Amit K. Chopra, Ph.D.

Curriculum Vitae

Contents

1 Interests

I am interested in software abstractions and methodologies that enable the *governance* of sociotechnical systems, that is, systems involving autonomous stakeholders. My work draws upon social abstractions such as values, ethics, norms, and accountability and uniquely relates them to ideas and techniques in programming languages and distributed systems. I have applied my work to settings such as ebusiness, finance, health, the IoT, and microservices.

I call my program of research *Interaction-Oriented Programming* and I believe it to be a game changer for traditional software systems research and highly relevant for addressing the major societal challenges of the future.

2 Education

Ph.D. Computer Science, North Carolina State University, 2008

M.S. Computer Science, North Carolina State University, 2003

B.E. Computer Engineering, University of Pune, India, 1999

3 Professional Experience

Senior Lecturer (Associate Professor) (August 2016–) Lancaster University, UK

Lecturer (Assistant Professor) (October 2012–July 2016) Lancaster University, UK

Postdoctoral Fellow (January 2009–September 2012) University of Trento, Italy

Graduate Research Assistant (January 2003–December 2005 and January 2007–May 2008) Department of Computer Science, North Carolina State University, USA

Software Intern (January 2006–December 2006) WebSphere Technology Institute, IBM, Research Triangle Park, North Carolina, USA

Member of Technical Staff (July 1999–June 2001) Persistent Systems, Pune, India

4 Professional Qualifications

- Fellow of the Higher Education Academy, 2015. Awarded for completing the *Post Graduate Certificate in Academic Practice* course at Lancaster University.

5 Research Funding

Role	Title	Funder	Amount	Share	Duration
PI	Turtles: Protocol-based foundations for distributed multi-agent systems	EPSRC	£1,550,248	£686,507	Sep 2016–Sep 2023
PI	Requirements engineering for business protocols	Marie Curie IEF	€200,371	€200,371	Jul 2012–Jun 2014
PI	Business-level modeling and middleware for services: Reasoning about goals, compliance, interoperability, and adaptability	Marie Curie Fellowship, Trentino Cofund	€98,990	€98,990	May 2010–Apr 2012

6 Engagement with Startups

- With a Washington DC-based startup, via the November Group. *Financial contracts on blockchain.* Oct 2018–Feb 2019.

7 Awards and Patents

- Best program committee member finalist (three out of 350), International Conference on Autonomous Agents and Multiagent Systems, 2010
- Best Student Paper Award, [46] below
- *Blue Ribbon* reviewer, International Joint Conference on Artificial Intelligence, 2016
- Amit K. Chopra, Brett G. King, Brandon J. W. Smith, and Aaron J. Tarter. HTTP-based publish-subscribe service. US Patent No. 7904559 B2, Issued: Mar 8, 2011.

8 Publications

A record of my publications is available at

- DBLP: `https://dblp.org/pers/c/Chopra:Amit_K=.html`
- Google Scholar: `https://scholar.google.com/citations?user=xXhZVgwAAAAJ`
- A personally-maintained Web page: `https://www.lancaster.ac.uk/staff/chopraak/`

ORCID: https://orcid.org/0000-0003-4629-7594

8.1 Journal Articles

1. Amit K. Chopra. Interaction-oriented software engineering: Programming abstractions for autonomy and decentralization. In *AI Communications*, 35(4):381–391, 2022.

2. Amit K. Chopra, and Munindar P. Singh. Accountability as a Foundation for Requirements in Sociotechnical Systems. In *IEEE Internet Computing*, 25(6):33–41, 2021.

3. Samuel H. Christie V, Amit K. Chopra and Munindar P. Singh, Mandrake: Multiagent Systems as a Basis for Programming Fault-Tolerant Decentralized Applications. In *Autonomous Agents and Multi-Agent Systems (JAAMAS)*, 36(1):1–30, 2022.

4. Samuel H. Christie V, Amit K. Chopra, and Munindar P. Singh. Bungie: Improving Fault Tolerance via Extensible Application-Level Protocols. In *IEEE Computer*, 54(5):44–53, 2021.

5. Samuel H. Christie V, Amit K. Chopra, and Munindar P. Singh. Hercule: Representing and Reasoning About Norms as a Foundation for Declarative Contracts Over Blockchain. In *IEEE Internet Computing*, 25(4):67–75, 2021.

