Patrick MacAlpine

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Education

- **University of Texas At Austin**   Austin, TX
  Ph.D. in Computer Science   *Aug. 2009 - Aug. 2017*
    – Dissertation: *Multilayered Skill Learning and Movement Coordination for Autonomous Robotic Agents*
    – Advisor: Prof. Peter Stone
    – Research: Artificial Intelligience, Multiagent Systems, Reinforcement Learning, and Robotics

- **Rice University**   Houston, TX
  M.E.E. in Electrical and Computer Engineering   *Aug. 2004 - May 2005*
    – GPA: 3.85

- **Rice University**   Houston, TX
  Bachelor of Science in Electrical and Computer Engineering   *Aug. 2000 - May 2004*
    – GPA: 3.76
    – Graduated Cum Laude

Work Experience

- **University of Texas at Austin**   Austin, TX
  Postdoctoral Fellow   *Sep. 2017 - present*
    – Continuing work on research in areas of machine learning, multiagent systems, and robotics
    – Mentoring graduate students

- **University of Texas at Austin**   Austin, TX
  Research Assistant, Teaching Assistant, NDSEG Fellow   *Aug. 2009 - Aug. 2017*
    – Participated on and led the Austin Villa RoboCup robot 3D simulation soccer team
    – Performed research on bipedal locomotion and skill learning for robots
    – Performed research on multiagent positioning, movement, and coordination
    – Performed research on ad hoc teamwork
    – Performed research on training recurrent neural networks
    – Assisted in teaching and grading students

- **University of Texas at Austin**   Austin, TX
  Assistant Instructor   *Sep. 2015 - Dec. 2015*
    – Taught upper level undergraduate course on autonomous multiagent systems (35 students)
    – Created and helped manage programming assignments for the class
    – Provided guidance for students' research projects as well as advice and feedback on scientific writing

- **Acelot, Inc.**   Santa Barbara, CA
  Research Programmer   *Feb. 2009 - Aug. 2009*
    – Implemented and researched data mining algorithms in the area of bioinformatics

- **Green Hills Software, Inc.**   Santa Barbara, CA
  Software Engineer   *Aug. 2005 - Oct. 2008*
    – Developed and maintained software for company's flagship IDE and debugger

U.S. Citizen

Awards and Honors

- Team leader of seven-time world champion UT Austin Villa team in the International RoboCup 3D Simulation League, 2011, 2012, 2014, 2015, 2016, 2017, and 2018
- Bert Kay Dissertation Award (award for best dissertation, Dept. of Computer Science at UT Austin), 2017
- Second place HARTING Open Source Prize, 2016
- National Defense Science and Engineering Graduate (NDSEG) Fellowship, 2011-2014
- RoboCup Federation Sponsored Short-Term Funded Visit Award, 2014

Academic Service and Professional Activities

- Technical Committee Member, RoboCup 3D Simulation League, 2013-2018
- Programming Committee Member, AAMAS Workshop on Adaptive Learning Agents (ALA), 2014-2018
- Programming Committee Member, RoboCup Symposium, 2016-2018
- Reviewer, Autonomous Robots (AURO), 2017-2018
- Chair of Soccer Simulation Leagues, RoboCup Asia-Pacific (RCAP), 2017
- Reviewer, International Conference on Robotics and Automation (ICRA), 2017
- Reviewer, International Symposium on Multi-Robot and Multi-Agent Systems (MRS), 2017
- Reviewer, Robotics and Autonomous Systems Journal, 2017
- Reviewer, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2012, 2015-2017
- Reviewer, AAAI Conference on Artificial Intelligence (AAAI), 2017
- Programming Committee Member, Conference on Principles and Practice of Multi-Agent Systems (PRIMA), 2015-2016
- Reviewer, International Conference on Autonomous Agents and Multiagent Systems (AAMAS), 2016
- Reviewer, The Knowledge Engineering Review Journal, 2016
- Programming Committee Member, AAAI Workshop on Knowledge, Skill, and Behavior Transfer in Autonomous Robots (KSBT), 2015
- Programming Committee Member, AAAI Conference on Artificial Intelligence (AAAI), 2014-2015
- Reviewer, International Journal of Robotics and Automation, 2015
- Reviewer, Connection Science Journal, 2014
- Programming Committee Member, AAMAS Workshop on Autonomous Robots and Multirobot Systems (ARMS), 2014
- Reviewer, RoboCup Symposium, 2013
- Organizing Committee Chair, RoboCup 3D Simulation League, 2012
- Reviewer, Journal of Intelligent and Robotic Systems, 2011
- Officer, Graduate Representative Association of Computer Sciences (GRACS), 2009-2010

