

Prashant Doshi

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Research Interests

- Theoretical
 - Artificial intelligence
 - Sequential decision theory, planning for single agent and multiagent domains, probabilistic reasoning over time, particle filters
 - Game theory: games of incomplete information, interactive epistemology
- Applied
 - Artificial intelligence techniques to service-oriented computing
 - Service-oriented computing: semantic Web services discovery, dynamic workflow composition

Education

PhD in Computer Science

August 2001 to August 2005

Dept. of Computer Science, University of Illinois, Chicago, IL

GPA: 4.0/4.0

Thesis: Optimal Sequential Planning in Multiagent Settings

Thesis Advisor: Piotr Gmytrasiewicz

Thesis Committee: Bing Liu, Peter Nelson, Avi Pfeffer, Gyorgy Turan

Masters in Computer Science

September 1999 to June 2001

Math and Computer Science Dept., Drexel University, Philadelphia, PA

GPA: 3.88/4.0

Thesis: Effective Methods for Building Probabilistic Models from Large

Noisy Data Sets

Thesis Advisor: Lloyd Greenwald

Thesis Committee: John Clarke, Ali Shokoufandeh

Research Projects

- **Sequential Planning in Complex Multiagent Settings** August 2001 to present
AI Lab, Dept. of Computer Science, University of Illinois, Chicago
Collaborators: Piotr Gmytrasiewicz, Bharanee Rathnasabathy, Kyle Polich
- **Web Services based Dynamic Workflow Composition using Markov Decision Processes** May 2003 to August 2003
Semantic e-Business Middleware Group, IBM T.J. Watson Research Center, Hawthorne
Collaborators: Richard Goodwin, Rama Akkiraju, Juhnyoung Lee, Kunal Verma
- **Semantic Matchmaking for Web Services** May 2002 to August 2002
Semantic e-Business Middleware Group, IBM T.J. Watson Research Center, Hawthorne
Collaborators: Richard Goodwin, Rama Akkiraju, Sascha Roeder
- **Probabilistic Decision Support Systems in Medicine** September 1999 to June 2001
ITCS Lab, Dept. of Computer Science, Drexel University, Philadelphia
Collaborators: Lloyd Greenwald, John Clarke

Technical Papers Published/ Under Review

Highly Refereed Journals and Conferences

- Rama Akkiraju, John Colgrave, Kunal Verma, Richard Goodwin, Prashant Doshi, Juhnyoung Lee, "Dynamic Discovery and Binding of Web Services to Abstract Web Process Flows", Invited submission to the International Journal of Web Services Research (JWSR). October 2004. Under Review
- Piotr Gmytrasiewicz, Prashant Doshi, "A Framework for Sequential Planning in Multiagent Settings", Journal of Artificial Intelligence Research (JAIR). Accepted for publication. To appear in 2005
- Prashant Doshi, Richard Goodwin, Rama Akkiraju, Kunal Verma, "Dynamic Workflow Composition Using Markov Decision Processes", International Journal of Web Services Research (JWSR), Vol 2(1): 1-17, 2005. To appear

- John Clarke, Stanley Trooskin, Prashant Doshi, Lloyd Greenwald, Charles Mode, “Time to Laparotomy for Intra-Abdominal Bleeding from Trauma does affect Survival for Delays upto 90 minutes”, The Journal of Trauma: Injury, Infection, and Critical Care, Vol 52(3): 420-425, 2002
- Prashant Doshi, Piotr Gmytrasiewicz, “Approximating State Estimation in Multiagent Settings using Particle Filters”, Fourth International Autonomous Agents and Multiagent Systems Conference (AAMAS), Utrecht, Netherlands, July 25-29, 2005
- Piotr Gmytrasiewicz, Prashant Doshi, “Interactive POMDPs: Properties and Preliminary Results”, Third International Autonomous Agents and Multiagent Systems Conference (AAMAS), pp. 1374-1375, New York, NY, July, 2004
- Prashant Doshi, Richard Goodwin, Rama Akkiraju, Kunal Verma, “Dynamic Workflow Composition using Markov Decision Processes”, Second International Conference on Web Services (ICWS), pp. 576-582, San Diego, CA, July 6-9, 2004
- Prashant Doshi, Lloyd Greenwald, John Clarke, “Using Bayesian Networks for Cleansing Trauma Data”, Sixteenth International FLAIRS Conference, pp. 72-76, St. Augustine, FL, May 12-14, 2003