6. Samuel H. Christie V, Daria Smirnova, Amit K. Chopra, and Munindar P. Singh. Protocols over Things: A Decentralized Programming Model for the Internet of Things. In *IEEE Computer*, 53(12):60–68, 2020.

7. Amit K. Chopra, Samuel H. Christie V, and Munindar P. Singh. An Evaluation of Communication Protocol Languages for Engineering Multiagent Systems. In *Journal of Artificial Intelligence Research*, 69:1351–69:1393, 2020.

8. Munindar P. Singh and Amit K. Chopra. Computational governance and violable contracts for blockchain applications. In *IEEE Computer*, 53(1):53–62, 2020.

9. Elda Paja, Amit K. Chopra, and Paolo Giorgini. Trust-based specification of sociotechnical systems. *Data and Knowledge Engineering*, 87:339–353, 2013, Elsevier.

10. Amit K. Chopra, Alexander Artikis, Jamal Bentahar, Marco Colombetti, Frank Dignum, Nicoletta Fornara, Andrew J. I. Jones, Munindar P. Singh, and Pınar Yolum. Research directions in agent communication. *ACM Transactions on Intelligent Systems and Technology*, 4(2):20:1–20:23, 2013.

11. Nirmit Desai, Amit K. Chopra, and Munindar P. Singh. Amoeba: A methodology for modeling and evolution of cross-organizational business processes. *ACM Transactions on Software Engineering and Methodology*, 19(2):6:1–6:45, 2009.

12. Munindar P. Singh, Amit K. Chopra, and Nirmit Desai. Commitment-based service-oriented architecture. *IEEE Computer*, 42(11):72–79, 2009.

13. Nirmit Desai, Ashok U. Mallya, Amit K. Chopra, and Munindar P. Singh. Interaction protocols as design abstractions for business processes. *IEEE Transactions on Software Engineering*, 31(12):1015–1027, December 2005.

14. Munindar P. Singh, Amit K. Chopra, Nirmit Desai, and Ashok U. Mallya. Protocols for processes: Programming in the large for open systems. *ACM SIGPLAN Notices*, 39(12): 73–83, December 2004.

8.2 Conference Papers

Annotated with the CORE Conference Ranking (`https://www.core.edu.au/conference-portal`).

15. (A*) Samuel H. Christie V, Munindar P. Singh, and Amit K. Chopra. Kiko: Programming Agents to Enact Interaction Protocols. In *Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 1154–1163, 2023.

16. (A*) Amit K. Chopra and Samuel H. Christie V. Communication Meaning: Foundations and Directions for Systems Research. In *Proceedings of the 22th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 1786–1791, 2023.

17. (A*) Samuel H. Christie V, Amit K. Chopra, and Munindar P. Singh. Pippi: Practical Protocol Instantiation. In *Proceedings of the 21th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 281–289, 2022.

18. (A) Samuel H. Christie V, Amit K. Chopra, and Munindar P. Singh. Deserv: Decentralized Serverless Computing. In *Proceedings of the IEEE International Conference on Web Services (ICWS)*, pages 51–60, 2021.

19. (A*) Samuel H. Christie V, Amit K. Chopra, and Munindar P. Singh. Multiagent protocol refinement. In *Proceedings of the 19th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 258–266, 2020.

20. (A*) Munindar P. Singh and Amit K. Chopra. Clouseau: Generating Communication Protocols from Commitments. In *Proceedings of the Thirty-Fourth International Conference on Artificial Intelligence (AAAI)*, pages 7244–7252, 2020.

21. (A*) Munindar P. Singh and Amit K. Chopra. Requirements Engineering as Science in the Small. Proceedings of the 41st International Conference on Software Engineering (ICSE) New Ideas and Emerging Results (NIER), pages 45–48, 2019.

22. (A*) Akin Günay, Amit K. Chopra, and Munindar P. Singh. Supple: Multiagent communication protocols with causal types. In *Proceedings of the 18th International Conference on Autonomous Agents and Multiagent Systems(AAMAS)*, pages 781–789, 2019.

