

Munindar P. Singh

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Research Experience:

- Professor, Computer Science, NCSU, Raleigh: August 2003–present.
- Associate Professor (tenured), Computer Science, NCSU, Raleigh: August 2000–July 2003.
- Assistant Professor, Computer Science, NCSU, Raleigh: August 1995–July 2000.
- Member of the Technical Staff, MCC, Austin: December 1992–July 1995.

Academic Qualifications:

- Ph.D., Computer Sciences; University of Texas, Austin: 1993.
- M.S.C.S.; University of Texas, Austin: 1988.
- B.Tech., Computer Science & Engineering; Indian Institute of Technology, Delhi: 1986.

Honors:

1. Fellow, IEEE, 2009.
2. Intel Research Council Faculty Award, 2007.
3. Cisco University Research Award, 2001.
4. IBM Partnership Awards: 1996, 1997, 1998, 2000, 2007.
5. National Science Foundation CAREER Award: 1996–2000.
6. IEEE Computer Society Distinguished Visitor: 1997–2000.
7. Microelectronics and Computer Development Fellowship, U. Texas at Austin: 1986–1988.
8. Merit Prizes for First Position, three semesters, Indian Institute of Technology, 1985, 1986.
9. National Talent Search Scholarship of India: 1980–1986.

Five Relevant Publications:

1. A. K. Chopra, and M. P. Singh, "Constitutive Interoperability." *Proceedings of the 7th International Conference on Autonomous Agents and MultiAgent Systems (AAMAS)*, 2008, pp. 797–804.
2. N. Desai, A. K. Chopra, and M. P. Singh, "On the Enactability of Business Protocol Specifications." *Proceedings of the 23rd Conference on Artificial Intelligence (AAAI)*, 2008, pp. 1126–1131.
3. M. P. Singh, "Formalizing Communication Protocols for Multiagent Systems." *Proceedings of the 20th International Joint Conference on Artificial Intelligence (IJCAI)*, 2007, pages 1519–1524.
4. A. Mallya, M. P. Singh, "An Algebra for Commitment Protocols." *Autonomous Agents and Multi-Agent Systems*, 14(2):143–163, April 2007.
5. N. Desai, A. U. Mallya, A. K. Chopra, M. P. Singh, "Interaction Protocols as Design Abstractions for Business Processes." *IEEE Transactions on Software Engineering*, 31(12):1015–1027, December 2005.

Five Additional Publications:

6. M. P. Singh, A. K. Chopra, N. Desai, "Commitment-Based SOA." *IEEE Computer*, Accepted.
7. N. Desai, A. K. Chopra, M. P. Singh, "Amoeba: A Methodology for Modeling and Evolution of Cross-Organizational Business Processes." *ACM Transactions on Software Engineering and Methodology (TOSEM)*. In press.
8. M. P. Singh, "Semantical Considerations on Dialectical and Practical Commitments." *Proceedings of the 23rd Conference on Artificial Intelligence (AAAI)*, 2008, pp. 176–181.
9. M. P. Singh, "An ontology for commitments in multiagent systems: Toward a unification of normative concepts." *Artificial Intelligence and Law*, 7:97–113, 1999.
10. M. Venkatraman, M. P. Singh, "Verifying compliance with commitment protocols." *Autonomous Agents and Multi-Agent Systems*, 2(3):217–236, September 1999.

Synergistic Activities:

1. Charter Member of the Board of Directors, *International Foundation for Autonomous Agents and Multiagent Systems (IFAAMAS)* 2007–2012; Chair of Conference Committee, 2007.
2. General Cochair, *4th International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, Utrecht, The Netherlands, July 2005.
3. Editor-in-Chief, *IEEE Internet Computing*, 1999–2002; Associate EIC: 1998; Charter Member of the Editorial Board: 1997 and 2003 onwards.
4. Charter Member of the Editorial Board, *Journal of Autonomous Agents and Multiagent Systems*. Springer; *International Journal of Agent-Oriented Software Engineering*; *Journal of Web Semantics*. Elsevier; *Journal of Service-Oriented Computing and Applications*; Springer
5. Charter Member of the Steering Committee, *IEEE Transactions on Mobile Computing*, 2001–2004.
6. Coorganizer, *Workshops on Deception, Fraud and Trust in Agent Societies*, 2000–2002.
7. Program cochair, *International Workshop on Agent Theories, Architectures, and Languages (ATAL)*, 1997–1999. Also general chair for 1997.
8. Program cochair, *International Conference on Intelligent & Cooperative Information Systems (CoopIS)*, 1997.
9. Program committee member for over forty workshops and conferences, including Senior PC member for the 1st, 2nd, 6th *International Joint Conferences on Autonomous Agents and MultiAgent Systems (AAMAS)*.
10. Member of NSF proposal-review panels for IIS (1996, 1998, 1999, 2001, 2002, 2004, 2007) and ITR (2001, 2002). Member of an NSF site-review panel for a research center, 1995.
11. Invited panelist or speaker at 26 international meetings; presenter of 18 conference tutorials.

Advisors (Two) and Graduated Doctoral Advisees (Twelve):

Nicholas Asher (UT Austin, *coadvisor*), Allen Emerson (UT Austin, *coadvisor*), Soydan Bilgin (Amazon), Zhengang Cheng (SimpliCTI), Amit K. Chopra (University of Trento), Nirmal Desai (IBM Research), Ashok Mallya (eBay), Michael Maximilien (IBM Research), Yathi Udupi (Cisco), Feng Wan (SimpliCTI), Jie Xing (IBM), Pinar Yolum (Bogazici University), Bin Yu (Quantum Leap Innovations), and Qing Zhang (Teradata Research).

Non-NCSU Collaborators in the last 48 months:

Reka Albert (Penn State), Brian Blake (Georgetown), Alberto Bressan (Penn State), Romit Choudhury (Duke), Tim Finin (UMBC), Michael Huhns (South Carolina), Anupam Joshi (UMBC), Mark Klein (MIT), Ingolf Krüger (UCSD), Soundar Kumara (Penn State), Ling Liu (GA Tech), John Madden (Duke), Ricardo Pietrobon (Duke), Calton Pu (GA Tech), Gunther Schadow (Regenstrief), Amit Sheth (Wright), and Katia Sycara (CMU).

Qualifications Relevant to the Proposed Project:

Professor Singh is a recognized authority on multiagent systems, and is best known for this research into agent interaction protocols, agent-based engineering, and large-scale information systems. His research has drawn thousands of citations. Dr. Singh has developed and studied (via mathematics, simulation, and implementation) abstractions that support the engineering of systems of autonomous components that can function in open environments. On the practical side, this interest has led to work on extended transaction modeling, workflow, information access, and service-oriented computing. On the theoretical side, this interest has led to a formulation of the so-called “public” commitment-based semantics of agent communication languages. Dr. Singh has sought to combine the two directions in his research on the modeling and enactment of protocols, and of the engineering of business processes via protocols. Dr. Singh’s proposed research into business protocol engineering will provide a unified treatment of key challenges in the engineering of real-life, large-scale software systems.