

David Pardoe

Yahoo! Labs
4401 Great America Pkwy 2GA-2
Santa Clara, CA 95054

dpardoe@yahoo-inc.com
(512) 550-4815
www.cs.utexas.edu/~dpardoe

dpardoe@cs.utexas.edu

Research summary:

My research focuses on applications of machine learning in multi-agent systems, particularly in e-commerce settings. This research has been motivated by my participation in the Trading Agent Competition, where I have designed winning autonomous agents in both supply chain management and ad auction scenarios. My Ph.D. thesis explores methods by which agents in such settings can adapt to the behavior of other agents, with a particular focus on the use of transfer learning to learn quickly from limited interaction with these agents.

Education:

- 2010: Ph.D. in Computer Science at the University of Texas at Austin.
Dissertation: Adaptive Trading Agent Strategies using Market Experience
Advisor: Dr. Peter Stone
Committee: Risto Miikkulainen, Raymond Mooney, Peter Stone, Maytal Saar-Tsechansky, and Michael Wellman
- 2002: B.S. in Computer Science and Mathematics (double major) at Brigham Young University.

Research Experience:

- 2004-2010: Graduate Research Assistant with Dr. Peter Stone

Teaching Experience:

Teaching Assistant, The University of Texas at Austin

- Artificial Intelligence (graduate): Fall 2003, Spring 2004.
- Fundamentals of Computer Science: Spring 2005.
- Agent-Based Electronic Commerce (graduate): Fall 2006.
- Theory in Programming Practice: Spring 2009.

Work Experience:

- **Yahoo! Labs** Santa Clara, CA
(February 2011-Present)
Scientist in the Advertising Sciences group.
Developing an auction platform for display advertising.
- **Susquehanna International Group** Bala Cynwyd, PA
(June-August 2008)
Internship in the Statistical Arbitrage division.
Tested machine learning-based trading strategies.
Developed data visualization tools.
Wrote a Python wrapper for a Java machine learning toolkit.
- **Dallas Computer Services Information Systems** Plano, TX
(May-August 2000, May-August 2001, May-August 2002)

Helped to design and implement a web-based public records database product.

Developed proprietary database update and access routines.

Worked with C++, Visual Basic, MS SQL Server, MySQL, ASP, and HTML on Windows and Linux.

Publications:

Journal Articles:

- David Pardoe, Peter Stone, Maytal Saar-Tsechansky, Tayfun Keskin, and Kerem Tomak. **Adaptive Auction Mechanism Design and the Incorporation of Prior Knowledge.** In *Infirms Journal on Computing*, 2010.

Refereed Conferences:

- David Pardoe and Peter Stone. **A Particle Filter for Bid Estimation in Ad Auctions with Periodic Ranking Observations.** In *Proceedings of the 10th International Conference on Autonomous Agents and Multiagent Systems*, May 2011.
- David Pardoe and Peter Stone. **Boosting for Regression Transfer.** In *Proceedings of the Twenty-Seventh International Conference on Machine Learning*, June 2010.
- David Pardoe, Doran Chakraborty and Peter Stone. **TacTex09: A Champion Bidding Agent for Ad Auctions.** In *Proceedings of the 9th International Conference on Autonomous Agents and Multiagent Systems*, May 2010.
- David Pardoe, Peter Stone, Maytal Saar-Tsechansky, and Kerem Tomak. **Adaptive Mechanism Design: A Metalearning Approach.** In *The Eighth International Conference on Electronic Commerce*, August 2006.
- David Pardoe and Peter Stone. **TacTex-05: A Champion Supply Chain Management Agent.** In *Proceedings of the Twenty-First National Conference on Artificial Intelligence*, July 2006.
- David Pardoe and Peter Stone. **Predictive Planning for Supply Chain Management.** In *Proceedings of the International Conference on Automated Planning and Scheduling*, June 2006.
- David Pardoe, Michael Ryoo, and Risto Miikkulainen. **Evolving Neural Network Ensembles for Control Problems.** In *Proceedings of the Genetic and Evolutionary Computation Conference*, June 2005.
- Satinder Singh, Michael L. Littman, Nicholas K. Jong, David Pardoe, and Peter Stone. **Learning Predictive State Representations.** In *Proceedings of the Twentieth International Conference on Machine Learning*, August 2003.

Book Chapters:

- David Pardoe and Peter Stone. **An Autonomous Agent for Supply Chain Management.** In Adomavicius and Gupta, editors, *Handbooks in Information Systems Series: Business Computing*, Emerald Group, 2009.

Refereed Workshops:

- David Pardoe and Peter Stone. **A Particle Filter for Bid Estimation in Ad Auctions with Periodic Ranking Observations.** In *ACM EC 2010 Workshop on Trading Agent Design and Analysis*, June 2010.
- David Pardoe and Peter Stone. **The 2007 TAC SCM Prediction Challenge.** In *AAAI 2008 Workshop on Trading Agent Design and Analysis*, July 2008.