Refereed Symposiums and Workshops

- Prashant Doshi, Piotr Gmytrasiewicz, “A Framework for Optimal Sequential Planning in Multiagent Settings”, Ninth AAAI/SIGART Doctoral Consortium, AAAI, pp. 985-986, San Jose, CA, July 2004
- Kunal Verma, Rama Akkiraju, Richard Goodwin, Prashant Doshi, Juhnyoung Lee, “On Accommodating Inter-Service Dependencies in Web Process Flow Composition”, AAAI Spring Symposium on Semantic Web Services, Stanford, CA, March 22-24, 2004
- Piotr Gmytrasiewicz, Prashant Doshi, “A Framework for Sequential Planning in Multiagent Settings”, AI&M 9-2004. Eighth International Symposium on Artificial Intelligence and Mathematics (AMAI), Fort Lauderdale, FL, January 4-6, 2004
- Prashant Doshi, Lloyd Greenwald, John Clarke, “On Retaining Intermediate Probabilistic Models When Building Bayesian Networks”, AAAI Fall Symposium on Using Uncertainty Within Programming, pp. 47-48, North Falmouth, MA, November 2-4, 2001
- Piotr Gmytrasiewicz, Prashant Doshi, “A Framework for Sequential Planning in Multiagent Settings”, Sixth International Workshop on Game Theory and Decision Theory (GTDT), pp. 39-47, New York, NY, July 20, 2004
- Prashant Doshi, Piotr Gmytrasiewicz, “A Particle Filtering Algorithm for Interactive POMDPs”, Workshop on Modeling Other Agents from Observations (MOO), AAMAS, New York, NY, July 19, 2004
- Rama Akkiraju, Kunal Verma, Richard Goodwin, Prashant Doshi, Juhnyoung Lee, “Executing Abstract Web Process Flows”, Workshop on Planning and Scheduling for Web and Grid Services, ICAPS, Whistler, Canada, June 3-7, 2004
- Rama Akkiraju, Richard Goodwin, Prashant Doshi, Sascha Roeder, “A Method For Semantically Enhancing the Service Discovery Capabilities of UDDI”, Workshop on Information Integration on the Web, IJCAI, pp. 87-92, Acapulco, Mexico, August 9-10, 2003
- Prashant Doshi, Lloyd Greenwald, John Clarke, “Towards Effective Structure Learning for Large Bayesian Networks”, AAAI Workshop on Probabilistic Approaches in Search, pp. 16-22, Edmonton, Canada, July 28-30, 2002

Technical Reports

- Piotr Gmytrasiewicz, Prashant Doshi, “A Framework for Sequential Planning in Multiagent Settings”, Technical Report UIC-AIL-TR05, Artificial Intelligence Laboratory, University of Illinois at Chicago, June, 2004
- Prashant Doshi, Richard Goodwin, Rama Akkiraju, “Parameterized Semantic Matchmaking for Workflow Composition”, Technical Report RC23133, T. J. Watson Research Center, IBM, NY, March, 2004

Teaching Experience

- **Teaching Assistant** August 2001 to May 2003
Dept. of Computer Science, University of Illinois at Chicago
 CS 385: Operating Systems Concepts and Design
 Enrollment: 80 Level: Undergraduate senior and graduate Duration: Fall 2001
 Conducted discussion sessions on difficult topics. Supervised and graded examinations.

Provided individual help to students

CS 301: Languages and Automata

Enrollment: 40 Level: Undergraduate senior and graduate Duration: Spring 2002

Held weekly problem-solving and discussion sessions. Developed, supervised, and graded examinations

CS 476: Programming Languages Design

Enrollment: 25 Level: Undergraduate senior and graduate Duration: Fall 2002

Developed, supervised, and graded weekly assignments and examinations

CS 411: Artificial Intelligence - I

Enrollment: 40 Level: Undergraduate senior and graduate Duration: Fall 2002

Taught several topics with emphasis on active student participation. Full responsibility for developing, and grading weekly assignments

CS 511: Artificial Intelligence - II

Enrollment: 20 Level: Graduate Duration: Spring 2003

Full responsibility for developing and grading assignments. Provided individual help to students.

Invited as a guest lecturer to teach robot-tracking techniques

- **Teaching Assistant** September 1999 to June 2001
Mathematics & Computer Science Dept., Drexel University
Math 121, 122, and 123: Calculus I, II, and III
Enrollment: 3 sections of 30 each Level: Undergraduate freshman
Conducted problem-solving and discussion sessions three times a week per quarter. Supervised and graded examinations