23. (A*) Samuel H. Christie V, Amit K. Chopra, and Munindar P. Singh. Compositional correctness in multiagent interactions. In *Proceedings of the 17th International Conference on Autonomous Agents and Multiagent Systems(AAMAS)*, pages 1159–1167, 2018.

24. Amit K. Chopra, Munindar P. Singh. Sociotechnical systems and ethics in the large. In *Proceedings of the 2018 AAAI/ACM Conference on AI, Ethics, and Society (AIES)*, pages 48–53, 2018.

25. (A*) Thomas C. King, Akin Günay, Amit K. Chopra, and Munindar P. Singh. Tosca: Operationalizing Commitments Over Information Protocols. In *Proceedings of the 26th International Joint Conference on Artificial Intelligence(IJCAI)*, pages 256–264, 2017.

26. (A) Munindar P. Singh and Amit K. Chopra. The Internet of Things and Multiagent Systems: Decentralized Intelligence in Distributed Computing. In *Proceedings of the 37th IEEE International Conference on Distributed Computing Systems (ICDCS)*, pages 1738–1747, 2017.

27. (A*) Amit K. Chopra, Samuel H. Christie V, and Munindar P. Singh. Splee: A declarative information-based language for multiagent interaction protocols. In *Proceedings of the Sixteenth International Conference on Autonomous Agents and Multiagent Systems(AAMAS)*, 10 pages, in press, 2017.

28. (A) Georgi M. Kanchev, Pradeep K. Murukannaiah, Amit K. Chopra, and Pete Sawyer. Canary: Extracting Requirements-Related Information from Online Discussions. In *Proceedings of the 25th IEEE International Requirements Engineering Conference (RE)*, pages 31–40, 2017.

29. (A*) Amit K. Chopra and Munindar P. Singh. Custard: Computing norm states over information stores. In *Proceedings of the Fifteenth International Conference on Autonomous Agents and Multiagent Systems(AAMAS)*, pages 1096–1105, 2016.

30. (A*) Amit K. Chopra and Munindar P. Singh. From social machines to social protocols: Software engineering foundations for sociotechnical systems. In *Proceedings of the 25th International World Wide Web Conference (WWW)*, pages 903–914, 2016.

31. (A*) Matteo Baldoni, Cristina Baroglio, Amit K. Chopra, and Munindar P. Singh. Composing and verifying commitment-based multiagent protocols. In *Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI)*, pages 10–17, 2015.

32. (A*) Amit K. Chopra and Munindar P. Singh. Generalized commitment alignment. In *Proceedings of the Fourteenth International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 453–461, 2015.

33. (A*) Amit K. Chopra and Munindar P. Singh. Cupid: Commitments in relational algebra. In *Proceedings of the Thirtieth International Conference on Artificial Intelligence (AAAI)*, pages 2052–2059, 2015.

34. (A) Amit K. Chopra, Fabiano Dalpiaz, Fatma Başak Aydemir, Paolo Giorgini, John Mylopoulos, and Munindar P. Singh. Protos: Foundations for engineering innovative sociotechnical systems. In *Proceedings of the 18th IEEE International Requirements Engineering Conference (RE)*, pages 53–62, 2014.

35. (A) Amit K. Chopra, Elda Paja, and Paolo Giorgini. Sociotechnical trust: An architectural approach. In *Proceedings of the 30th International Conference on Conceptual Modeling (ER)*, volume 6998 of *LNCS*, pages 104–117. Springer, 2011.

36. (A*) Elisa Marengo, Matteo Baldoni, Cristina Baroglio, Amit K. Chopra, Viviana Patti, and Munindar P. Singh. Commitments with regulations: Reasoning about safety and control. In *Proceedings of the 10th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 467–474, 2011.

37. (A*) Amit K. Chopra and Munindar P. Singh. Specifying and applying commitment-based business patterns. In *Proceedings of the 10th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 475–482, 2011.

38. (A) Fabiano Dalpiaz, Amit K. Chopra, Paolo Giorgini, and John Mylopoulos. Adaptation in open systems: Giving interaction its rightful place. In *Proceedings of the 29th International Conference on Conceptual Modeling (ER 2010)*, volume 6412 of *LNCS*, pages 31–45. Springer, 2010.

