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†formerly Sarratt

# Trevor Santarra<sup>†</sup>

## Education

- 2011–Present **Ph.D. in Computer Science**, *University of California at Santa Cruz*.  
Research interests: Ad Hoc Teams, Multiagent Planning, Communication, Behavior Modeling
- 2007–2011 **B.S. in Applied Mathematics**, *University of Tulsa*.  
Minors in Biology, Chemistry, and Computer Science

## Skills

- Languages Python, C++, Java, C#
- Specialties Decision-theoretic Planning, Multiagent Systems, Machine Learning, Game AI

## Experience

- 2015–Present **Ph.D. Candidate**, *University of California at Santa Cruz*.
  - Examining the interplay between model uncertainty and communicated intentions in online coordination.
  - Developing a decision-theoretic planning framework incorporating agent models constructed from prior knowledge, online learning, and communication.
- 2011–2015 **Ph.D. Student**, *University of California at Santa Cruz*.
  - Explored alternative belief revision approaches to agent modeling when coordinating with inconsistent agents.
  - Applied machine learning techniques to gesture recognition and feature generation.
- Summer 2013 **Visiting Researcher**, *University of Southern California*.  
Institute for Creative Technologies
  - Proposed and implemented recursive mental models for wartime negotiation simulations.
  - Extended the functionality of the POMDP-based social simulation tool, PsychSim.
- Winter 2013 **Research Intern**, *Honda Research Institute*.
  - Developed a real-time driver monitoring system using depth sensors.
  - Implemented random forest classifier for fast video feature analysis.
- 2008–2011 **Student Researcher**, *University of Tulsa*.  
Computational Neuroscience and Adaptive Systems Lab
  - Programmed several video processing algorithms in Java for *C. elegans* video analysis.
  - Implemented neural controllers into the ALIVE simulator.  
Gryllotalpa Major Ecology Lab
  - Performed DNA sequencing on tissue samples from various cricket species.
  - Aligned sequences and constructed phylogeny trees from probable mutation histories.  
Institute of Bioinformatics and Computational Biology
  - Implemented complex biological models using a stochastic pi-calculus.
  - Developed a model for iron diffusion across membranes using a grid of stochastic cells.

## Teaching

- Winter 2016 **Teaching Assistant**, *University of California at Santa Cruz*.  
CMPM146: Game AI
  - Created programming assignments covering various AI topics.
  - Covered material specific to multiagent planning in games.

- Spring 2015 **Teaching Assistant**, *University of California at Santa Cruz*.  
CMPM172: Game Design Studio III
- Supervised groups for capstone game design projects.
  - Provided feedback, guidance, and technical assistance to teams.
- Winter 2012 **Teaching Assistant**, *University of California at Santa Cruz*.  
CMPS20: Game Design Experience
- Managed a lab section of nearly thirty students.
  - Taught the basics of C# and XNA for game design.
  - Supervised groups for end of semester projects.
- 2009–2010 **Teaching Assistant**, *University of Tulsa*.  
MATH2024: Calculus II
- Taught two lab sections per week.
  - Wrote and graded quizzes, homework, and tests.

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## Papers

- 2016 **Trevor Sarratt** and Arnav Jhala. "Policy Communication for Coordination with Unknown Teammates" *3rd Workshop on Multiagent Interaction without Prior Coordination, AAAI-16*.
- 2015 **Trevor Sarratt** and Arnav Jhala. "Tuning Belief Revision for Coordination with Inconsistent Agents" *Eleventh Annual AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*, 2015.
- 2015 **Trevor Sarratt** and Arnav Jhala. "The Role of Models and Communication in the Ad Hoc Multi-Agent Team Decision Problem" *The Third Annual Conference on Advances in Cognitive Systems, Atlanta, GA*.
- 2015 **Trevor Sarratt** and Arnav Jhala. "RAPID: A Belief Convergence Strategy for Collaborating with Inconsistent Agents" *Second Workshop on Multiagent Interaction without Prior Coordination, AAAI-15*.
- 2014 **Trevor Sarratt**, Soja Marie Morgens, and Arnav Jhala. "Domain-Specific Sentiment Classification for Games-Related Tweets" *Third Workshop on Games and NLP, AIIDE-14*.
- 2014 **Trevor Sarratt**, David Pynadath, and Arnav Jhala. "Converging to a Player Model in Monte-Carlo Tree Search" *IEEE Conference on Computational Intelligence and Games, CIG-2014*.
- 2011 Roger Mailler, Jacob Graves, Nathan Willy, and **Trevor Sarratt**. "A Biologically Accurate Simulation of the Locomotion of *Caenorhabditis elegans*," in *The International Journal on Advances in Life Sciences*, vol. 2(3), pp. 82-93.
- 2010 Abinash Padhi, Richard E. Young, Jr., Cara Hoffart, **Trevor Sarratt**, Jennifer Fancher, Michael Steffen and Peggy S. M. Hill. "Investigating genetic relationships within the Gryllotalpidae: A molecular hypothesis," in *Journal of Orthoptera Research*, vol. 19(2), pp. 357-360.
- 2009 Stephen Tyree, Rayus Kuplicki, **Trevor Sarratt**, Scott Fujan and John Hale. "GridSPiM: A Framework for Simple Locality and Containment in the Stochastic Pi-Calculus," in *Lecture Notes in Computer Science: Bioinformatics and Computational Biology*, pp. 409-423.

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## Posters

- 2016 **Trevor Santarra** and Arnav Jhala. "Communicating Intentions for Coordination with Unknown Teammates" *The Fifteenth Annual Conference on Autonomous Agents and Multiagent Systems, Singapore*.
- 2014 **Trevor Sarratt**. "Leveraging Communication for Player Modeling and Cooperative Play" *The 10th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*.
- 2010 Richard Young, **Trevor Sarratt**, and Peggy Hill. "Investigating genetic relationships within the Gryllotalpidae." *Animal Behaviour Society, Annual Meeting, Williamsburg, VA*.
- 2008 Stephen Tyree, Rayus Kuplicki, **Trevor Sarratt**, Scott Fujan and John Hale. "Towards a Multi-Level Calculus for Cellular Modeling and Simulation". *International Society for Computational Biology, Sixth Rocky Mountain Bioinformatics Conference, Aspen, CO*.