

Pragnesh Jay Modi

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citizenship: USA, Canadian (dual)
born: Oct 5 1975, *status:* unmarried

RESEARCH INTERESTS

Artificial Intelligence, Multi-agent/robot Systems, Distributed Constraint Reasoning

Applications of interest include:

- distributed scheduling
- distributed planning
- distributed resource allocation

EDUCATION

Doctor of Philosophy, Computer Science

Department of Computer Science, University of Southern California
Thesis title: *Distributed Constraint Optimization for Multiagent Systems.*
Thesis Advisors: Prof. Wei-Min Shen and Prof. Milind Tambe
Dec 2003

Bachelor of Science, University Honors, Computer Science/Mathematics

School of Computer Science, Carnegie Mellon University
May 1997

CURRENT POSITION

Post-Doctoral Fellow, Computer Science Department, Carnegie Mellon University

- Member of CORAL research group (Led by Prof. Manuela Veloso)
<http://www.cs.cmu.edu/~coral>
2003-Present

PREVIOUS POSITION

Graduate Student, Computer Science Department, University of Southern California

- Member of TEAMCORE research group (Led by Prof. Milind Tambe)
<http://teamcore.usc.edu>
2000-2003
- Member of Polymorphic Robots Lab (Led by Prof. Wei-Min Shen)
<http://www.isi.edu/robots>
1998-2003

AWARDS

- Best Student Paper Nomination**, Autonomous Agents and Multiagent Systems, 2003
Paper title: “*An Asynchronous Complete Method for Distributed Constraint Optimization*”
- Invited Presenter**, DARPA Young Investigator Award
IPTO 40th Anniversary Cognitive Systems Conference, 2003
- Meritorious Service Award**, Information Sciences Institute, 2003
- University Honors**, Carnegie Mellon University, 1997
- Undergraduate Scholarship**, Carnegie Mellon University, 1993-1997

INVITED TALKS

- Title:** “*Coordinating Autonomous Agents with Distributed Constraints*”
DARPA/IPTO 40th Anniversary Cognitive Systems Conference, (Poster presentation), Nov 13 2003
- Title:** “*Distributed Constraint Optimization in Multiagent Systems*”
Honeywell Laboratories, Mar 7 2003
SRI International, Feb 27 2003
HRL, Apr 3 2003
NASA/JPL, Apr 8 2003
NASA/AMES, May 12 2003
- Title:** “*New Results in Distributed Constraint Optimization*”
DARPA Autonomous Negotiating Teams (ANTs) Principal Investigators Meeting, Monterey, CA, Dec 4 2002.
- Title:** “*Dynamic Distributed Resource Allocation: Formalization, Complexity and Approaches*”
DARPA Autonomous Negotiating Teams (ANTs) Principal Investigators Meeting, Lake Tahoe, CA, May 1 2001.
- Title:** “*DCOP in Distributed Sensor Networks*”
Software System Demo at Autonomous Agents and Multiagent Systems, May 2001

FUNDING EXPERIENCE

- DARPA COORDINATORS** Program, \$50k, 1 year. 2004
Secured funding to investigate distributed constraint reasoning for adaptive military mission planning. Awarded as primary investigator.
- NSF Robotics ITR** Program, unfunded, 2003.
Wrote significant portions of proposal.
- NASA Intelligent Systems** Program, unfunded, 2003.
Participated in proposal writing with colleagues at USC, NASA AMES.

STUDENTS ADVISED

- **John Davin** (jointly with Manuela Veloso), CMU M.Sc. 2005 expected
 - Thesis topic: “*Impact of Problem Centralization in Distributed Constraint Optimization Algorithms*”
- **Peter Kim**, CMU B.S. 2005 expected
 - Thesis topic: “*Learning Scheduling Strategies in Personal Assistant Agents*”
- **Kerry Hannan**, CMU M.Sc. 2004
 - Project topic: “*Getting Users to Write Emails So Agents Can Understand*”
- **Raza Ali** (jointly with Milind Tambe), USC M.Sc., 2004
 - Project topic: “*Distributed Constraint Reasoning Under Unreliable Communication*”

SERVICE

- **Academic Workshops Organized**
 - School (Co) Chair**, Fourth Americas School on Agents and Multiagent Systems
Held at National Conference on Artificial Intelligence 2005
 - Workshop Chair**, Fifth Workshop on Distributed Constraint Reasoning
Held at Constraint Programming (CP) Conference 2004
 - Workshop (Co) Chair**, Workshop on Decentralized Resource Allocation
Held at Autonomous Agents and Multiagent Systems 2003
- **Conferences and Reviewing**
 - Program Committee**, Autonomous Agents and Multiagent Systems 2005
 - Program Committee**, Intelligent Agent Technologies 2004
 - Program Committee**, Autonomous Agents and Multiagent Systems 2003
 - Reviewer**, Journal of Autonomous Agents and Multiagent Systems (JAAMAS)
 - Reviewer**, Artificial Intelligence Journal (AIJ)
 - Reviewer**, Journal of Artificial Intelligence Research (JAIR)
 - Reviewer**, International Journal of Cooperative Information Systems (IJCIS)
 - Community Service**, California Science Center, 1999
Interactive demonstration of robot soccer to museum visitors

TEACHING

- **Teaching Assistant**, Graduate Course in *Software Multiagent Systems*
Instructor: Prof Milind Tambe
Dept. of Computer Science, University of Southern California
Spring 2003
- **Course Grader**, Graduate Course in *Advanced AI*
Instructor: Prof Milind Tambe
Department of Computer Science, University of Southern California
Fall 2002

PROFESSIONAL EXPERIENCE

Research Assistant, Information Sciences Institute, Univ. of Southern California

Select responsibilities include:

