

ELIZABETH BLACK

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Summary of Research Interests

I'm interested in how intelligent agents (machines and humans) can work together, make joint decisions, influence one another and reach agreements. My research is mainly focussed in the following areas:

- Argumentation theoretic models of agent reasoning, communication and dialogue.
- Strategic considerations for argumentation-based dialogues.
- Relevance and persuasiveness of arguments.
- How an agent can develop and use a model of another agent.
- Normative agent systems.
- Applications of artificial intelligence in healthcare informatics.

Education

- 2002 – 2006 PhD Computer Science (awarded 31 July 2007), Department of Computer Science, University College London, UK.
Thesis: *A Generative Framework for Argumentation-Based Inquiry Dialogues*.
Supervisors: Professor Anthony Hunter (Department of Computer Science, UCL) and Professor John Fox (Department of Engineering Science, University of Oxford).
- 1998 – 2002 MSci Computer Science with Cognitive Science (First class honours), Department of Computer Science, University College London, UK.
Dissertation: *An Agent Architecture for a Medical Decision Support System*.

Employment

- 2015 – Senior Lecturer, Agents and Intelligent Systems Group, Department of Informatics, King's College London, UK.
- 2011 – 2015 Lecturer, Agents and Intelligent Systems Group, Department of Informatics, King's College London, UK.
- 2010 – 2011 Marie Curie Intra-European Fellow, Intelligent Systems Group, Utrecht University, Netherlands.
- 2007 – 2010 Post-Doctoral Research Assistant, Department of Engineering Science, University of Oxford, UK.

Funded projects

- 2015 – 2016 Principal investigator of Engineering and Physical Sciences Research Council project, *Planning an Argument* (EP/M01892X/1), £98,726.
- 2014 – 2015 Co-investigator of Innovate UK Collaborative Research and Development project, *Commodity Market Transparency Through Data Exploration* (TS/M002365/1), £49,821.
- 2010 – 2012 Marie Curie Intra-European Fellowship for Career Development, *Argumentation Strategies* (253911), €136,000.

PhDs supervised

- Dr Christos Hadjinikolis, awarded March 2015: *Persuasion Dialogues and Opponent Modelling*.
- Dr Andrada Voinitchi, awarded January 2016: *Disrupting Agents' Plans*.

Other professional activities

Organising committees

- Co-Chair of the *Fourth International Workshop on Theory and Applications of Formal Argumentation Theory* (TAFA 2017), held as an IJCAI workshop in Melbourne, Australia, 2017.
- Co-Chair of the *Third International Workshop on Theory and Applications of Formal Argumentation Theory* (TAFA 2015), held as an IJCAI workshop in Buenos Aires, Argentina, 2015.
- Local Chair of *Norms, Actions, Games* workshop (NAG 2014), held at King's College London, 2014.
- Co-Chair of the *Second International Workshop on Theory and Applications of Formal Argumentation Theory* (TAFA 2013), held as an IJCAI workshop in Beijing, China, 2013.
- Programme Co-Chair and Local Co-Chair of the *15th European Agent Systems Summer School* (EASSS 2013), held at King's College London, 2013.
- Programme Co-Chair and Local Co-Chair of the *15th Advanced Course on Artificial Intelligence* (ACAI 2013), held at King's College London, 2013.

Editorial board membership

- Member of the Editorial Board for the *Artificial Intelligence* journal since 2015.

Senior programme committee membership

- *International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS 2017, AAMAS 2018).
- *International Joint Conference on Artificial Intelligence* (IJCAI 2017).

