on Multi-Agent Systems (1997-2001); Int. Conf. on Electronic Commerce (2003); and UK Workshop on Multi-Agent Systems (1996-2003)
- Co-organiser OOPSLA Workshop on Agent Oriented Methodologies (2002), IJCAI Workshop on AI and Autonomic Computing (2003), AAMAS Workshop on Smart Grid Technologies (2005), AAMAS Workshop on Defence Applications of Multi-Agent Systems (2005), Fusion Workshop on Autonomous Agents for Data and Information Fusion (2006), AAMAS Workshop on Applications of Agent Technology to Disaster Management (2006), Dagstuhl on Negotiation and Market Engineering (2006), AAMAS Workshop on Optimisation in Multi-Agent Systems (2008 and 2009)
- Programme or Senior Programme committee [SPC] member: Autonomous Agents and Multi-Agent Systems (AAMAS) (02 [SPC], 03 [SPC], 05 [SPC]; 07 [SPC]; 08 [SPC]; 09, 10 [SPC]); Int. Conf.

on Multi-Agent Systems (95, 96, 98, 00: all); Autonomous Agents (97, 98, 99 [SPC], 00 [SPC], 01 [SPC]: all); Agent Theories, Architectures and Languages (94, 95, 96, 97, 98, 99, 00, 01: all); Practical Applications of Agents and Multi-agent Systems (96, 97, 98, 99); Association for Advancement of AI (AAAI) (98, 07, 08, 10 [SPC]); European Workshop on Multi-Agent Systems (97, 98, 99, 00, 01); Australian Distributed AI Workshop (95, 96); Agent-Mediated Electronic Commerce (98, 99, 00, 02, 03, 04, 05); Agent Oriented Software Engineering (00, 01, 02, 03); Intelligent Agents for Telecoms Applications (96, 97, 98); Int. Semantic Web Conf. (02); World Wide Web Conf. (03, 06); Automated Planning and Scheduling (03); ACM E-Commerce Conf. (04, 07, 09, 10 [SPC]); Autonomic Computing (04, 05); European Conf. on AI (00 [SPC], 06)

International Competitions

- Winner US State Department's TAG Challenge on social mobilization and rapid information gathering (2012)
- Second place in RoboCup Rescue Simulation League (2010)
- Winner 1st and 2nd Int. competitions on the Lemonade Stand Game (2010 & 2011)
- Winner RoboCup Rescue infrastructure development competition (2007)
- Winner 1st and 2nd Int. Competitions on Agent Reputation and Trust (2006 & 2007)
- Winner 20th Anniversary Iterated Prisoner's Dilemma Competition (2004)
- International Trading Agent Competitions in: Market Design (3rd in 09, 1st in 07); Travel Game (3rd in 06, 4th in 05, 2nd in 02; 3rd in 01) and Supply Chain Management (2nd in 05, 6th in 04).

Service to Journals and Research Funders

- Founding editor-in-chief of the Int. Journal of Autonomous Agents and Multi-Agent Systems. [First journal in this area; 1998-2002]
- Editorial board member of: J. of Computer Science and Technology (2004-08), Int. J. of Autonomous Agents and Multi-Agent Systems (2003-13), ACM Trans. on Internet Technology (2003-09), Computational Intelligence (2003-09), Int. J. of Applied Logic (2003-11), Int. J. of Electronic Commerce Research (2002-10), Int. J. of Web Semantics (2002-10), J. of Logic and Computation (1998-11), Int. J. of AI Communications (1996-04), The Knowledge Engineering Review (1994-08), and the AISB Journal (2004-05)
- Referee for following international journals: ACM Computing Surveys, ACM Trans. on Internet Technology, ACM Trans. on Software Engineering and Methodology, Acta Informatica, Artificial Intelligence, AI Review, AI and Law, Chemical Engineering Communications, Comms. of the ACM, The Computer Journal, Computational Intelligence, Concurrent Engineering Research and Applications, Decision Support Systems, Electronic Commerce Research Journal, Int. J. Man-Machine Studies, IEE Proc. on Software, IEE Proc. on Distributed Systems Engineering, IEE Electronics Letters, IEEE Intelligent Systems, IEEE Journal on Selected Areas of Communications, IEEE Internet Computing, IEEE Trans. on Systems Man and Cybernetics, IEEE Trans. on Data and Knowledge Engineering, IEEE Spectrum, IEEE Trans. on Robotics and Automation, Information Fusion Journal, Intelligent and Cooperative Information Systems, Intelligent Systems Engineering, Journal of the ACM, Journal of AI Research, Journal of Web Semantics, Machine Learning Journal, Pervasive and Mobile Computing, Software Practice and Experience, User Modelling and User-Adaptation Interaction
- Evaluator: Academy of Finland; Australian Research Council; Biotechnology and Biological Sciences Research Council; British Academy; Canadian Research Council; Economic and Social Research Council; Engineering and Physical Sciences Research Council; European Research Council; European Science Foundation; Fulbright Scholarship Program; Helmholtz Society; Israel Science Foundation; Leverhulme Trust; Medical Research Council; Natural Environment Research Council; Netherlands Computer Science Research Foundation; Norwegian Research Council; Nuffield Foundation; Oxford Martin School; Polish Science Foundation; Royal Academy of Engineering; Royal Society; Royal Irish Academy; Science Foundation Ireland; Swiss National