Industry Work Experience

- **Co-op Pre-Professional Programmer,** May 2003 to August 2003
T. J. Watson Research Center, IBM, Hawthorne, NY May 2002 to August 2002
Mentor: Richard Goodwin
Collaborators: Rama Akkiraju, Kunal Verma, Juhnyoung Lee
Surveyed various Web services technologies such as DAML-S, UDDI, and SOAP. Designed and developed PSME, a JAVA API, for parameterized semantic matching of Web services requests with advertisements. PSME is currently being used to enhance search capabilities of UDDI repositories. PSME is packaged with the IBM Web Services Emerging Technologies Toolkit (WSETTK) available publicly from the IBM Alphaworks website.
Collaborated in the development of the IBM Ontology Management System (OMS) codenamed SNOBASE. SNOBASE was featured on the “The Cover Pages” website of OASIS organization, and is available publicly from the IBM Alphaworks website.
Developed and implemented a novel approach for Web services based business process integration and management (BPIM) using a probabilistic decision theory model. Conceptualized the idea of robust and adaptive dynamic workflow composition using Web services
- **Summer Intern, Syngy Incorporated, Philadelphia, PA** June 2000 to September 2000
Worked on the development of the ICExpert™ Incentive Compensation system involving VB 6.0, VC++ 6.0 and MSSQL
Developed modules involving SQL-DMO, ADO and Web browser technologies
Performed QA testing and debugging for the above developed modules

Student Research Supervision

- **James McGirr, M.S. Thesis** May 2003 to present
Co-supervising with Piotr Gmytrasiewicz his thesis research on approximate probabilistic inference using Markov Chain Monte Carlo sampling techniques
- **Mathew Maycock, B.S. Work Study Project** January 2000 to January 2001
Co-supervised along with Lloyd Greenwald his research on cleansing and mining of large medical datasets

Invited Talks and Presentations

- “Planning in Complex Multiagent Settings”, Dept. of Computer Science, Drexel University, February 2005

- “Nested Belief Systems”, AI Seminar Series, Dept. of Computer Science, University of Illinois at Chicago, January 2004
- “Solving the Tiger Problem: A Comparison of Single agent and Multiagent Solutions”, AI Seminar Series, Dept. of Computer Science, University of Illinois at Chicago, September 2003
- “Semantic Web Services”, IBM T.J. Watson Research Center, Hawthorne, August 2002

Professional Service

Reviewer

- Sixth International Workshop on Game Theory and Decision Theory, 2004

Program Committee Member

- Seventh International Workshop on Game Theory and Decision Theory, 2005
- Workshop on Modeling other Agents from Observations, AAMAS 04
- Seventeenth International FLAIRS Conference, 2004

Panelist

- Workshop on Modeling other Agents from Observations, AAMAS, 2004

Co-organizer

- University of Illinois at Chicago AI Seminar Series, 2002, 2003, 2004

Relevant Coursework

Graduate Courses

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| ▪ Advanced Artificial Intelligence | ▪ Expert Systems |
| ▪ Intelligent Time-Critical Systems | ▪ Automated Optimal Decision Making |
| ▪ Advanced Computer Vision | ▪ Math Theory of AI |

Awards, Honors, and Other Activities

- Awarded the University of Illinois at Chicago Fellowship for the year 2004-2005
- Won the Summer Students e-Business Research Poster Competition, 2002 at T.J Watson Research Center, IBM for “Parameterized Semantic Matchmaking for Workflow Composition”, available as IBM Technical Report, RC23133
- Awarded AAAI Student Scholarship, 2002, and IJCAI Student Scholarship, 2003
- Awarded the Drexel Dean’s Fellowship for the year 1999-2000
- Member of Upsilon Pi Epsilon, American Association of Artificial Intelligence, Association of Computing Machinery, and invited membership to Outstanding Student Honor Society

References

- Piotr Gmytrasiewicz, Associate Professor
Dept. of Computer Science,
University of Illinois at Chicago, IL 60607
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Doctoral Dissertation Advisor and Thesis Committee Chair
- Avi Pfeffer, Associate Professor of Computer Science
Division of Engineering and Applied Sciences
Harvard University, Cambridge, MA 02138
Tel: (617) 496-1876, Email: avi @ eecs.harvard.edu
External Reader on Doctoral Thesis Committee
- Lloyd Greenwald, Assistant Professor
Dept. of Computer Science,
Drexel University, Philadelphia, PA 19104
Tel: (215) 895-2678, Email: lgreenwa @cs.drexel.edu
Master’s Thesis Advisor
- Richard Goodwin, Manager
Semantic e-Business Middleware Group
IBM T. J. Watson Research Center, Hawthorne, NY 10532
Tel: (914) 784-7608, Email: rgoodwin @ us.ibm.com
Summer Internship Mentor

- Milind Tambe, Associate Professor
Dept. of Computer Science,
University of Southern California, LA, CA 90089
Tel: (213) 740-6447, Email: tambe @ usc.edu
Mentor in AAAI-04 Doctoral Consortium