

# Curriculum Vitae

Patrick Francis Riley

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## Degrees

Ph.D., Computer Science, Carnegie Mellon University, Pittsburgh, PA, Mar 2005.

M.S., Computer Science, Carnegie Mellon University, Pittsburgh, PA, May 2002.

B.S., Computer Science, Carnegie Mellon University, Pittsburgh, PA, May 1999.

## Research Experience

8/1999–present Ph.D. Graduate Student, Carnegie Mellon University.

“Coaching: Learning and Using Environment and Agent Models for Advice”

Thesis is about a computational understanding of the coaching relationship between autonomous agents, where one agent provides advice to another agent. Includes research on algorithms to generate advice via machine learning of models of opponent and teammate behavior, representations for advice between agents, and adapting advice in response to observed behavior. Helped found and participated in the RoboCup simulated robot soccer coach competition. Advised by Manuela Veloso.

5/1999–8/1999 Research Assistant

Developed a simulated robotic soccer team which was the champion of the international competition RoboCup-99. Also continued previous work on classifying adversary behaviors, focusing on using machine learning techniques.

8/1998–5/1999 Senior Undergraduate Research Project

Designed and implemented a system for an agent team to classify an opponent by fusing partial information of the agents. Advised by Manuela Veloso.

1/1998–9/1998 Undergraduate Research Assistant

Part of a three person team which designed and implemented a robotic soccer team which was the champion of the international competition RoboCup-98.

## Teaching Experience

Fall 2002; Teaching Assistant, Carnegie Mellon University, for the undergraduate course, *Artificial Intelligence*, covering the basic ideas of Artificial Intelligence research. Helped formulate assignments and tests, graded assignments and tests, and held weekly office hours.

Spring 2000; Teaching Assistant, Carnegie Mellon University, for the undergraduate course, *Great Theoretical Ideas in Computer Science*, a version of discrete math for Computer Science majors. Prepared and delivered a weekly recitation section, helped formulate assignments (including automatic grading programs) and tests, graded assignments and tests, and held weekly office hours.

Fall 1998; Teaching Assistant, Carnegie Mellon University, for the undergraduate *Artificial Intelligence* course. Prepared and delivered a lecture, formulated assignments and tests, graded assignments and exams, and held weekly office hours.

### **Honors**

Best Paper Award at the Sixth International Conference on AI Planning and Scheduling (AIPS 2002)

RoboCup Engineering Award at RoboCup 2002

National Science Foundation Graduate Fellowship

Allen Newell Award for Excellence in Undergraduate Research

### **Professional Activities**

Program Committee for IJCAI 2005 Workshop on Agents in Real-Time and Dynamic Environments

Program Committee for Autonomous Agents and Multi-Agent Systems 2004

Program Committee for Autonomous Agents and Multi-Agent Systems 2004 Workshop on Multi-Agent and Multi-Agent Based Simulation

Program Committee for International Conference on Machine Learning 2003

Program Committee for RoboCup 2003 Symposium

Member RoboCup 2002 & 2003 Simulation League Organizing Committee

Member RoboCup 2002-2004 Simulation League Technical Committee

Program Committee for Autonomous Agents and Multi-Agent Systems 2003

Reviewer for Journal of Autonomous Agents and Multi-Agent Systems; Journal of Artificial Intelligence Research; IEEE Transactions on Knowledge and Data Engineering; IEEE Systems, Man, and Cybernetics; and Simulation: Transactions of the Society for Modeling and Simulation International

### **Publications**

John Davin, Patrick Riley, and Manuela Veloso. CommLang: Communication for coachable agents. In Daniele Nardi, Martin Riedmiller, and Claude Sammut, editors, *RoboCup-2004: The Seventh RoboCup Competitions and Conferences*. Springer Verlag, Berlin, 2005. (to appear).

Patrick Riley and Manuela Veloso. Advice generation from observed execution: Abstract Markov decision process learning. In *Proceedings of the Nineteenth National Conference on Artificial Intelligence (AAAI-2004)*, 2004.

Patrick Riley and George Riley. SPADES — a distributed agent simulation environment with software-in-the-loop execution. In S. Chick, P. J. Sánchez, D. Ferrin, and D. J. Morrice, editors, *Winter Simulation Conference Proceedings*, volume 1, pages 817–825, 2003.

Patrick Riley and Manuela Veloso. Coaching advice and adaptation. In Daniel Polani, Andrea Bonarini, Brett Browning, and Kazuo Yoshida, editors, *RoboCup-2003: The Sixth RoboCup Competitions and Conferences*. Springer Verlag, Berlin, 2004. (to appear).

Patrick Riley and Manuela Veloso. An overview of coaching with limitations. In *Proceedings of the Second Autonomous Agents and Multi-Agent Systems Conference*, pages 1110–1111, 2003.

Patrick Riley. SPADES: System for parallel agent discrete event simulation. *AI Magazine*, 24(2):41–42, 2003.