Teaching Experience

- Instructor, Autonomous Multiagent Systems, Fall 2015
- Teaching Assistant, Autonomous Multiagent Systems, Fall 2010 and Fall 2012
- Teaching Assistant, Elements of Computers and Programming (Python), Spring 2010
- Teaching Assistant, Elements of Software Design (Java), Fall 2009

Invited Talks

- "Prioritized Role Assignment for Marking", IEEE CASE 2016 Workshop on Multi-Robot Systems in Automation: Topics in Planning and Control, Fort Worth, Texas, August 2016.
- "UT Austin Villa 2011: RoboCup 3D Simulation League Champion", The 7th Barbados Workshop on Reinforcement Learning, Holetown, Barbados, April 2012.
- "UT Austin Villa 2011: RoboCup 3D Simulation League Champion", The Sixth Workshop on Humanoid Soccer Robots at Humanoids 2011, Bled, Slovenia, October 2011.

Code Releases

- UT Austin Villa 3D simulation team base code release
  `https://github.com/LARG/utaustinvilla3d`
  Second place HARTING Open Source Prize, RoboCup Symposium, 2016

Publications

Journal Articles

[1] **P. MacAlpine** and P. Stone, "Overlapping layered learning," *Artificial Intelligence*, vol. 254, pp. 21–43, January 2018.

[2] O. Ossmy, J. E. Hoch, **P. MacAlpine**, S. Hasan, P. Stone, and K. E. Adolph, "Variety wins: Soccer-playing robots and infant walking," *Frontiers in Neurorobotics*, vol. 12, p. 19, 2018.

[3] **P. MacAlpine**, E. Price, and P. Stone, "SCRAM: Scalable collision-avoiding role assignment with minimal-makespan," *Artificial Intelligence*. In Preparation.

Refereed Conference Papers

[1] **P. MacAlpine**, M. Depinet, and P. Stone, "UT Austin Villa 2014: RoboCup 3D simulation league champion via overlapping layered learning," in *Proceedings of the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI)*, January 2015. [26.7% acceptance rate].

[2] **P. MacAlpine**, E. Price, and P. Stone, "SCRAM: Scalable collision-avoiding role assignment with minimal-makespan for formational positioning," in *Proceedings of the Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI)*, January 2015. [26.7% acceptance rate].

[3] **P. MacAlpine**, K. Genter, S. Barrett, and P. Stone, "The RoboCup 2013 drop-in player challenges: Experiments in ad hoc teamwork," in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, September 2014. [46.7% acceptance rate].

[4] A. Farchy, S. Barrett, **P. MacAlpine**, and P. Stone, "Humanoid robots learning to walk faster: From the real world to simulation and back," in *Proc. of 12th Int. Conf. on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2013. [22.9% acceptance rate].

[5] **P. MacAlpine**, S. Barrett, D. Urieli, V. Vu, and P. Stone, "Design and optimization of an omnidirectional humanoid walk: A winning approach at the RoboCup 2011 3D simulation competition," in *Proceedings of the Twenty-Sixth AAAI Conference on Artificial Intelligence (AAAI-12)*, July 2012. [26.0% acceptance rate].

[6] **P. MacAlpine**, D. Urieli, S. Barrett, S. Kalyanakrishnan, F. Barrera, A. Lopez-Mobilia, N. Ştiurcă, V. Vu, and P. Stone, "UT Austin Villa 2011: A champion agent in the RoboCup 3D soccer simulation competition," in *Proc. of 11th Int. Conf. on Autonomous Agents and Multiagent Systems (AAMAS 2012)*, June 2012. [20.4% acceptance rate].