Science Foundation; (US) Department of Homeland Security; (US) National Science Foundation; Welsh Government

III. EDUCATION AND OUTREACH

I have taught courses at all levels, from first year introductory to specialised final year, masters level and executive education. These courses are typically a mixture of formal lectures, small group tutorials and labs. However, in several cases, I have used a flipped classroom structured around software competitions and the presentation and discussion of research topics. I have also supervised 80+ final year and MSc projects, several of which have led to research publications with the student. I have delivered public lectures at the Royal Institution, Pint of Science and Funzing, spoken about robotics at local primary and secondary schools, and presented work at the British Science Festival, the University of Southampton Science Fair, and the Big Bang Science and Engineering Fair.

- **Courses taught** (responsible for course design and delivery): *Programming Fundamentals* introduced principles behind production of quality software and the Pascal programming language (year 1); *Programming Languages* detailed the key structures present in modern high-level programming languages (year 2); *Data Structures* explored the use and development of data structures in programming systems (year 2); *Information Systems Design* covered a broad range of topics related to the design and implementation of distributed information systems (years 3 and 4); *Artificial Intelligence* covered the theories and principles behind the design of intelligent systems (years 3 and 4); *Network Programming* introduced basic concepts of programming for the Internet (year 2); *Intelligent Agents* advanced topics in multiagent systems (years 3 and 4); *E-Business Techniques* advanced information processing techniques for E-Business applications and electronic marketplaces (years 3 and 4). Also taught on the *Executive Education* programme at Imperial College Business School (on AI, internet of things and cybersecurity) and the *British Telecom MSc* (on software engineering and human-computer interaction).

- **Examination duties**: External examiner for University of Edinburgh MSc in AI (1999-02). External examiner for Computer Science Undergraduate Degrees at Universities of York (03-05), Sabah (04-06), Bath (06-08) and Etisalat (05-07). PhD examiner at Universities of: Aberdeen, Hebrew University, Edinburgh, Essex, EPFL, Imperial College, Loughborough, Mannheim, Maastricht, Queensland Univ. of Technology, Queen Mary, Southampton, Strathclyde, Surrey, Swinburne Univ. of Technology, Sydney, Technical Univ. of Eindhoven, University College Dublin, UCL, Universitat Autonoma de Barcelona, Universitat Politecnia de Catalunya, Warwick, Westminster

IV. POLICY AND ADVISORY ROLES

Government

As the UK Government's Chief Scientific Advisor (CSA) for National Security, I worked with a range of departments and agencies both in the UK and abroad. I was the head of profession for all scientists and engineers (covering the natural, physical, information and social sciences) and championed science at board level. My team responded to urgent operational situations, delivered new technologies that helped keep the country safe and secure, and undertook longer term research on disruptive capabilities. I devised and deployed new mechanisms for delivering innovative technologies in partnership with academia, government labs and a range of companies (both large and small). I was the inaugural post holder and created this multi-agency section from scratch. I worked closely with two Government CSAs, Sir Mark Walport and Sir John Beddington, as an active member of the network of departmental CSAs and provided scientific advice across government.