- Patrick Riley. MPADES: Middleware for parallel agent discrete event simulation. In Gal A. Kaminka, Pedro U. Lima, and Raul Rojas, editors, *RoboCup-2002: Robot Soccer World Cup VI*, number 2752 in Lecture Notes in Artificial Intelligence, pages 162–178. Springer Verlag, Berlin, 2003. *RoboCup Engineering Award*.
- Paul Carpenter, Patrick Riley, Manuela Veloso, and Gal Kaminka. Integration of advice in an action-selection architecture. In Gal A. Kaminka, Pedro U. Lima, and Raul Rojas, editors, *RoboCup-2002: Robot Soccer World Cup VI*, number 2752 in Lecture Notes in Artificial Intelligence, pages 195–205. Springer Verlag, Berlin, 2003.
- Patrick Riley, Manuela Veloso, and Gal Kaminka. An empirical study of coaching. In H. Asama, T. Arai, T. Fukuda, and T. Hasegawa, editors, *Distributed Autonomous Robotic Systems 5*, pages 215–224. Springer-Verlag, 2002.
- Patrick Riley, Manuela Veloso, and Gal Kaminka. Towards any-team coaching in adversarial domains. In *Proceedings of the First Autonomous Agents and Multi-Agent Systems Conference*, pages 1145–1146, 2002.
- Patrick Riley and Manuela Veloso. Planning for distributed execution through use of probabilistic opponent models. In *Proceedings of the Sixth International Conference on AI Planning and Scheduling (AIPS-2002)*, pages 72–81, 2002. *Best Paper Award*.
- Paul Carpenter, Patrick Riley, Gal Kaminka, Manuela Veloso, Ignacio Thayer, and Robert Wang. ChaMeleons-01 team description. In Andreas Birk, Silvia Coradeschi, and Satoshi Tadokoro, editors, *RoboCup-2001: Robot Soccer World Cup V*, number 2377 in Lecture Notes in Artificial Intelligence, pages 503–506. Springer-Verlag, Berlin, 2002.
- Patrick Riley and Manuela Veloso. Recognizing probabilistic opponent movement models. In A. Birk, S. Coradeschi, and S. Tadokoro, editors, *RoboCup-2001: Robot Soccer World Cup V*, number 2377 in Lecture Notes in Artificial Intelligence, pages 453–458. Springer Verlag, Berlin, 2002. (extended abstract).
- Patrick Riley and Manuela Veloso. Planning for distributed execution through use of probabilistic opponent models. In *IJCAI-2001 Workshop PRO-2: Planning under Uncertainty and Incomplete Information*, pages 18–26, 2001.
- Patrick Riley and Manuela Veloso. Coaching a simulated soccer team by opponent model recognition. In *Proceedings of the Fifth International Conference on Autonomous Agents (Agents-2001)*, pages 155–156, 2001.
- Patrick Riley and Manuela Veloso. On behavior classification in adversarial environments. In Lynne E. Parker, George Bekey, and Jacob Barhen, editors, *Distributed Autonomous Robotic Systems 4*, pages 371–380. Springer-Verlag, 2000.
- Patrick Riley, Peter Stone, David McAllester, and Manuela Veloso. ATT-CMUnited-2000: Third place finisher in the robocup-2000 simulator league. In P. Stone, T. Balch, and G. Kretzschmar, editors, *RoboCup-2000: Robot Soccer World Cup IV*, number 2019 in Lecture Notes in Artificial Intelligence, pages 489–492. Springer, Berlin, 2001.
- Peter Stone, Patrick Riley, and Manuela Veloso. Defining and using ideal teammate and opponent models. In *Proceedings of the Twelfth Innovative Applications of Artificial Intelligence Conference (IAAI-2000)*, pages 1040–1045, 2000.
- Patrick Riley and Manuela Veloso. Towards behavior classification: A case study in robotic soccer. In *Proceedings of the Seventeenth National Conference on Artificial Intelligence (AAAI-2000)*, page 1092. AAAI Press, 2000.
- Patrick Riley, Peter Stone, and Manuela Veloso. Layered disclosure: Revealing agents’ internals. In C. Castelfranchi and Y. Lespérance, editors, *Intelligent Agents VII. Agent Theories, Architectures, and Languages — 7th. International Workshop, ATAL-2000, Boston, MA, USA, July 7–9, 2000, Proceedings*, number 1986 in Lecture Notes in Artificial Intelligence, pages 61–72. Springer, Berlin, 2001.
- Peter Stone, Patrick Riley, and Manuela Veloso. CMUnited-99: RoboCup-99 simulator world champion team. *AI Magazine*, 21(3):33–40, 2000.

- Patrick Riley. Classifying adversarial behaviors in a dynamic, inaccessible, multi-agent environment. Technical Report CMU-CS-99-175, Carnegie Mellon University, 1999.
- Peter Stone, Patrick Riley, and Manuela Veloso. The CMUnited-99 champion simulator team. In Veloso, Pagello, and Kitano, editors, *RoboCup-99: Robot Soccer World Cup III*, number 1856 in Lecture Notes in Artificial Intelligence, pages 35–48. Springer, Berlin, 2000.
- Peter Stone, Manuela Veloso, and Patrick Riley. CMUnited-98: RoboCup-98 simulator world champion team. *AI Magazine*, 21(1):20–28, 2000.
- Peter Stone, Manuela Veloso, and Patrick Riley. The CMUnited-98 champion simulator team. In Asada and Kitano, editors, *RoboCup-98: Robot Soccer World Cup II*, number 1604 in Lecture Notes in Artificial Intelligence, pages 61–75. Springer, 1999.