[7] D. Urieli, **P. MacAlpine**, S. Kalyanakrishnan, Y. Bentor, and P. Stone, "On optimizing interdependent skills: A case study in simulated 3D humanoid robot soccer," in *Proc. of 10th Int. Conf. on Autonomous Agents and Multiagent Systems (AAMAS 2011)*, May 2011. [22.1% acceptance rate].

Book Chapters

[1] **P. MacAlpine** and P. Stone, "UT Austin Villa: RoboCup 2017 3D simulation league competition and technical challenges champions," in *RoboCup 2017: Robot Soccer World Cup XXI* (C. Sammut, O. Obst, F. Tonidandel, and H. Akyama, eds.), Lecture Notes in Artificial Intelligence, Springer, 2018.

[2] **P. MacAlpine** and P. Stone, "Evaluating ad hoc teamwork performance in drop-in player challenges," in *Autonomous Agents and Multiagent Systems, AAMAS 2017 Workshops, Best Papers* (G. Sukthankar and J. A. Rodriguez-Aguilar, eds.), vol. 10642 of *Lecture Notes in Artificial Intelligence*, pp. 168–186, Springer International Publishing, 2017.

[3] **P. MacAlpine** and P. Stone, "UT Austin Villa: RoboCup 2016 3D simulation league competition and technical challenges champions," in *RoboCup 2016: Robot Soccer World Cup XX* (S. Behnke, D. D. Lee, S. Sariel, and R. Sheh, eds.), Lecture Notes in Artificial Intelligence, Springer, 2016.

[4] **P. MacAlpine** and P. Stone, "Prioritized role assignment for marking," in *RoboCup 2016: Robot Soccer World Cup XX* (S. Behnke, D. D. Lee, S. Sariel, and R. Sheh, eds.), Lecture Notes in Artificial Intelligence, Springer, 2016.

[5] **P. MacAlpine** and P. Stone, "UT Austin Villa RoboCup 3D simulation base code release," in *RoboCup 2016: Robot Soccer World Cup XX* (S. Behnke, D. D. Lee, S. Sariel, and R. Sheh, eds.), Lecture Notes in Artificial Intelligence, Springer, 2016.

[6] **P. MacAlpine**, J. Hanna, J. Liang, and P. Stone, "UT Austin Villa: RoboCup 2015 3D simulation league competition and technical challenges champions," in *RoboCup-2015: Robot Soccer World Cup XIX* (L. Almeida, J. Ji, G. Steinbauer, and S. Luke, eds.), Lecture Notes in Artificial Intelligence, Springer, 2016.

[7] D. L. Leottau, J. R. del Solar, **P. MacAlpine**, and P. Stone, "A study of layered learning strategies applied to individual behaviors in robot soccer," in *RoboCup-2015: Robot Soccer World Cup XIX* (L. Almeida, J. Ji, G. Steinbauer, and S. Luke, eds.), Lecture Notes in Artificial Intelligence, Springer, 2016.

[8] **P. MacAlpine**, M. Depinet, J. Liang, and P. Stone, "UT Austin Villa: RoboCup 2014 3D simulation league competition and technical challenge champions," in *RoboCup-2014: Robot Soccer World Cup XVIII* (R. A. C. Bianchi, H. L. Akin, S. Ramamoorthy, and K. Sugiura, eds.), Lecture Notes in Artificial Intelligence, Springer, 2015.

[9] M. Depinet, **P. MacAlpine**, and P. Stone, "Keyframe sampling, optimization, and behavior integration: Towards long-distance kicking in the robocup 3d simulation league," in *RoboCup-2014: Robot Soccer World Cup XVIII* (R. A. C. Bianchi, H. L. Akin, S. Ramamoorthy, and K. Sugiura, eds.), Lecture Notes in Artificial Intelligence, Springer, 2015.