- National Security Council: Science and Technology Committee (2013-)
- National Risk Register: lead the cyber risks group (2013-)

- Science Advisory Councils in the National Security area (member 2010- ; chair 2018-)
- Non-Executive Board member of CERT-UK (2014-16)
- Prime Minister's Council for Science and Technology: Report on "The age of algorithms" that led to the creation of the Alan Turing Institute (2013)
- Defence Scientific Advisory Council: Register of independent members (1997-2017)
- Government Office of Science:
  - Foresight panel member on: Cognitive Systems (2003), CyberTrust (2003), Intelligent Infrastructure Systems (2004) and The Future of Identity (2013)
  - Blackett review team member on: Cybersecurity (2010), Low Probability High Impact Events (2011), Wide-Area Biological Detection (2013), Internet of Things (2014), and Influence and Persuasion (2016)
  - Technology and Innovation Futures working group (2016)
  - Several Departmental Science reviews, including Ministry of Defence and DSTL
- Contributions to Green/White papers and reports, including:
  - "Growing the Artificial Intelligence Industry in the UK" (2017)
  - "Future Technology Trends in Security" (2017)
  - "National Security Strategy and Strategic Defence and Security Review" (2015)
  - "National Security through Technology" (2012)
  - "The UK Cyber Security Strategy" (2011)
  - "Securing Britain in an Age of Uncertainty" (2010)
- Select committees:
  - Royal College of Surgeons Commission on the "Future of Surgery" (2018)
  - House of Commons Science and Technology Committee (2017) "Algorithms in decision making"
  - House of Lords Committee on Artificial Intelligence (2017)
  - House of Commons Science and Technology Committee (2016) "Robotics and AI"

Industry

- Non-Executive Board member of Imperial College London ThinkSpace (2017-)
- Trustee of the Building Research Establishment (2015-)
- Advisor to:
  - Contact Engine (2017-)
  - BAE Systems Technology Foresight (2016-)
  - Crossword Cybersecurity (2016-)
  - Reliance Cyber Science (2016-)
  - Mentat (2016-)
  - Defence Technology Centre on Systems Engineering and Integrated Systems (2005-08)
  - IBM Autonomic Computing Initiative (2002-05)
  - Aerogility (2000-)

National Academies, Research Institutes and Professional Societies

- Royal Academy of Engineering:
  - Report on "Cyber safety and resilience: strengthening the digital systems that support the modern economy" (chair of working group) (2018)
  - MacRobert Award Committee (2017-)
  - Engineering Policy Committee (2016-)
  - Report on "Connecting data: driving productivity and innovation" (2015)
  - Research and Secondments Committee (2008-11)
  - Membership Panel (2008-11)
  - Industrial Secondment Scheme (Chair: 2008-10)

- Royal Society:
    - Report on "Machine learning: the power and promise of computers that learn by example" (2017)
    - Newton Prize Committee (2017-)
    - University Research Fellows Appointment Panel (2009-13)
- IEE: IT Sector Panel (2002-06)
- UK Computing Research Committee: Member (2004-); Membership Committee (2007-10)
- Founding Director Int. Foundation on Autonomous Agents and Multi-Agent Systems (1998-2012)
- European Network of Excellence in Agent-Based Computing: Management Board (1999-2002)
- Scientific Advisory Boards
    - Alan Turing Institute (2018-)
    - Southampton Univ. Academic Centre of Excellence in Cyber Security Research (2012-16)
    - Imperial College Institute for Security Science and Technology (2011-16)
    - UK National Research and Training Initiative in Large-Scale Complex IT Systems (2007-12)
    - Web Science Research Initiative (2006-10)
    - German Research Centre for AI (DFKI) (2000-12)

Funders

- Engineering and Physical Sciences Research Council
    - Council member (2018-)
    - Strategic advisor for Autonomous and Intelligent Systems programme (2012-16)
    - Information Technology Computing College (1997-2015)
- Singapore Sustainable Built Environment Research Council: Strategic Research Panel (2018-)
- RCUK Partnership for Conflict, Crime and Security Research programme: Advisor (2013-18)
- RCUK Global Uncertainties Programme: Strategic assessor (2012-13)
- European Research Council: Informatics Panel for Advanced Fellowships (2008-12)

V. UNIVERSITY LEADERSHIP

At Imperial, I am a member of the President's Board (which plans for and addresses issues of broad, strategic, and College-wide significance; identifying, endorsing and approving strategic initiatives, governance matters, major policies, and the financial strategy) and the Provost's Board (which is responsible for the delivery of the College's core academic missions of education, research and translation; including oversight of the quality and efficacy of education and research; recruitment, development and retention of academic and research staff; and student life and well-being). I am also the College lead on two major building projects (total budget £200m), budget holder for our HEIF funding, and a member of the transformation investment board which is responsible for the system and process changes associated with enhancing our academic and professional support services. I have previously been a head of section (18 academics and 100 researchers), head of a large department (300 staff, 1800 students) and an associate dean for research and enterprise for engineering, science and maths.

