

James A. MacGlashan

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Education

University of Maryland, Baltimore County (UMBC)

B.S., Computer Science, 2007
Ph.D., Computer Science, 2013

Research Interests

I am interested in a wide range of artificial intelligence research, but I primarily focus on reinforcement learning, autonomous planning, and human-agent interaction. More specifically, I have published research in learning from human-delivered reinforcement, learning from demonstration, natural language command grounding, multi-agent interaction, hierarchical action learning, and learning planning knowledge. I have contributed a large breadth of open source research tools for these topics as the creator the Brown-UMBC Reinforcement Learning and Planning Java library.

Academic Positions

- **Adjunct Research Professor** March 2016 to Present
Brown University Providence, RI
- **Postdoctoral Researcher** March 2013 to March 2016
Brown University Providence, RI
- **Instructor** Fall Semester for 2009, 2010, and 2011
University of Maryland Baltimore County Baltimore, MD

I have taught the following undergraduate courses at UMBC: CS 104: Introduction to programming for non majors, CS 100: Introduction to computer science, and TRS 201: Introduction to Unix and Linux for transfer students.

Active Open Source Research Projects

- **Brown-UMBC Reinforcement Learning and Planning (BURLAP)**
BURLAP is a large open-source reinforcement learning and planning Java library that I created. The library supports a wide range of different single and multi-agent problems. Algorithms included range from classic forward search planning, to value function approximation, to inverse reinforcement learning for learning from humans. Many standard domains are included and the library also includes a range of analysis and visualization tools. The library and tutorials can be found at <http://burlap.cs.brown.edu>.
- **BurlapCraft**
BurlapCraft is a mod for the video game Minecraft that allows researchers to run AI algorithms within Minecraft, using BURLAP as the interface for implementing AI algorithms. I created BurlapCraft in conjunction with Krishna Aluru, Stefanie Tellex, and John Oberlin. BurlapCraft creates well defined state representations of the game world and provides action controllers to manipulate the Minecraft player. Along with a provided model of the world, these tools are bundled together to allow existing planning and learning algorithms developed in BURLAP to control the Minecraft player. The library is available at <https://github.com/h2r/burlapcraft>.
- **Java Rosbridge**
Java Rosbridge is a Java library for connecting Java code to Robot OS (ROS) over Rosbridge, thereby allowing arbitrary Java code run on local or remote machines to control robots that interface with ROS. The library is available at https://github.com/h2r/java_rosbridge.

Publications

- [1] B. Peng, J. MacGlashan, R. Loftin, M. L. Littman, D. L. Roberts, and M. E. Taylor, “A Need for Speed: Adapting Agent Action Speed to Improve Task Learning from Non-Expert Humans,” in *Proceedings of the 2016 International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2016. 24.9
- [2] N. Gopalan, M. desJardins, M. L. Littman, J. MacGlashan, S. Squire, S. Tellex, J. Winder, and L. L. Wong, “Planning with Abstract Markov Decision Processes,” in *ICML workshop on Abstraction in Reinforcement Learning*, 2016.
- [3] B. Peng, J. MacGlashan, R. Loftin, M. L. Littman, D. Roberts, and M. Taylor, “A need for speed: Adapting agent action speed to improve task learning from non-expert humans,” in *Proceedings of Autonomous Agents and Multiagent Systems*, 2016.
- [4] J. L. Austerweil, S. Brawner, A. Greenwald, E. Hilliard, M. Ho, M. L. Littman, J. MacGlashan, and C. Trimbach, “The impact of other-regarding preferences in a collection of non-zero-sum grid games,” in *Proceedings of the AAAI Spring Symposium*, 2016.
- [5] D. Abel, J. MacGlashan, and M. L. Littman, “Reinforcement learning as a framework for ethical decision making,” in *Proceedings of the AI, Ethics, and Society AAAI Workshop*, 2016.
- [6] K. Aluru, S. Tellex, J. Oberlin, and J. MacGlashan, “Minecraft as an experimental world for AI in robotics,” in *Proceedings of the AAAI Fall Symposium*, 2015.
- [7] D. E. Hershkowitz, J. MacGlashan, and S. Tellex, “Learning propositional functions for planning and reinforcement learning,” in *Proceedings of the AAAI Fall Symposium*, 2015.
- [8] E. Wu, Y. Han, D. Whitney, J. Oberlin, J. MacGlashan, and S. Tellex, “Robotic social feedback for object specification,” in *Proceedings of the AAAI Fall Symposium*, 2015.
- [9] J. MacGlashan, M. Babeş-Vroman, M. desJardins, M. Littman, S. Muresan, S. Squire, S. Tellex, D. Arumugam, and L. Yang, “Grounding English commands to reward functions,” in *Robotics: Science and Systems*, 2015.
- [10] J. MacGlashan and M. L. Littman, “Between imitation and intention learning,” in *Proceedings of the International Joint Conference on Artificial Intelligence*, 2015.
- [11] N. Topin, N. Haltmeyer, S. Squire, J. Winder, M. desJardins, and J. MacGlashan, “Portable option discovery for automated learning transfer in object-oriented markov decision processes,” in *Proceedings of the International Joint Conference on Artificial Intelligence*, 2015.
- [12] D. Abel, D. Hershkowitz, G. Barth-Maron, S. Brawner, K. O’Farrell, J. MacGlashan, and S. Tellex, “Goal-based action priors,” in *The International Conference on Automated Planning and Scheduling*, 2015.
- [13] R. Loftin, B. Peng, J. MacGlashan, M. L. Littman, M. E. Taylor, J. Huang, and D. L. Roberts, “Learning behaviors via human-delivered discrete feedback: modeling implicit feedback strategies to speed up learning,” *Autonomous Agents and Multi-Agent Systems*, pp. 1–30, 2015.
- [14] R. Loftin, J. MacGlashan, B. Peng, M. E. Taylor, M. L. Littman, J. Huang, and D. L. Roberts, “A strategy-aware technique for learning behaviors from discrete human feedback,” in *Proceedings of the 28th AAAI Conference on Artificial Intelligence (AAAI-2014)*, 2014.