- Presentations at DARPA PI meetings (ANTs program)
- Participating in DARPA program reviews

1998-2003

Research Programmer, Information Sciences Institute, University of Southern California

Under guidance of Prof. Craig Knoblock and Prof. Steve Minton

1997-1998

Research Programmer, Schenley Park Research, Pittsburgh, PA

Under guidance of Prof. Tom Mitchell and Prof. Andrew Moore

1996-1997

Research Programmer, Electrical and Computer Engineering Dept, Carnegie Mellon University

1995-1996

Course Grader, Fundamentals of CS II, School of Computer Science, Carnegie Mellon University

Spring 1995

Network Systems Assistant, U.S. Steel Corp., Pittsburgh, PA

Summer 1995

SOFTWARE IN PUBLIC DOMAIN

Implementation of **Adopt** algorithm

- o Available from <http://teamcore.usc.edu/software>
- o In use by a number of other research groups

PUBLICATIONS

- **Under Submission**

- Pragnesh Jay Modi, Woo Tae Kim. "Classification of Examples by Multiple Agents with Private Features", *National Conference on Artificial Intelligence (AAAI)*. Decision expected May 2005.

- **Journal Articles, Highly Refereed Conference Papers**

1. Pragnesh Jay Modi, Manuela Veloso. "Bumping Strategies for the Multiagent Agreement Problem", *Proceedings of Autonomous Agents and Multi-Agent Systems*, 2005 (acceptance rate: 24%).
2. John Davin, Pragnesh Jay Modi. "The Impact of Problem Centralization in Distributed Constraint Optimization Algorithms", *Proceedings of Autonomous Agents and Multi-Agent Systems*, 2005 (acceptance rate: 24%).
3. Pragnesh Jay Modi, Wei-Min Shen, Milind Tambe, Makoto Yokoo. "Adopt: Asynchronous Distributed Constraint Optimization with Quality Guarantees". *Artificial Intelligence Journal*, 2005.
4. Pragnesh Jay Modi, Wei-Min Shen, Milind Tambe, Makoto Yokoo. "An Asynchronous Complete Method for Distributed Constraint Optimization". *Proceedings of Autonomous Agents and Multi-Agent Systems*, 2003 (acceptance rate: 25%).
5. Pragnesh Jay Modi, Hyuckchul Jung, Milind Tambe, Wei-Min Shen, Shriniwas Kulkarni. "A Dynamic Distributed Constraint Satisfaction Approach to Resource Allocation". *Proceedings of Principles and Practice of Constraint Programming*, 2001.
6. Pragnesh Jay Modi, Hyuckchul Jung, Milind Tambe, Wei-Min Shen, Shriniwas Kulkarni. "Dynamic Distributed Resource Allocation: A Distributed Constraint Satisfaction Approach". *Proceedings of Agent Theories, Architectures and Languages*, 2001.
7. Craig A. Knoblock and Steven Minton and Jose Luis Ambite and Naveen Ashish and Pragnesh Jay Modi and Ion Muslea and Andrew G. Philpot and Sheila Tejada. "Modeling Web Sources for Information Integration". *Proceedings of the Fifteenth National Conference on Artificial Intelligence*, 1998.

- **Refereed Symposia, Book Chapters, Workshop Papers**

8. Pragnesh Jay Modi, Manuela Veloso, "Bumping Strategies for the Private

- Incremental Multiagent Agreement Problem”, *AAAI Spring Symposium on Persistent Assistents*, 2005.
9. Pragnesh Jay Modi, Manuela Veloso. “Multiagent Meeting Scheduling with Rescheduling”. *Workshop on Distributed Constraint Reasoning* 2004.
 10. Pragnesh Jay Modi, Manuela Veloso, Stephen F. Smith, Jean Oh, “CMRadar: A Personal Assistant for Calendar Management”. *Agent Oriented Information Systems (AOIS)* 2004.
 11. Pragnesh Jay Modi, Wei-Min Shen, Milind Tambe. "A Dynamic Distributed Constraint Satisfaction Approach to Resource Allocation". *"Distributed Sensor Networks: A Multiagent Perspective"*, Kluwer Publishers, 2003.
 12. Paul Scerri, Pragnesh Jay Modi, Wei-Min Shen, Milind Tambe. "Are multiagent algorithms relevant for robotics applications? A case study of distributed constraint algorithms". *ACM Symposium on Applied Computing*, 2003
 13. Pragnesh Jay Modi, Wei-Min Shen, Milind Tambe, Makoto Yokoo. "An Asynchronous Complete Method for General Distributed Constraint Optimization". *Proceedings of Autonomous Agents and Multi-Agent Systems Workshop on Distributed Constraint Reasoning*, 2002.
 14. Wei-Min Shen, Rogelio Adobbati, Jay Modi, Behnam Salemi. “Purposeful Behavior in Robot Soccer Team Play” *RoboCup 1999: Robot Soccer World Cup III*. (Ed.) M. Veloso, E. Pagello, H. Kitano. *Lecture Notes in Computer Science*, Springer 2000.
 15. Pragnesh Jay Modi, Wei-Min Shen. "Collaborative Multiagent Learning for Classification Tasks". *Proceedings of the 5th International Conference on Autonomous Agents Workshop on Learning Agents*, 2001.
 16. Tambe, M., Shen, W., Mataric, M., Goldberg, D., Modi, J., Qiu, Z., and Salemi, B. "Teamwork in cyberspace: Using TEAMCORE to make agents team-ready". *Proceedings of AAAI Spring Symposium on Agents in Cyberspace*, 1999.

PERSONAL INFORMATION

Citizenship: United States and Canada

Marital Status: Unmarried

Hobbies: Snowboarding, Running, Weightlifting

REFERENCES

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Stephen F. Smith

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Research Assistant Professor, Department of Computer Science
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