As Vice-Provost for Research and Enterprise at Imperial, I am responsible for developing and delivering the College's research and enterprise strategy across the Faculties of Engineering, Natural Sciences, Medicine and the Business School. The total research budget is £475 million, we engage with 500+ corporate partners and have 130 active start-ups. Our overarching aim is to achieve enduring excellence for the benefit of society and we have the greatest concentration of high-impact research of any major UK university (according to REF 2014). My role is to enhance the quality, impact, management and delivery of research and the main areas of focus include: nurturing research talent, sustaining world-class core academic disciplines, fostering multidisciplinary research, establishing effective partnerships and ensuring our research informs, influences and impacts. To enable this, we need to have world-class research facilities and infrastructure, a vibrant and healthy

research environment and adequate research funding. In terms of enterprise, my main areas of focus include our corporate partnerships, technology transfer and spin outs, developing our entrepreneurial eco-system and technology foresight. New initiatives include re-invigorating the global challenge institutes, setting up 25 Imperial College Networks and Centres of Excellence, establishing the excellence fund for frontier research and the EU partners fund, redesigning the College ethics functions, signing the College up to the San Francisco Declaration on Research Assessment, establishing the College as a significant contributor to the Global Challenge Research Fund, facilitating the development of the Enterprise Lab and the Imperial College Advanced Hackspace, and helping establish the Techcelerate programme.

Imperial College

2017-	Chair of Michael Uren Biomedical Engineering Research Hub Strategic Board
2017-	Stakeholder Board for the London Institute for Medical Sciences Construction
2017-	Equality, Diversity and Inclusion Strategy Group
2017-	Transformation and Investment Board
2017-	Audit and Risk Committee
2016-	President's Board
2016-	Provost's Board
2016-	Chair Cross College Research Proposals Review Group which, amongst other things, selects the President's PhD Scholars and the Imperial College Research Fellows, and allocates the Impact Acceleration Account Funds.

University of Southampton

2015-16	Head of the Electronics and Computer Science Department (300 staff, including 100+ academics; 1800 students; annual budget £40m)
2011-15	Founding Head of the Agents, Interaction and Complexity Group (14 academics, 50 RFs and PhD students)
2008-10	Associate Dean (Research and Enterprise) for Faculty of Engineering, Science and Mathematics
2008-10	University's Research and Enterprise Leadership Group
2008-10	Chair Faculty Research and Enterprise Committee
2008-10	Faculty Strategy and Policy Committee
2008-10	Member of Senate
2007	Responsible for Computer Science RAE return (rated joint second in terms of GPA)
2007-10	University's Knowledge Creation and Transfer Management Board
2004-07	Advisory Panel for University's Research Support Office
2003-08	Deputy Head of School (Research)
2001-03	Chair School's Research Committee
2001-11	Head Intelligence, Agents, Multimedia Group (18 academics, 100 RFs and PhD students)
2001	Responsible for Computer Science RAE return (move from 5 to 5*)

Queen Mary University of London

1995-99	Head of the Intelligent Systems Group (4 academics, 12 RFs and PhD students)

VI. PUBLICATIONS

BOOKS

1. H. Gimpel, **N. R. Jennings**, G. E. Kersten, A. Okenfels and C. Weinhardt (eds.) (2008) *"Negotiation, auctions and market engineering"* Springer.

2. S. Bussmann, **N. R. Jennings** and M. Wooldridge (2004) "*Multiagent systems for manufacturing control: A design methodology*" Series on Agent Technology, Springer.
3. **N. R. Jennings** and Y. Lesperance (eds.) (2000) "*Intelligent agents VI*" Springer.
4. **N. R. Jennings** and M. Wooldridge (eds.) (1998) "*Agent technology: foundations, applications and markets*" Springer.
5. J. P. Müller, M. Wooldridge and **N. R. Jennings** (eds.) (1997) "*Intelligent agents III*" Springer.
6. G. M. P. O'Hare and **N. R. Jennings** (eds.) (1996) "*Foundations of distributed artificial intelligence*" John Wiley & Sons.
7. M. J. Wooldridge and **N. R. Jennings** (eds.) (1995) "*Intelligent agents*" Springer.
8. **N. R. Jennings** (1994) "*Cooperation in industrial multi-agent systems*" World Scientific Publishing.