Programme committee membership

- *Association for the Advancement of Artificial Intelligence Conference* (AAAI 2015, AAAI 2016).
- *International Joint Conference on Artificial Intelligence* (IJCAI 2011, IJCAI 2013, IJCAI 2015, IJCAI 2018).
- *European Conference on Artificial Intelligence* (ECAI 2014, ECAI 2016).
- *International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS 2012, AAMAS 2015).
- *International Conference on Principles of Knowledge Representation and Reasoning* (KR 2012, KR 2016).
- *International Conference on Computational Models of Argument* (COMMA 2012, COMMA 2016, COMMA 2018).
- *International Workshop on the Theory and Applications of Formal Argumentation* (TAFA 2011).
- *International Workshop on Systems and Algorithms for Formal Argumentation* (SAFA 2016).
- *European Workshop on Multi-Agent Systems* (EUMAS 2010, EUMAS 2011, EUMAS 2014, EUMAS 2015).
- *International Workshop on Argumentation and Multi-Agent Systems* (ArgMAS 2009, ArgMAS 2010, ArgMAS 2011, ArgMAS 2012, ArgMas 2013, ArgMAS 2014, ArgMAS 2015).
- *International Workshop on Computational Logic in Multi-Agent Systems* (CLIMA 2013).
- *International Workshop on Conflict Resolution in Decision Making* (CORDEMA 2013).
- *Sixth Starting AI Researchers Symposium* (STAIRS 2012).

Journal and book chapter reviewing

- *Journal of Artificial Intelligence Research*.
- *Knowledge and Information Systems*.
- *Artificial Intelligence*.
- *Autonomous Agents and Multi-Agent Systems*.
- *Journal of Logic and Computation*.
- *International Journal on Artificial Intelligence Tools*.
- *AI Communications*.
- C. Reed and C. Tindale (eds.). *Dialectics, Dialogue and Argumentation*. College Publications, London, 2010.

Grant proposal reviewing

- EPSRC.
- Leverhulme UK.
- Netherlands Organisation for Scientific Research.

PhD examinations

- External examiner for University of Liverpool, 2013.

Publications

Journal special issues and books

1. E. Black, S. Modgil and N. Oren (eds.). *Theory and Applications of Formal Argumentation: Fourth International Workshop, TAFA 2017, Melbourne, VIC, Australia, August 19-20, 2017, Revised Selected papers*. Springer LNAI 10757, 2018.
2. E. Black, S. Modgil and N. Oren (eds.). *Theory and Applications of Formal Argumentation: Third International Workshop, TAFA 2015, Buenos Aires, Argentina, July 25-26, 2015, Revised Selected papers*. Springer LNAI 9524, 2015.
3. E. Black, S. Modgil and N. Oren (eds.). *Theory and Applications of Formal Argumentation: Second International Workshop, TAFA 2013, Beijing, China, August 3-5, 2013, Revised Selected papers*. Springer LNAI 8306, 2013.
4. E. Black, L. Floridi and A. Third (eds.). Special issue on the nature and scope of information, *Synthese*, Vol. 175, Supplement 1, 2010.

Invited papers and book chapters

5. E. Black and A. Hunter. Executable logic for dialogical argumentation. In *Proceedings of the 20th European Conference on Artificial Intelligence*, pp. 15-20, 2012.
6. J. Fox, E. Black, I. Chronakis, R. Dunlop, V. Patkar, M. South and R. Thomson. From guidelines to careflows: modelling and supporting complex clinical processes. In A. Ten Teije et al. (eds.), *Computer-based Medical Guidelines and Protocols: A Primer and Current Trends*, pp. 44-62, IOS Press, 2008.

Peer-reviewed journal publications

7. N. Criado, E. Black and M. Luck. A coherence maximization process for solving normative inconsistencies. *Journal of Autonomous Agents and Multi-Agent Systems*. In press. Published online June 2015.
8. E. Black and A. Hunter. A relevance-theoretic framework for constructing and deconstructing enthymemes. *Journal of Logic and Computation*, 22(1): 55-78, 2012.
9. J. Fox, D. Glasspool, V. Patkar, M. Austin, E. Black, M. South, D. Robertson and C. Vincent. Delivering clinical decision support services: There is nothing as practical as a good theory. *Journal of Biomedical Informatics*, 43(5):831-843, 2010.
10. E. Black and A. Hunter. An inquiry dialogue system. *Autonomous Agents and Multi-Agent Systems*. 19(2):173-209, 2009.