39. (A) Amit K. Chopra, Fabiano Dalpiaz, Paolo Giorgini, and John Mylopoulos. Modeling and reasoning about service-oriented applications via goals and commitments. In *Proceedings of the 22nd International Conference on Advanced Information Systems Engineering (CAISE)*, volume 6051 of *LNCS*, pages 113–128. Springer, 2010.

40. (A*) Amit K. Chopra, Fabiano Dalpiaz, Paolo Giorgini, and John Mylopoulos. Reasoning about agents and protocols via goals and commitments. In *Proceedings of the 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 457–464, 2010.

41. (A*) Matteo Baldoni, Cristina Baroglio, Amit K. Chopra, Nirmit Desai, Viviana Patti, and Munindar P. Singh. Choice, interoperability, and conformance in interaction protocols and service choreographies. In *Proceedings of the 8th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 843–850, 2009.

42. (A*) Amit K. Chopra and Munindar P. Singh. Multiagent commitment alignment. In *Proceedings of the 8th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 937–944, 2009.

43. (A*) Amit K. Chopra and Munindar P. Singh. Constitutive interoperability. In *Proceedings of the 7th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 794–804, 2008.

44. (A*) Nirmit Desai, Amit K. Chopra, and Munindar P. Singh. Representing and reasoning about commitments in business processes. In *Proceedings of the 22nd Conference on Artificial Intelligence (AAAI)*, pages 1328–1333, 2007.

45. (A) Nirmit Desai, Amit K. Chopra, Matthew Arrott, Bill Specht, and Munindar P. Singh. Engineering foreign exchange processes via commitment protocols. In *Proceedings of the 4th IEEE International Conference on Services Computing*, pages 514–521, 2007.

46. (A) Nirmit Desai, Amit K. Chopra, and Munindar P. Singh. Business process adaptations via protocols. In *Proceedings of the IEEE International Conference on Services Computing*, pages 103–110, 2006.

47. (A*) Amit K. Chopra and Munindar P. Singh. Contextualizing commitment protocols. In *Proceedings of the 5th International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 1345–1352, 2006.

8.3 Workshops

48. Aditya Khadse, Samuel H. Christie V, Munindar P. Singh, and Amit K. Chopra Protocol-Based Engineering of Microservices. In *Proceedings of the Workshop on Engineering Multiagent Systems*, 2023.

49. Amit K. Chopra, Samuel H. Christie V, and Munindar P. Singh. Multiagent Foundations for Distributed Systems: A Vision. In *Proceedings of the Workshop on Engineering Multiagent Systems*, pages 62–71, volume 13190 of *LNCS*, Springer, 2021.

50. Samuel H. Christie V and Amit K. Chopra. Fault tolerance in multiagent systems. In *Proceedings of the Workshop on Engineering Multiagent Systems*, pages 78–86, volume 12589 of *LNCS*. Springer, 2020.

51. Akin Günay and Amit K. Chopra. Stellar: A Programming Model for Developing Protocol-Compliant Agents. In *Proceedings of the Workshop on Engineering Multiagent Systems*, pages 117–136, volume 11375 of *LNCS*, 2018.

52. Georgi Kanchev and Amit K. Chopra. Social Media through the Requirements Lens: A Case Study of Google Maps. In *Proceedings of the IEEE First International Workshop on Crowd-Based Requirements Engineering*, pages 7–12, 2015.

53. Amit K. Chopra and Munindar P. Singh. The Evolution of Interoperability. Invited paper in *Declarative Agent Languages and Technologies IX 9th International Workshop, DALT 2011, Revised Selected and Invited Papers*, pages 90–94, volume 7169 of *LNCS*. Springer, 2011.

54. Amit K. Chopra. Requirements-driven adaptation: Compliance, context, uncertainty, and systems. In *Proceedings of the Requirements@Runtime Workshop*, pages 32–36. IEEE Computer Society, 2011.

55. Amit K. Chopra. Social computing: Principles, platforms, and applications. In *Proceedings of the IEEE Workshop on Requirements Engineering for Social Computing*, 26–29. IEEE Computer Society, 2011.

56. Amit K. Chopra and Paolo Giorgini. Requirements engineering for social applications. In *Proceedings of the istar Workshop*, pages 138–143, volume 766 of *CEUR* Workshop Proceedings. CEUR-WS.org, 2011.