JOURNALS

1. V. Robu, M. Vinyals, A. Rogers and **N. R. Jennings** (2018) "Efficient buyer groups with prediction-of-use electricity tariffs" *IEEE Trans on Smart Grids*.
2. M. M. Khan, L. Tran-Thanh, S. D. Ramchurn and **N. R. Jennings** (2018) "Speeding up GDL-based message passing algorithms for large-scale DCOPs" *The Computer Journal.*
3. A. Zenonos, S. Stein and **N. R. Jennings** (2018) "Coordinating measurements for environmental monitoring in uncertain participatory sensing settings" *Journal of AI Research* **61** 433-474.
4. R. T. Pruna, M. Polukarov and **N. R. Jennings** (2018) "Avoiding regret in an agent-based asset pricing model" *Finance Research Letters* **24** 273-277.
5. Z. Beck, W. T. L Teacy, A. Rogers and **N. R. Jennings** (2018) "Collaborative online planning for automated victim search in disaster response applications" *Robotics and Autonomous Systems* **100** 251-266.
6. R. Meir, M. Polukarov, J. S. Rosenschein and **N. R. Jennings** (2017) "Acyclic games and iterative voting" *Artificial Intelligence* **252** 100-122.
7. S. Stein, E. H. Gerding, A. Nedea, A. Rosenfeld and **N. R. Jennings** (2017) "Market interfaces for electric vehicle charging" *Journal of AI Research* **59** 175-227.
8. A. A Panagopoulos, S. Maleki, M. Venanzi, A. Rogers and **N. R. Jennings** (2017) "Advanced economic control of electricity-based space heating systems in domestic coalitions with shared intermittent energy resources" *ACM Trans. on Intelligent Systems and Technology* **8** (4) 59.1-59.27.
9. S. D. Ramchurn, T. D. Huynh, Y. Ikuno, J. Flann, L. Moreau, **N. R. Jennings**, J. E. Fischer, W. Jiang, T. Rodden, E. Simpson, S. Reece, S. J. Roberts and F. Wu (2016) "HAC-ER: A disaster response system based on human-agent collectives" *Journal of AI Research* **57** 661-708.
10. V. Robu, G. Chalkiadakis, R. Kota, A. Rogers and **N. R. Jennings** (2016) "Rewarding cooperative virtual power plant formation using scoring rules" *Energy* **117** (1) 19-28.
11. A. Alan, E. Costanza, S. D. Ramchurn, J. Fischer, T. Rodden and **N. R. Jennings** (2016) "Tariff Agent: Interacting with a future smart energy system at home" *ACM Trans. on Computer-Human Interaction* **23** (4) 25.1-25.28.
12. M. Venanzi, J. Guiver, P. Kohli and **N. R. Jennings**, (2016) "Time-sensitive Bayesian aggregation for crowdsourcing" *Journal of AI Research* **56** 517-545.
13. B. Shi, E. H. Gerding and **N. R. Jennings** (2016) "An equilibrium analysis of trading across multiple double auction marketplaces using fictitious play" *Electronic Commerce Research and Applications* **17** (3) 134-149.
14. S. D. Ramchurn, F. Wu, J. Fischer, S. Reece, W. Jiang, S. J. Roberts, T. Rodden and **N. R. Jennings** (2016) "Human-agent collaboration for disaster response" *Journal of Autonomous Agents and Multi-Agent Systems* **30** (1) 82-111.
15. M de Weerdt, E. H. Gerding, S. Stein, V. Robu and **N. R. Jennings** (2015) "Intention-aware routing of electric vehicles" *IEEE Trans. on Intelligent Transportation Systems* **17** (5) 1472-1482.
16. T. Rahwan, T. Michalak, E. Elkind, M. Wooldridge and **N. R. Jennings** (2015) "A hybrid exact algorithm for complete set partitioning" *Artificial Intelligence* **230** 14-50.
17. T. Rahwan, T. P. Michalak, M. Wooldridge and **N. R. Jennings** (2015) "Coalition structure generation" *Artificial Intelligence* **229** 139-174*.*
18. S. Ghosh, S. Reece, A. Rogers, S. J. Roberts, A. Malibari and **N. R. Jennings** (2015) "Modelling the thermal dynamics of buildings: a latent force model approach" *ACM Trans. on Intelligent Systems and Technology* **6** (1) 7.1-7.27.
19. T. Michalak, P. Szczepanski, T. Rahwan, A. Chrobak, S. Brânzei, M. Wooldridge and **N. R. Jennings** (2014) "Implementation and computation of a value for generalized characteristic function games" *ACM Trans on Economics and Computation* **2** (4) 16.1-16.35.
20. **N. R. Jennings**, L. Moreau, D. Nicholson, S. Ramchurn, S. Roberts, T. Rodden and A. Rogers (2014) "On human-agent collectives" *Communications of ACM* **57** (12) 80-88.