- David Pardoe and Peter Stone. **Adapting Price Predictions in TAC SCM**. In *AAMAS 2007 Workshop on Agent Mediated Electronic Commerce IX*, May 2007.
- David Pardoe, Peter Stone, and Mark VanMiddlesworth. **TacTex-05: An Adaptive Agent for TAC SCM**. In *AAMAS 2006 Joint workshop on Trading Agent Design and Analysis & Agent Mediated Electronic Commerce VIII*, May 2006.
- David Pardoe, Peter Stone, Maytal Saar-Tsechansky, and Kerem Tomak. **Adaptive Auctions: Learning to Adjust to Bidders**. In *The Fifteenth Annual Workshop on Information Technologies and Systems*, December 2005.
- David Pardoe and Peter Stone. **Bidding for Customer Orders in TAC SCM**. In *AAMAS 2004 Workshop on Agent Mediated Electronic Commerce VI: Theories for and Engineering of Distributed Mechanisms and Systems*, July 2004.

Other Articles:

- David Pardoe and Peter Stone. **Developing Adaptive Auction Mechanisms**. *SIGecom Exchanges*, 5(3):1–10, Winter 2005.
- David Pardoe and Peter Stone. **TacTex-03: A Supply Chain Management Agent**. *SIGecom Exchanges: Special Issue on Trading Agent Design and Analysis*, 4(3):19–28, Winter 2004.

Presentations:

Paper Presentations:

- **A Particle Filter for Bid Estimation in Ad Auctions with Periodic Ranking Observations**
AAMAS-11, Taipei, Taiwan, May 2011
- **Boosting for Regression Transfer**
ICML-10, Haifa, Israel, June 2010
- **A Particle Filter for Bid Estimation in Ad Auctions with Periodic Ranking Observations**
TADA Workshop at ACM EC-10, Cambridge, MA, June 2010
- **TacTex09: A Champion Bidding Agent for Ad Auctions**
AAMAS-10, Toronto, Canada, May 2010
- **The 2007 TAC SCM Prediction Challenge**
TADA Workshop at AAAI-08, Chicago, IL, July 2008
- **Adapting Price Predictions in TAC SCM**
AMEC Workshop at AAMAS-07, Honolulu, HI, May 2007
- **Adaptive Mechanism Design: A Metalearning Approach**
ICEC-06, Fredericton, Canada, August 2006
- **TacTex-05: A Champion Supply Chain Management Agent**
AAAI-06, Boston, MA, July 2006
- **Predictive Planning for Supply Chain Management**
ICAPS-06, Cumbria, United Kingdom, June 2006
- **TacTex-05: An Adaptive Agent for TAC SCM**
TADA/AMEC Workshop at AAMAS-06, Hakodate, Japan, May 2006
- **Adaptive Auctions: Learning to Adjust to Bidders**
WITS-05, Las Vegas, NV, December 2005
- **Evolving Neural Network Ensembles for Control Problems**
GECCO-05, Washington DC, July 2005
- **Bidding for Customer Orders in TAC SCM**
AMEC Workshop at AAMAS-04, New York, NY, August 2004

Posters and Demonstrations:

- **Adapting in Agent-Based Markets: A Study from TAC SCM**
Poster presentation, AAMAS-07, Honolulu, HI, May 2007
- **Predictive Planning for Supply Chain Management: Adapting to Competitor Behavior**
Doctoral Consortium Poster, ICAPS-06, Cumbria, United Kingdom, June 2006
- **The Trading Agent Competition: Supply Chain Management Scenario: Game Demonstration and Description of 2005 Winner TacTex-05**
Demonstration, ICAPS-06, Cumbria, United Kingdom, June 2006
- **TacTex-05: Winner of the 2005 Trading Agent Competition - Supply Chain Management Scenario**
Demonstration, WITS-05, Las Vegas, NV, December 2005
- **Agent-Based Supply Chain Management: Bidding for Customer Orders**
Poster presentation, AAMAS-04, New York, NY, August 2004

Professional Activities:

Program Committee Member:

- Trading Agent Design and Analysis Workshop (2006, 2007, 2008, 2009, 2010, 2011)
- Agent Mediated Electronic Commerce Workshop (2006, 2008, 2009, 2010, 2011)
- Agents and Data Mining Interaction Workshop (2008)
- Autonomous Agents and Multiagent Systems Conference (2008)

Reviewer:

- Integrated Computer-Aided Engineering (2010)
- Information Systems Research (2009, 2010, 2011)
- Journal of Autonomous Agents and Multi-Agent Systems (2006, 2008, 2011)
- Electronic Commerce Research and Applications (2006, 2007, 2008)
- Journal of Artificial Intelligence Research (2005)
- International Conference on Robotics and Automation (2005)
- SIGecom Exchanges (2003)

Other:

- Created and organized the Supply Chain Management Prediction Challenge of the 2007 and 2008 Trading Agent Competition.

Honors:

- MCD Fellowship, UT Department of Computer Science, 2002
- Leader or sole member of a team in the Ad Auctions scenario of the Trading Agent Competition
 - First Place in 2009 (out of 15 qualifying teams)
 - First Place in 2010 (out of 11 qualifying teams)
- Leader or sole member of a team in the Supply Chain Management scenario of the Trading Agent Competition
 - First place in 2005 (out of 25 qualifying teams)
 - First place in 2006 (out of 21 qualifying teams)
 - First place in 2010 (out of 7 qualifying teams)

- Second place in 2007, 2008, 2009
- Third place in 2003