57. Amit K. Chopra and Munindar P. Singh. Colaba: Collaborative design of cross-organizational business processes. In *Proceedings of the Workshop on Requirements Engineering for Systems, Services, and Systems of Systems*, pages 36–43. IEEE Computer Society, 2011.

58. Amit K. Chopra, Nir Oren, Sanjay Modgil, Nirmit Desai, Simon Miles, Michael Luck, and Munindar P. Singh. Analyzing contract robustness through a model of commitments. Invited paper. *11th International Workshop, AOSE 2010, Revised Selected Papers*, pages 17–36, volume 6788 of *LNCS*, Springer, 2011.

59. Raian Ali, Amit K. Chopra, Fabiano Dalpiaz, Paolo Giorgini, John Mylopoulos, and Vitor E. Silva Souza. The evolution of Tropos: Contexts, commitments and adaptivity. In *Proceedings of the 4th International i* Workshop*, volume 586 of *CEUR*, pages 15–19. CEUR-WS.org, 2010.

60. Amit K. Chopra and Munindar P. Singh. An architecture for multiagent systems: An approach based on commitments. In *Proceedings of the Workshop on Programming Multiagent Systems*, volume 5919 of *LNCS*, pages 15–30, Springer, 2009.

61. Munindar P. Singh and Amit K. Chopra. Programming multiagent systems without programming agents. Invited paper. In *Proceedings of the Workshop on Programming Multiagent Systems*, volume 5919 of *LNCS*, pages 1–14, Springer, 2009.

62. Munindar P. Singh and Amit K. Chopra. Correctness properties for multiagent systems. In *Proceedings of the Workshop on Declarative Agent Languages and Technologies*, volume 5948 of LNCS, pages 192–207. Springer, 2009.

63. Amit K. Chopra and Munindar P. Singh. Interoperation in protocol enactment. In *Declarative Agent Languages and Technologies V: Selected, Revised, and Invited Papers*, volume 4897 of *LNCS*, pages 36–49. Springer, 2008.

64. Nirmit Desai, Ashok U. Mallya, Amit K. Chopra, and Munindar P. Singh. OWL-P: A methodology for business process development. In *Agent-Oriented Information Systems III, 7th International Bi-Conference Workshop, AOIS 2005*, volume 3529 of *LNCS*, pages 79–94. Springer, 2006.

65. Amit K. Chopra and Munindar P. Singh. Producing compliant interactions: conformance, coverage, and interoperability. In *Declarative Agent Languages and Technologies IV: Selected, Revised, and Invited Papers*, volume 4327 of *LNCS*, pages 1–15. Springer, 2006.

66. Amit Chopra and Munindar P. Singh. Nonmonotonic commitment machines. In *Advances in Agent Communication: Proceedings of the 2003 AAMAS Workshop on Agent Communication Languages*, volume 2922 of *LNAI*, pages 183–200. Springer, 2004.

8.4 Short Papers, Posters, Demos, and Presentations

In some instances, we presented our work in workshops but chose not to publish the paper in formal workshop proceedings.

67. Amit K. Chopra and Samuel H. Christie V, Multiagent Middleware for Application Semantics. Presented at the *17th USENIX Symposium on Operating Systems Design and Implementation* (OSDI), 2023.

68. Amit K. Chopra, Samuel H. Christie V, and Munindar P. Singh. Interaction-Oriented Programming: Intelligent, Meaning-Based Multiagent Systems. In proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS), page 3041–3043, 2023.

69. Samuel H. Christie V, Amit K. Chopra and Munindar P. Singh, Mandrake: Multiagent Systems as a Basis for Programming Fault-Tolerant Decentralized Applications. In proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS), pages 1218–1220, 2023.

70. Amit K. Chopra, Samuel H. Christie V, and Munindar P. Singh. Interaction-Oriented Programming: Intelligent, Meaning-Based Business Processes. In the *AAAI AI4BPM Bridge Demonstrations Track*, 2023.

71. Amit K. Chopra, Samuel H. Christie V, and Munindar P. Singh. Programming Decentralized Decision Making in Business Processes In the *AAAI AI4BPM Bridge Poster Track* , 2023.