21. V. Naroditskiy, **N. R. Jennings**, P. van Hentenryck and M. Cebrian (2014) "Crowdsourcing contest dilemma" *Royal Society Interface* **11** (99) 20140532*.*

22. S. Reece, S. J. Roberts, S. Ghosh, A. Rogers and **N. R. Jennings** (2014) "Efficient state-space inference of periodic latent force models" *Journal of Machine Learning Research* **15** 2337-2397.

23. F. Biermann, V. Naroditskiy, T. D. Nguyen, M. Polukarov, A. Rogers and **N. R Jennings** (2014) "Task assignment with controlled and autonomous agents" *Mathematical Social Sciences* **71** 116-121.

24. G. de Clippel, V. Naroditskiy, M. Polukarov, A. Greenwald and **N. R. Jennings** (2014) "Destroy to save" *Games and Economic Behaviour* **86** 392-404.

25. L. Tran-Thanh, S. Stein, A. Rogers and **N. R. Jennings** (2014) "Efficient crowdsourcing of unknown experts using multi–armed bandits" *Artificial Intelligence* **214** 89-111.

26. A. C. Chapman, D. S. Leslie, A. Rogers and **N. R. Jennings** (2014) "Learning in unknown reward games: application to sensor networks" *The Computer Journal* **57** (6) 875-892.

27. M. Vinyals, K. S. Macarthur, A. Farinelli, S. D. Ramchurn and **N. R. Jennings** (2014) "A message-passing approach to decentralised parallel machine scheduling" *The Computer Journal* **57** (6) 856-874.

28. A. Farinelli, A. Rogers and **N. R. Jennings** (2014) "Agent-based decentralised coordination for sensor networks using the max-sum algorithm" *Journal of Autonomous Agents and Multi-Agent Systems* **28** (3) 337-380*.*

29. J. McInerney, S. Stein, A. Rogers and **N. R. Jennings** (2013) "Breaking the habit: Measuring and predicting departures from routine in individual human mobility" *Pervasive and Mobile Computing* **9** (6) 808-822.

30. V. Robu, E. H. Gerding, S. Stein, D. C. Parkes, A. Rogers and **N. R. Jennings** (2013) "An online mechanism for multi-unit demand and its application to plug-in hybrid electric vehicle charging" *Journal of AI Research* **48** 175-230.

31. A. Rutherford, M. Cebrian, I. Rahwan, S. DSouza, J. McInerney, V. Naroditskiy, M. Venanzi, **N. R. Jennings**, J. R. de Lara, E. Wahlstedt and S. U. Miller (2013) "Targeted social mobilization in a global manhunt" PLoS ONE **8** (9) e74628.

32. M. Vasirani, R. Kota, R. L. G. Cavalcante, S. Ossowski and **N. R. Jennings** (2013) "An agent-based approach to virtual power plants of wind generators and electric vehicles" *IEEE Trans on Smart Grids* **4** (3) 1314-1322.

33. A. C. Chapman, D. S. Leslie, A. Rogers and **N. R. Jennings** (2013) "Convergent learning algorithms for unknown reward games" *SIAM J. of Control and Optimisation* **51** (4) 3154-3180

34. T. Baarslag, K. Fujita, E. H. Gerding, K. Hindriks, T. Ito, **N. R. Jennings**, C. Jonker, S. Kraus, R. Lin, V. Robu and C. R. Williams (2013) "Evaluating practical negotiating agents: Results and analysis of the 2011 international competition" *Artificial Intelligence* **198** 73-103*.*

35. T. P. Michalak K. V. Aadithya, P. L. Szczepanski, B. Ravindran and **N. R. Jennings** (2013) "Efficient computation of the Shapley value for game-theoretic network centrality" *Journal of AI Research* **46** 607-650.