[10] **P. MacAlpine**, N. Collins, A. Lopez-Mobilia, and P. Stone, "UT Austin Villa: RoboCup 2012 3D simulation league champion," in *RoboCup-2012: Robot Soccer World Cup XVI* (X. Chen, P. Stone, L. E. Sucar, and T. V. der Zant, eds.), Lecture Notes in Artificial Intelligence, Berlin: Springer Verlag, 2013.

[11] **P. MacAlpine**, F. Barrera, and P. Stone, "Positioning to win: A dynamic role assignment and formation positioning system," in *RoboCup-2012: Robot Soccer World Cup XVI* (X. Chen, P. Stone, L. E. Sucar, and T. V. der Zant, eds.), Lecture Notes in Artificial Intelligence, Berlin: Springer Verlag, 2013.

[12] A. Bai, X. Chen, **P. MacAlpine**, D. Urieli, S. Barrett, and P. Stone, "Wright Eagle and UT Austin Villa: RoboCup 2011 simulation league champions," in *RoboCup-2011: Robot Soccer World Cup XV* (T. Roefer, N. M. Mayer, J. Savage, and U. Saranli, eds.), Lecture Notes in Artificial Intelligence, Springer, 2012.

Refereed Workshop/Symposium Papers

[1] **P. MacAlpine** and P. Stone, "Evaluating ad hoc teamwork performance in drop-in player challenges," in *AAMAS Multiagent Interaction without Prior Coordination (MIPC) Workshop*, May 2017.

[2] **P. MacAlpine**, E. Liebman, and P. Stone, "Adaptation of surrogate tasks for bipedal walk optimization," in *GECCO Surrogate-Assisted Evolutionary Optimisation (SAEOpt) Workshop*, July 2016.

[3] **P. MacAlpine**, K. Genter, S. Barrett, and P. Stone, "The RoboCup 2013 drop-in player challenges: A testbed for ad hoc teamwork," in *AAMAS Autonomous Robots and Multirobot Systems Workshop (ARMS 2014)*, May 2014.

[4] **P. MacAlpine**, E. Price, and P. Stone, "SCRAM: Scalable collision-avoiding role assignment with minimal-makespan for formational positioning," in *AAMAS Autonomous Robots and Multirobot Systems Workshop (ARMS 2014)*, May 2014.

[5] **P. MacAlpine**, E. Liebman, and P. Stone, "Simultaneous learning and reshaping of an approximated optimization task," in *AAMAS Adaptive Learning Agents (ALA) Workshop*, May 2013.

[6] **P. MacAlpine**, F. Barrera, and P. Stone, "Positioning to win: A dynamic role assignment and formation positioning system," in *AAAI 2012 Workshop on Multi-Agent Pathfinding (WoMP)*, July 2012.

[7] **P. MacAlpine** and P. Stone, "Using dynamic rewards to learn a fully holonomic bipedal walk," in *AAMAS Adaptive Learning Agents (ALA) Workshop*, June 2012.

[8] **P. MacAlpine**, S. Barrett, D. Urieli, V. Vu, and P. Stone, "Design and optimization of an omnidirectional humanoid walk: A winning approach at the RoboCup 2011 3D simulation competition," in *The Sixth Workshop on Humanoid Soccer Robots at Humanoids 2011*, October 2011.

[9] D. Urieli, **P. MacAlpine**, S. Kalyanakrishnan, Y. Bentor, and P. Stone, "Optimizing interdependent skills for simulated 3D humanoid robot soccer," in *The Fifth Workshop on Humanoid Soccer Robots at Humanoids 2010*, December 2010.

Technical Reports

[1] **P. MacAlpine**, D. Urieli, S. Barrett, S. Kalyanakrishnan, F. Barrera, A. Lopez-Mobilia, N. Ştiurcă, V. Vu, and P. Stone, "UT Austin Villa 2011 3D Simulation Team report," Tech. Rep. UT-AI-TR-11-10, The University of Texas at Austin, Department of Computer Sciences, AI Laboratory, December 2011.