72. Samuel H. Christie V, Daria Smirnova, Amit K. Chopra, and Munindar P. Singh. A Decentralized Programming Model for the Internet of Things. Presented in *Workshop on Engineering Multiagent Systems*, 2020.

73. Amit K. Chopra, Samuel H. Christie V, and Munindar P. Singh. Concurrency and asynchrony in protocol languages. Presented in *Workshop on Engineering Multiagent Systems*, 2019.

74. Samuel H. Christie V, Amit K. Chopra, and Munindar P. Singh. Hercule: Reasoning about norms over unstructured Events. In *Presented at the Workshop on Engineering Multiagent Systems*, 2019.

75. Georgi M. Kanchev, Pradeep K. Murukannaiah, Amit K. Chopra, and Pete Sawyer. Canary: An interactive and query-based approach to extract requirements from online forums. In *Proceedings of the 25th IEEE International Requirements Engineering Conference*, pages 470–471, 2017.

76. Georgi M. Kanchev and Amit K. Chopra. Social media through the requirements lens: A case study of Google Maps. In *Proceedings of the IEEE First International Workshop on Crowd-Based Requirements Engineering*, pages 7–12, 2015.

77. Matteo Baldoni and Cristina Baroglio and Amit K. Chopra and Munindar P. Singh. Social contexts and social pragmatics. In *Proceedings of the 14th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, pages 1739–1740, 2015.

78. Amit K. Chopra and Munindar P. Singh, The Thing Itself Speaks: Accountability as a Foundation for Requirements in Sociotechnical Systems. *Proceedings of the 7th IEEE International Workshop on Requirements Engineering and Law*, page 22, 2014.

79. Amit K. Chopra and Munindar P. Singh. Choice and interoperation in protocol enactment. In *Proceedings of the 6th International Joint Conference on Autonomous Agents and Multiagent Systems*, page 29, 2007.

80. Nirmit Desai, Zhengang Cheng, Amit K. Chopra, and Munindar P. Singh. Toward verification of commitment protocols and their compositions. In *Proceedings of the 6th International Joint Conference on Autonomous Agents and Multiagent Systems*, page 33, 2007.

81. Nirmit Desai, Amit K. Chopra, and Munindar P. Singh. An overview of business process adaptations via protocols. In *Proceedings of the 5th International Joint Conference on Autonomous Agents and Multiagent Systems*, pages 1326–1328, 2006.

82. Ashok U. Mallya, Nirmit Desai, Amit K. Chopra, and Munindar P. Singh. OWL-P: OWL for protocol and processes. In *Proceedings of the 4th International Joint Conference on Autonomous Agents and Multiagent Systems*, pages 139–140, 2005.

83. Amit K. Chopra and Munindar P. Singh. Commitments for flexible business processes. In *Proceedings of the 3rd International Joint Conference on Autonomous Agents and Multiagent Systems*, pages 1362–1363, 2004.

84. Amit K. Chopra, Nirmit Desai, Ashok Mallya, Leena Wagle, and Munindar P. Singh. A Semantic Protocol-Based Approach for Developing Business Processes. In the *International Conference on Service Oriented Computing*, 2004.

8.5 Book Chapters

85. Amit K. Chopra and Munindar P. Singh. Agent Communication. In Gerhard Weiss, ed., *Multiagent Systems*, 2nd ed. MIT Press, 2013.

86. Fabiano Dalpiaz, Amit K. Chopra, John Mylopoulos, and Paolo Giorgini. From intentions to social commitments: Adaptation in multiagent systems. In Gerhard Lakemeyer and Sheila A. McIlraith, eds., *Knowing, Reasoning, and Acting: Essays in Honour of Hector J. Levesque*. College Publications, 2011.

87. Amit K. Chopra, John Mylopoulos, Fabiano Dalpiaz, Paolo Giorgini, and Munindar P. Singh. Requirements as goals and commitments too. In Selmin Nurcan, Camille Salinesi, Carine Souveyet, and Jolita Ralyté, eds., *Intentional Perspectives on Information Systems Engineering*, pages 137–152. Springer, 2010.