36. I. Rahwan, S. DSouza, A. Rutherford, V. Naroditskiy, J. McInerney, M. Venanzi, **N. R. Jennings** and M. Cebrian (2013) "Global manhunt pushes the limits of social mobilisation" *IEEE Computer* **46** (4) 68-75.

37. R. Stranders, E Munoz de Cote, A Rogers and **N. R. Jennings** (2013) "Near-optimal continuous patrolling with teams of mobile information gathering agents" *Artificial Intelligence* **195** 63-105.

38. Z. Rabinovich, V. Naroditskiy, E. H. Gerding and **N. R. Jennings** (2013) "Computing pure Bayesian Nash equilibria in games with finite actions and continuous types" *Artificial Intelligence* **195** 106-139.

39. B. Shi, E. H. Gerding, P. Vytelingum and **N. R. Jennings** (2013) "An equilibrium analysis of market selection strategies and fee strategies in competing double auction marketplaces" *Journal of Autonomous Agents and Multi-Agent Systems* **26** (2) 245-287.

40. V. Naroditskiy, M. Polukarov and **N. R. Jennings** (2013) "Optimal payments in dominant strategy mechanisms for single-parameter domains" *ACM Trans on Economics and Computation* **1** (1) 4.1-4.21*.*

41. M. A. Osborne, S. J. Roberts, A. Rogers and **N. R. Jennings** (2012) "Real-time information processing of environmental sensor network data using Bayesian Gaussian processes" *ACM Trans on Sensor Networks* **9** (1) 1.1-1.32.

42. S. S. Fatima, M. Wooldridge and **N. R. Jennings** (2012) "A heuristic approximation method for the Banzhaf index for voting games" *Int. Journal of Multi-Agent and Grid Systems* **8** (3) 257-274*.*

43. V. Naroditskiy, I. Rahwan, M. Cebrian and **N. R. Jennings** (2012) "Verification in referral-based crowdsourcing" *PLoS ONE* **7** (10) e45924. [doi:10.1371/journal.pone.0045924]

44. T. Voice, M. Polukarov and **N. R. Jennings** (2012) "Graph coalition structure generation" *Journal of AI Research* **45** 165-196.

45. W. T. L. Teacy, **N. R. Jennings**, A. Rogers and M. Luck (2012) "A hierarchical Bayesian trust model based on reputation and group behaviour" *Artificial Intelligence* **193** 149-185.

46. R. Kota, N. Gibbins and **N. R. Jennings** (2012) "Decentralised approaches for self-organising agent systems" *ACM Trans on Autonomous and Adaptive Systems* **7** (1) 1.1-1.28.

47. T. Rahwan, T. Michalak, M. Wooldridge and **N. R. Jennings** (2012) "Anytime coalition structure generation in multi-agent systems with positive or negative externalities" *Artificial Intelligence* **186** 95-122.

48. L. Tran-Thanh, A. Rogers and **N. R. Jennings** (2012) "Long-term information collection with energy harvesting wireless sensors: A multi-armed bandit based approach" *Journal of Autonomous Agents and Multi-Agent Systems* **25** (2) 352-394.

49. S. D. Ramchurn, P. Vytelingum, A. Rogers and **N. R. Jennings** (2012) "Putting the 'smarts' into the smart grid: A grand challenge for artificial intelligence" *Comms of the ACM* **55** (4) 86-97.

50. X. Luo, C. Miao, **N. R. Jennings**, M. He and Z. Shen (2012) "KEMNAD: A knowledge engineering methodology for negotiating agent development" *Computational Intelligence* **28** (1) 51-105.

51. P. Vytelingum, T. D. Voice, S. D. Ramchurn, A. Rogers and **N. R. Jennings** (2011) "Theoretical and practical foundations of large-scale agent-based micro-storage in the smart grid" *Journal of AI Research* **42** 765-813. [Honourable mention for the 2016 IJCAI-JAIR best paper prize]

52. A. C. Chapman, A. C. Rogers, D. S. Leslie and **N. R. Jennings** (2011) "A unifying framework for iterative approximate best response algorithms for distributed constraint optimisation problems" *The Knowledge Engineering Review* **26** (4) 411-444*.*