- [15] R. Loftin, B. Peng, J. MacGlashan, M. Littman, M. Taylor, J. Huang, and D. Roberts, “Learning something from nothing: Leveraging implicit human feedback strategies,” in *Robot and Human Interactive Communication, 2014 RO-MAN: The 23rd IEEE International Symposium on*, pp. 607–612, Aug 2014.
- [16] J. MacGlashan, M. Littman, R. Loftin, B. Peng, D. Roberts, and M. E. Taylor, “Training an agent to ground commands with reward and punishment,” in *AAAI Machine Learning for Interactive Systems Workshop*, 2014.
- [17] D. Abel, G. Barth-Maron, J. MacGlashan, and S. Tellex, “Toward affordance-aware planning,” in *RSS Affordances in Vision for Cognitive Robotics*, 2014.
- [18] J. MacGlashan, M. Babeş-Vroman, M. desJardins, M. Littman, S. Muresan, and S. Squire, “Translating English to reward functions,” Tech. Rep. CS-14-01, Brown University, 2014.
- [19] M. Babeş-Vroman, J. MacGlashan, R. Gao, K. Winner, R. Adjogah, M. desJardins, M. Littman, and S. Muresan, “Learning to interpret natural language instructions,” in *Proceedings of the Second Workshop on Semantic Interpretation in an Actionable Context*, SIAC ’12, (Stroudsburg, PA, USA), pp. 1–6, Association for Computational Linguistics, 2012.
- [20] J. MacGlashan, D. Miner, and M. desJardins, “A game playing system for use in computer science education.,” in *FLAIRS Conference*, 2010.
- [21] M. desJardins, J. MacGlashan, and K. L. Wagstaff, “Confidence-based feature acquisition to minimize training and test costs,” in *Society for Industrial and Applied Mathematics. Proceedings of the SIAM International Conference on Data Mining*, Society for Industrial and Applied Mathematics, 2010.
- [22] J. MacGlashan and M. DesJardins, “Hierarchical skill learning for high-level planning,” in *ICML/UAI/COLT Workshop on Abstraction in Reinforcement Learning*, 2010.
- [23] M. DesJardins, J. MacGlashan, and J. Ferraioli, *Interactive Visual Clustering for Relational Data*, ch. 14, pp. 329–355. CRC Press, 2008.
- [24] M. DesJardins, J. MacGlashan, and J. Ferraioli, “Interactive visual clustering,” in *Proceedings of the 12th international conference on Intelligent user interfaces*, pp. 361–364, ACM, 2007.