

UT Austin Villa: List of Contributions to RoboCup

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Abstract

This document summarizes UT Austin Villa's contributions to the RoboCup community through February 2008.

1 Introduction

In this document, please find

- List of previous results.
- List of work for the simulation community (simulator work, committees, etc.)
- List of RoboCup related publications (not restricted to RoboCup Symposia).

2 Previous Results

- **Best Paper Award**, RoboCup Symposium, July 2007.
- **Best Student Paper Award**, RoboCup Symposium, June 2006.
- **Best Paper Award Nominee**, RoboCup Symposium, June 2006.
- **World Champion** team member in 6 **RoboCup** events:
 - Simulator coach competition, July 2005, July 2003;
 - Simulator competition, August 1999;
 - Simulator and small-size robot competitions, July 1998
 - Small-size robot competition, August 1997.
- 2nd place in simulator coach competition at RoboCup 2006 (June 2006)
- 3rd place in simulator competition at RoboCup 2001 (August 2001)
- 2nd place at american open simulator coach competition (May 2003)
- 3rd place in american open legged robot competition (May 2004, 2005)
- quarterfinalist in legged robot competition at RoboCup 2004, 2005 (July)

3 Simulation Community Service

Peter Stone has been involved in extensive RoboCup service as follows:

- **Member**, RoboCup simulation league organizing committee, July 2007.
- **Chair**, RoboCup US Open simulation league committee, May 2005, April 2004.
- **Associate chair** in charge of simulation events for RoboCup-2001, August 2001.
- **Co-chair**, RoboCup Workshop, August 2000.
- **Co-chair**, RoboCup simulator competition organizing committee, August 1997 – August 1999.
- **Trustee**, RoboCup Federation, July 2003 – present.
- **Advisory committee member**, RoboCup European Championship, May 2000.
- **Executive committee member**, RoboCup Federation, August 1999 – present.
- **RoboCup Symposium PC member**, July 2005, July 2004, July 2003, June 2002, August 2001.
- **Member**, RoboCup US committee, March 1997 – present.

4 RoboCup Related Publications

Peter Stone has been involved in the RoboCup initiative since its inception and has been publishing his research using this domain for the past eight years. The relevant books and journal articles are listed in this section. More than fifty additional relevant book chapters, magazine articles, conference papers, and workshop papers can be found referenced on the principal investigator's CV which is linked to <http://www.cs.utexas.edu/~pstone>. Most of the papers themselves are also available from that page.

Shivaram Kalyanakrishnan has published five RoboCup-related papers with Peter Stone, including the winner of the best student paper award at RoboCup 2006:

- [1] **Shivaram Kalyanakrishnan** and Peter Stone. An Empirical Analysis of Value Function-Based and Policy Search Reinforcement Learning. In 8th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), May 2009. To appear.
- [2] **Shivaram Kalyanakrishnan** and Peter Stone. Learning Complementary Multiagent Behaviors: A Case Study. In 8th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), May 2009. To appear as short paper.
- [3] **Shivaram Kalyanakrishnan**, Peter Stone, and Yaxin Liu. Model-based Reinforcement Learning in a Complex Domain. In Ubbo Visser, Fernando Ribeiro, Takeshi Ohashi, and Frank Dellaert, editors, *RoboCup-2007: Robot Soccer World Cup XI*. Springer Verlag, Berlin, 2008. To appear.
- [4] **Shivaram Kalyanakrishnan** and Peter Stone. Batch Reinforcement Learning in a Complex Domain. In 6th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), May 2007.
- [5] **Shivaram Kalyanakrishnan**, Yaxin Liu, and Peter Stone. Half field offense in RoboCup soccer: A multiagent reinforcement learning case study. In Gerhard Lakemeyer, Elizabeth Sklar, Domenico Sorenti, and Tomoichi Takahashi, editors, *RoboCup-2006: Robot Soccer World Cup X*. Springer Verlag, Berlin, 2007. To appear. **Winner of Best Student Paper Award.**

Books

- [6] **Peter Stone**, Tucker Balch, and Gerhard Kraetschmar, editors. *RoboCup-2000: Robot Soccer World Cup IV*. Springer Verlag, Berlin, 2001.
- [7] **Peter Stone**. *Layered Learning in Multiagent Systems: A Winning Approach to Robotic Soccer*. MIT Press, 2000.

Journal Articles

- [8] Matthew E. Taylor, **Peter Stone**, and Yaxin Liu. Transfer Learning via Inter-Task Mappings for Temporal Difference Learning. *Journal of Machine Learning Research*, 8(1):2125–2167, 2007.
- [9] Shimon Whiteson, Matthew E. Taylor, and **Peter Stone**. Empirical studies in action selection for reinforcement learning. *Adaptive Behavior*, 15(1), 2007. To appear.
- [10] **Peter Stone**, Mohan Sridharan, Daniel Stronger, Gregory Kuhlmann, Nate Kohl, Peggy Fiedelman, and Nicholas K. Jong. From pixels to multi-robot decision-making: A study in uncertainty. *Robotics and Autonomous Systems (RAS)*, 54(11):933–43, November 2006. Special issue on Planning Under Uncertainty in Robotics.
- [11] Daniel Stronger and **Peter Stone**. Towards autonomous sensor and actuator model induction on a mobile robot. *Connection Science Journal (CSJ)*, 18(2):97–119, June 2006. Special Issue on Developmental Robotics. Based on “Simultaneous calibration of action and sensor models on a mobile robot.” In *IEEE International Conference on Robotics and Automation (ICRA)*, April 2005.
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- [13] Shimon Whiteson, Nate Kohl, Risto Miikkulainen, and **Peter Stone**. Evolving keepaway soccer players through task decomposition. *Machine Learning (MLJ)*, 59(1):5–30, May 2005. Based on earlier version in *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO)*, July 2003.
- [14] Elizabeth Sklar, Simon Parsons, and **Peter Stone**. Using RoboCup in university-level computer science education. *Journal of Educational Resources in Computing (JERIC)*, 4:2, June 2004. Special Issue on Robotics in Undergraduate Education, Part 1.
- [15] Itsuki Noda and **Peter Stone**. The RoboCup soccer server and CMUnited clients: Implemented infrastructure for MAS research. *Autonomous Agents and Multi-Agent Systems*, 2002. To appear.
- [16] Michael Bowling Manuela Veloso and **Peter Stone**. The CMUnited-98 champion small-robot team. *Advanced Robotics*, 13(8):753 – 766, 2000.
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- [18] **Peter Stone** and Manuela Veloso. Task decomposition, dynamic role assignment, and low-bandwidth communication for real-time strategic teamwork. *Artificial Intelligence*, 110(2):241–273, June 1999.
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- [21] **Peter Stone** and Manuela Veloso. Towards collaborative and adversarial learning: A case study in robotic soccer. *International Journal of Human-Computer Studies*, 48(1):83–104, January 1998.
- [22] Nate Kohl and Peter Stone. Machine learning for fast quadrupedal locomotion. In *The Nineteenth National Conference on Artificial Intelligence*, pages 611–616, July 2004.