9 Professional Activities

9.1 Teaching

- Fundamentals of Computer Science [SCC 120]: 2014–2018, 2021–
- Operating Systems [SCC 211]: 2021–
- Languages and Compilers [SCC 312]: 2018
- Software Engineering Studio [SCC 230]: 2012–2017
- Network Studio [SCC 330]: 2013
- Elements of Distributed Systems [SCC 401]: 2013
- Elements of Distributed Systems—Computer Science [SCC 401-CS]: 2014
- Elements of Distributed Systems—Data Science [SCC 401-DS]: 2014, 2015
- Software Architecture and Integration [SCC 411]: 2013, 2014

9.2 Administrative Roles

All roles are for the School of Computing and Communications, Lancaster University.

- Postgraduate Committee Member, 2021
- Group lead, Software Engineering, 2017-19
- Convener, Distinguished Seminars, 2014-2019
- Year One Undergraduate Tutor, 2018-19
- Plagiarism Officer, 2017-2018
- Tutor, Undergraduate Admissions, 2013–2016

9.3 Editorial

- Senior Associate Editor, *ACM Transactions on Internet Technology* (July 2014–Dec 2018).
- Associate Editor, *ACM Transactions on Internet Technology* (January 2013–Dec 2018).
- Guest Editor, Special issue on *Advances in Social Computing* in *ACM Transactions on Internet Technology*, 2017.
- Guest Editor, Special issue on *Foundations of Social Computing* in *ACM Transactions on Internet Technology*, 14(4), 2014.
- Guest Editor, Special issue, *Agent Communication* in the *ACM Transactions on Intelligent Systems and Technology*, 4(2), 2013.

9.4 Tutorials Given at Conferences

I have given tutorials in top conferences in areas as diverse as AI, Programming Languages, and Distributed Computing.

- Interaction-Oriented Programming: Abstractions for Engineering Decentralized Multiagent Systems. In International Conference on Autonomous Agents and Multiagent Systems(AAMAS), 2023.
- Multiagent Systems for Representing and Enacting Financial Contracts. In *AAAI AI for Financial Services Bridge*, 2023.
- Interaction-Oriented Programming. In *Principles of Distributed Computing (PODC)*, July 2021.
- Programming for Autonomy. In *ACM Conference on Programming Language Design and Implementation (PLDI)*, 2020.
- Engineering Decentralized Systems via Protocols and Norms. In *ACM Conference on Principles of Programming Languages (POPL)*, 2019
- Decentralized Multiagent Systems. AAMAS 2015, IJCAI 2015, AAMAS 2016
- Internet of Things and Multiagent Systems. RCIS 2015, IJCAI 2015, AAMAS 2016

9.5 Invited Talks

1. Multiagent Foundations for Distributed Systems. *Royal Holloway University of London*, June 2021.
2. Interaction-Oriented Programming Applied to Contracts and the IoT. *IBM T. J. Watson Research Center*, January 2020.
3. Interaction-Oriented Programming: Autonomy, Meanings, and Protocols. *Università di Bologna*, November 2019.

4. Interaction-Oriented Programming: Autonomy, Meanings, and Protocols. *Università di Torino*, November 2019.
5. Asynchrony, Ordering, and Concurrency in Protocol Languages. *University of Cambridge*, October 2019.
6. Protocol Languages: Blindingly Simple Lessons. *University of Kent*, October 2019.
7. Protocol Languages: Blindingly Simple Lessons. *Aston University*, September 2019.
8. Information Protocols: Forsaking Global Orders and Embracing Decentralization. *University of Glasgow*, July 2019.
9. Decentralized Sociotechnical Systems. *University of Copenhagen*, June 2019.
10. Foundations for Decentralized Sociotechnical systems. *iSocial Workshop*, Crete, September, 2016.
11. Interaction-Oriented Software Engineering: Foundations for Sociotechnical Systems. *University of Liverpool*, April 2016.
12. Computing Commitments in Distributed Settings: Information and Alignment. *University of Luxembourg*, March 2015.
13. Interaction-Oriented Software Engineering. *British Computer Society*, London, Dec 2014.
14. Interaction-oriented Software Engineering: Concepts and Principles. *University of Edinburgh*, February, 2013.
15. Commitment alignment. *Imperial College London*, 2013.
16. Interaction-Oriented Software Engineering. *Bournemouth University*, UK, Nov 2012.
17. Interaction-Oriented Software Engineering. *Dagstuhl Seminar on Normative Multiagent Systems*, Germany, Mar 2012.
18. Interaction-Oriented Software Engineering: Concepts and Principles. *North Carolina State University*, USA, Dec 2011.
19. Social computing. *Dagstuhl Seminar on Models@Runtime*, Germany, Nov 2011.
20. Principles of Interaction-Oriented Software Engineering. *University of Bologna*, Mar 2011.
21. Engineering sociotechnical systems via trust. *Workshop on Trust and Reputation*, Paris, France, Dec 2010.
22. Interaction-Oriented Software Engineering. *Interdisciplinary Laboratory on Interacting Knowledge Systems*, Trento, Italy, Nov 2010.
23. Understanding Interoperability in Service Engagements via Commitments. *University of Torino*, Dec 2009.