53. S. Stein, E. Gerding, A. Rogers, K. Larson and **N. R. Jennings** (2011) "Algorithms and mechanisms for procuring services with uncertain durations using redundancy" *Artificial Intelligence* **175** 2021-2060*.*

54. R. Cavalcante, A. Rogers, I. Yamada and **N. R. Jennings** (2011) "Distributed asymptotic minimization of sequences of convex functions by a broadcast adaptive subgradient method" *IEEE J. of Selected Topics in Signal Processing* **5** (4) 739-753*.*

55. S. D. Ramchurn, P. Vytelingum, A. Rogers and **N. R. Jennings** (2011) "Agent-based homeostatic control for green energy in the smart grid" *ACM Trans. on Intelligent Systems and Technology* **2** (4) 35.1-35.28

56. S. Stein, T. R. Payne and **N. R. Jennings** (2011) "Robust execution of service workflows using redundancy and advance reservations" *IEEE Trans. on Services Computing* **4** (2) 125-139.

57. A. C. Chapman, A. Rogers and **N. R. Jennings** (2011) "Benchmarking hybrid algorithms for distributed constraint optimisation games" *Journal of Autonomous Agents and Multi-Agent Systems* **22** (3) 385-414.

58. A. Rogers, A. Farinelli, R. Stranders and **N. R. Jennings** (2011) "Bounded approximate decentralised coordination via the max-sum algorithm" *Artificial Intelligence* **175** (2) 730-759

59. A. Papakonstantinou, A. Rogers, E. H. Gerding and **N. R. Jennings** (2011) "Mechanism design for the truthful elicitation of costly probabilistic estimates in distributed information systems" *Artificial Intelligence* **175** (2) 648-672.

60. S. S. Fatima, M. Wooldridge and **N. R. Jennings** (2010) "Sequential auctions for common value objects with budget constrained bidders" *Int. J of Multiagent and Grid Systems* **6** (5) 403-414.

61. A. C. Chapman, R. A. Micillo, R. Kota and **N. R. Jennings** (2010) "Decentralised dynamic task allocation using overlapping potential games" *The Computer Journal* **53** (9) 1462-1477.

62. S. D. Ramchurn, A. Farinelli, K. S. Macarthur, M. Polukarov and **N. R. Jennings** (2010) "Decentralised coordination in RoboCup rescue" *The Computer Journal* **53** (9) 1447-1461.

63. J. Kho, L. Tran-Thanh, A. Rogers and **N. R. Jennings** (2010) "An agent-based distributed coordination mechanism for wireless visual sensor nodes using dynamic programming" *The Computer Journal* **53** (8) 1277-1290.

64. G. Chalkiadakis, E. Elkind, E. Markakis, M. Polukarov and **N. R. Jennings** (2010) "Cooperative games with overlapping coalitions" *Journal of AI Research* **39** 179-216.

65. Z. Rabinovich and **N. R. Jennings** (2010) "A hybrid controller based on the egocentric perceptual principle" *Robotics and Autonomous Systems* **58** (9) 1039-1048.

66. I. A. Vetsikas and **N. R. Jennings** (2010) "Bidding strategies for realistic multi-unit sealed bid auctions" *Journal of Autonomous Agents and Multi-Agent Systems* **21** (2) 265-291.

67. P. Padhy, R. K. Dash, K. Martinez and **N. R. Jennings** (2010) "A utility-based adaptive sensing and multi-hop communication protocol for wireless sensor networks" *ACM Trans. on Sensor Networks* **6** (3), 27.1-27.39.

68. T. Rahwan, S. D. Ramchurn, A. Giovannucci and **N. R. Jennings** (2009) "An anytime algorithm for optimal coalition structure generation" *Journal of AI Research* **34** 521-567.

69. N. C. Karunatillake, **N. R. Jennings**, I. Rahwan and P. McBurney (2009) "Dialogue games that agents play within a society" *Artificial Intelligence* **173 (**9-10) 935-981*.*

70. S. D. Ramchurn, R. K. Dash, A. Giovannucci, J. Rodriguez-Aguilar, C. Mezzetti and **N. R. Jennings** (2009) "Trust-based mechanisms for robust and efficient task allocation in the presence of execution uncertainty" *Journal of AI Research* **35** 119-159.

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74. J. Kho, A. Rogers and **N. R. Jennings** (2009) "Decentralised control of adaptive sampling in wireless sensor networks" *ACM Trans on Sensor Networks* **5** (3) 19.1-19.35.

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