11. J. Fox, A. Alabassi, V. Patkar, T. Rose and E. Black. An ontological approach to modelling tasks and goals. *Computers in Biology and Medicine*. 36(7-8):837-856, 2006.

Peer-reviewed conference, workshop and symposia publications

12. E. Black, A. J. Coles and C. Hampson. Planning for persuasion. In *Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems*, International Foundation for Autonomous Agents and Multiagent Systems, p. 933 - 942, 2017.
13. J. Murphy, I. Sassoan, M. Luck and E. Black. An investigation of argumentation characteristics. In *Proceedings of the 4th International Workshop on Theory and Applications of Formal Argumentation*, 2017.
14. D. Kohan Marzagão, J. Murphy, A. Young, M. Gauy, M. Luck, P. McBurney and E. Black. Team persuasion. In *Proceedings of the 4th International Workshop on Theory and Applications of Formal Argumentation*, 2017.
15. E. Black, A. J. Coles and C. Hampson. Optimal simple strategies for persuasion. In *ECAI 2016: 22nd European Conference on Artificial Intelligence 29 August-2 September 2016, The Hague, The Netherlands*, IOS Press, Vol. Frontiers in Artificial Intelligence and Applications 285, p. 1736 - 1737, 2016.
16. J. Murphy, E. Black and M. Luck. A heuristic strategy for persuasion dialogues. In *Computational Models of Argument: Proceedings of COMMA 2016*, IOS Press, Vol. Frontiers in Artificial Intelligence and Applications 287, p. 411 - 418, 2016.
17. E. I. Sklar and E. Black. Toward a model for handling noise in human-robot communication. In *Proceedings of the 5th International Workshop on Human-Agent Interaction Design and Models*, 2016.
18. E. Black and E. I. Sklar. Computational argumentation to support multi-party human-robot interaction: challenges and advantages. In *Proceedings of the Groups in Human-Robot Interaction Workshop: A workshop at the IEEE International Symposium on Robot and Human Interactive Communication*, 2016.
19. E. Black and A. Hunter. Reasons and options for updating an opponent model in persuasion dialogues. In *Proceedings of the Third International Workshop on the Theory and Applications of Formal Argumentation*, pp. 21-39, Springer LNAI 9524, 2015.
20. J. Murphy, E. Black and M. Luck. Arguing from similar positions: an empirical analysis. In *Proceedings of the Third International Workshop on the Theory and Applications of Formal Argumentation*, pp. 177-193, Springer LNAI 9524, 2015.
21. C. Hadjinikolis, S. Modgil and E. Black. Building support-based opponent models in persuasion dialogues. In *Proceedings of the Third International Workshop on the Theory and Applications of Formal Argumentation*, pp. 128-145, Springer LNAI 9524, 2015.
22. E. Black, A. J. Coles and S. Bernardini. Automated planning of simple persuasion dialogues. In *Proceedings of the the 15th International Workshop on Computational Logic in Multi-Agent Systems*, pp. 87-104, Springer LNAI 8624, 2014.
23. A. Voinitchi, E. Black and M. Luck. Towards disrupting teams' plans. In *Proceedings of the 17th International Workshop on Coordination, Organisations, Institutions and Norms*, 2014.
24. A. Voinitchi, E. Black and M. Luck. On the disruption of plans. In *Proceedings of the 31st Workshop of the UK Planning & Scheduling Special Interest Group*, 2013.
25. E. Black, P. McBurney and S. Zschaler. Toward agent dialogue as a tool for capturing software design discussions. In *Proceedings of the Second International Workshop on the Theory and Applications of Formal Argumentation*, pp. 95-110, Springer LNAI 8306, 2013.
26. C. Hadjinikolis, S. Modgil, E. Black, P. McBurney and Y. Siantos. Opponent modelling in persuasion dialogues. In *Proceedings of the 23rd International Joint Conference on Artificial Intelligence*, pp. 164-170, 2013. **Awarded best poster prize.**