9.6 Meetings

- Agents on the Web, Dagstuhl, 2023.

- Programming Languages for Distributed Computing, Dagstuhl, 2019.
- Novel concepts for autonomous systems. Ascot (Berkshire), 2017.
- Normative Multiagent systems, Dagstuhl, 2015.
- Normative Multiagent Systems, Dagstuhl, 2012.
- Models@Runtime, Dagstuhl, 2011.

9.7 Conference Organizing

- Publicity Chair, AAMAS 2023.
- Sponsorship Chair, *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2016.
- Publicity Chair, *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2015.
- Sponsorship Chair, *International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2013.

9.8 Seminars and Workshops Organizing

- Joint Chair, *Workshop on Engineering Multiagent Systems*, 2022.
- Joint Chair, *Second Workshop on Multiagent Foundations of Social Computing*, 2015.
- Joint Chair, *Dagstuhl Seminar on Normative Multi-Agent Systems*, 2015.
- Joint Chair, *First Workshop on Multiagent Foundations of Social Computing*, 2014.
- Joint Chair, *15th International Workshop on Coordination, Organisations, Institutions and Norms*, St. Paul, May 2013.
- Joint Chair, *First Workshop on Requirements Engineering for Social Computing*, Trento, Aug 2011.
- Joint Chair, *Workshop on Agent Communication*, Toronto, May 2010.

9.9 Select Program Committee Service

Program Chair is indicated by **Program**; Area Chair is indicated by **Area**; Senior Program Committee membership is indicated by **SP**.

- International Conference on Autonomous Agents and Multiagent Systems(AAMAS): 2010, 2011**(SP)**, 2012, 2013, 2014, 2015, 2016, 2017**(SP)**, 2018**(SP)**, 2019**(Area)**, 2020**(SP)**, 2021, 2022, 2023**(SP)**, 2024**(Area)**
- International Joint Conference on Artificial Intelligence(IJCAI): 2011, 2016, 2017, 2018, 2019, 2020, 2023

- International Conference on Principles and Practice of Multiagent Systems: 2010, 2012, 2013, 2014, 2015, 2016**(Program)**,2018, 2019
- AAAI Conference on Artificial Intelligence(AAAI): 2012, 2020
- European Conference on Artificial Intelligence: 2016
- International Conference on Social Informatics: 2012, 2013

9.10 Select Journal Reviewing

- IEEE Internet Computing
- Journal of Artificial Intelligence Research
- ACM Computing Surveys
- Journal of Systems and Software, Elsevier
- Journal of Applied Logic, Elsevier
- World Wide Web Journal, Springer
- Journal of Autonomous Agents and Multiagent Systems, Springer
- ACM Transactions on Autonomous and Adaptive Systems
- Service Oriented Computing and Applications, Springer

9.11 Proposal Reviewing (Last Four Years)

I am a member of the Engineering and Physical Sciences Research Council (EPSRC) Peer Review College.

- National Science and Engineering Research Council (NSERC), Canada
- Engineering and Physical Sciences Research Council (EPSRC), UK

10 Notable Supervision

1. Ganesh Ramanathan, PhD candidate (cosupervised).
2. Samuel Christie, PhD, 2022 (cosupervised). *Best CS Dissertation Award*, NC State University.
3. Georgi Kanchev, PhD, 2019.
4. Team of UG students won the 2017 ATOS IT Challenge, including a reward of £10k.