27. A. Voinitchi, E. Black and M. Luck. How can we disrupt teams? In *Proceedings of the Second Imperial College Computing Student Workshop*, 2012.
28. C. Hadjinikolis, S. Modgil, E. Black and P. McBurney. Mechanisms for opponent modelling. In *Proceedings of the Second Imperial College Computing Student Workshop*, 2012.
29. C. Hadjinikolis, S. Modgil, E. Black, P. McBurney and M. Luck. Investigating strategic considerations in persuasion dialogue games. In *Proceedings of the Sixth Starting Artificial Intelligence Research Symposium*, 2012.
30. E. Black and K. Bentley. An empirical study of a deliberation dialogue system. In *Proceedings of the First International Workshop on the Theory and Applications of Formal Argumentation*, pp. 132-146, Springer LNAI 7132, 2011.
31. L. Riley, K. Atkinson, T. Payne and E. Black. An implemented dialogue system for inquiry and persuasion. In *Proceedings of the First International Workshop on the Theory and Applications of Formal Argumentation*, pp. 67-84, Springer LNAI 7132, 2011.
32. E. Black and K. Atkinson. Choosing persuasive arguments for action. In *Proceedings of the Tenth International Conference on Autonomous Agents and Multi-Agent Systems*, pp. 905-912, 2011.
33. E. Black and K. Atkinson. Agreeing what to do. In *Proceedings of the Seventh International Workshop on Argumentation in Multi-Agent Systems*, pp. 1-18, Springer LNAI 6614, 2010.
34. E. Black, A. Hunter and J. Z. Pan. An argument-based approach to using multiple ontologies. In *Proceedings of the Third International Conference on Scalable Uncertainty Management*, pp. 68-79, 2009.
35. E. Black, D. Glasspool, M. A. Grando, V. Patkar and J. Fox. Goal-based decisions for dynamic planning. In *Proceedings of the Twelfth Conference on Artificial Intelligence in Medicine*, pp. 96-100, Springer LNAI 5651, 2009.
36. E. Black and K. Atkinson. Dialogues that account for different perspectives in collaborative argumentation. In *Proceedings of the Eighth International Conference on Autonomous Agents and Multi-Agent Systems*, pp. 867-874, 2009.
37. E. Black and A. Hunter. Using enthymemes in an inquiry dialogue system. In *Proceedings of the Seventh International Conference on Autonomous Agents and Multi-Agent Systems*, pp. 437-444, 2008.
38. E. Black and A. Hunter. A generative inquiry dialogue system. In *Proceedings of the Sixth International Conference on Autonomous Agents and Multi-Agent Systems*, pp. 1010-1017, 2007. **Awarded best student paper prize.**
39. J. Fox, E. Black, D. Glasspool, S. Modgil, A. Oettinger, V. Patkar and M. Williams. Towards a general model for argumentation services. In T. Bickmore and N. Green (eds.), *Proceedings of the AAAI Spring Symposium Series* (AAAI Technical Report SS-06-01), 2006.
40. J. Fox, V. Patkar, R. Thomson and E. Black. PROforma guidelines and care pathways: performance in trials and future plans. In *Proceedings of Workshop on Artificial Intelligence Techniques in Healthcare: Evidence-Based Guidelines and Protocols*, 2006.
41. J. Fox, D. Glasspool, S. Modgil, P. Tolchinsky and E. Black. Towards a canonical framework for designing agents to support healthcare organisations. In *Proceedings of Fourth Workshop on Agents Applied in Healthcare*, 2006.
42. J. Fox, A. Alabassi, E. Black, C. Hurt and T. Rose. Modelling clinical goals: a corpus of examples and a tentative ontology. In K. Kaiser, S. Miksch and S. Tu (eds.), *Computer-based Support for Clinical Guidelines and Protocols: Proceedings of the Symposium on Computerised Guidelines and Protocols*, pp. 31-45, 2004.