

BEI PENG

EDUCATION

Computer Science, Ph.D.

Aug 2013 – Jul 2018

School of Electrical Engineering and Computer Science
Washington State University (WSU), Pullman, WA, U.S.
Advisor: Dr. Matthew E. Taylor
Dissertation: Learning from Human Teachers: Supporting How People Want to Teach in Interactive Machine Learning

Computer Science, B.S.

Sep 2008 – Jun 2012

Department of Computer Science
Huazhong University of Science & Technology (HUST), Wuhan, Hubei, China

RESEARCH INTERESTS

Deep Reinforcement Learning, Interactive Machine Learning, and Curriculum Learning

ACADEMIC EXPERIENCE

Postdoctoral Researcher

Whiteson Research Lab, University of Oxford

Jan 2019 - Present

- Performed research in deep reinforcement learning, mainly focused on developing deep reinforcement learning algorithms for multi-agent domains with continuous action space.

Graduate Research Assistant

IRL Lab, Washington State University

Jan 2014 - Feb 2018

- Performed research in interactive machine learning, mainly focused on studying how humans want to teach the agent and how to incorporate the insights into the development of new machine learning algorithms.
- Investigated how to design a better representation of the learning agent to elicit a more natural and effective learning interaction between the human trainer and the learner.
- Performed research in curriculum learning, mainly focused on exploring how non-experts design curricula and how we can adapt machine-learning algorithms to take advantage of this guidance.

Teaching Assistant

Washington State University

Aug 2013 - Dec 2013

- Taught labs and debugged students' programming homework by assembly language.

PROFESSIONAL EXPERIENCE

Research Internship

Microsoft Research (Redmond)

Oct 2018 - Dec 2018

- Performed research in deep reinforcement learning, mainly focused on developing hierarchical reinforcement learning algorithms to learn interactive fiction games more efficiently.

Invited Research Talk

Microsoft Research (Redmond)

Jul 23, 2018

- Talk: Learning from Human Teachers: Supporting How People Want to Teach in Interactive Machine Learning

Research Internship

Borealis AI (Edmonton)

Mar 2018 - Jun 2018

- Performed research in deep reinforcement learning, mainly focused on developing novel algorithms that are able to learn complex behaviors from online evaluative feedback provided by humans.

Research Internship

Tencent AI Lab (Seattle)

Aug 2017 - Nov 2017

- Performed research in deep learning, mainly focused on exploring how to teach the agent to play the MOBA game KOG using deep supervised learning and reinforcement learning algorithms.

– Implemented web extensions and web games in mobile platform by JavaScript.

PUBLICATIONS

Journal Articles

Bei Peng, James MacGlashan, Robert Loftin, Michael L. Littman, David L. Roberts, and Matthew E. Taylor. Curriculum Design for Machine Learners in Sequential Decision Tasks. *IEEE Transactions on Emerging Topics in Computational Intelligence*, 2018.

Robert Loftin, Bei Peng, James MacGlashan, Michael L. Littman, Matthew E. Taylor, Jeff Huang, and David L. Roberts. Learning Behaviors via Human-Delivered Discrete Feedback: Modeling Implicit Feedback Strategies to Speed Up Learning. *Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS)*, pages 1-30, 2015.

Conference Papers

James MacGlashan, Mark Ho, Robert Loftin, Bei Peng, Guan Wang, David L. Roberts, Matthew E. Taylor, and Michael L. Littman. Interactive Learning from Policy-Dependent Human Feedback. In *Proceedings of the 34th International Conference on Machine Learning (ICML)*, August 2017. 25% acceptance rate.

Bei Peng, James MacGlashan, Robert Loftin, Michael L. Littman, David L. Roberts, and Matthew E. Taylor. A Need for Speed: Adapting Agent Action Speed to Improve Task Learning from Non-Expert Humans. In *Proceedings of the 15th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, May 2016. 24.9% acceptance rate.

Robert Loftin, Bei Peng, James MacGlashan, Michael L. Littman, Matthew E. Taylor, David Roberts, and Jeff Huang. Learning Something from Nothing: Leveraging Implicit Human Feedback Strategies. In *Proceedings of the 23rd IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, 2014.

Robert Loftin, James MacGlashan, Bei Peng, Michael L. Littman, Matthew E. Taylor, Jeff Huang, and David L. Roberts. A Strategy-Aware Technique for Learning Behaviors from Discrete Human Feedback. In *Proceedings of the 28th AAAI Conference on Artificial Intelligence (AAAI)*, July 2014. 28% acceptance rate.

Short Conference Papers

Bei Peng, James MacGlashan, Robert Loftin, Michael L. Littman, David L. Roberts, and Matthew E. Taylor. Curriculum Design for Machine Learners in Sequential Decision Tasks (Extended Abstract). In *Proceedings of the 16th International Conference on Autonomous Agents and Multi-agent Systems (AAMAS)*, May 2017. 26% acceptance rate for papers, 22% for extended abstracts.

Gabriel V. de la Cruz Jr., Bei Peng, Walter S. Lasecki, Matthew E. Taylor. Towards Integrating Real Time Crowd Advice with Reinforcement Learning. In *the 20th ACM Conference on Intelligent User Interfaces (IUI)*, March 2015. 41% acceptance rate for poster submissions.

Workshop and Symposium Papers

Tabish Rashid, Bei Peng, Wendelin Bohmer, and Shimon Whiteson. Optimistic Exploration with Pessimistic Initialization. In *Proceedings of the Exploration in Reinforcement Learning Workshop (at ICML)*, June 2019.

Bei Peng, James MacGlashan, Robert Loftin, Michael L. Littman, David L. Roberts, and Matthew E. Taylor. Curriculum Design for Machine Learners in Sequential Decision Tasks. In *Proceedings of the Adaptive Learning Agents Workshop (at AAMAS)*, May 2017.

Robert Loftin, James MacGlashan, Bei Peng, Matthew E. Taylor, Michael L. Littman, and David L. Roberts. Towards Behavior-Aware Model Learning from Human-Generated Trajectories. In *AAAI Fall Symposium on Artificial Intelligence for Human-Robot Interaction*, Nov 2016.

James MacGlashan, Michael L. Littman, David L. Roberts, Robert Loftin, Bei Peng, and Matthew E. Taylor. Convergent Actor Critic by Humans. In *Workshop on Human-Robot Collaboration: Towards Co-Adaptive Learning Through Semi-Autonomy and Shared Control (IROS)*, Oct 2016.

Bei Peng, James MacGlashan, Robert Loftin, Michael L. Littman, David L. Roberts, and Matthew E. Taylor. An Empirical Study of Non-Expert Curriculum Design for Machine Learners. In *Proceedings of the Interactive Machine Learning Workshop (at IJCAI)*, July 2016.

Mitchell Scott, Bei Peng, Madeline Chili, Tanay Nigam, Francis Pascual, Cynthia Matuszek, and Matthew E. Taylor. On the Ability to Provide Demonstrations on a UAS: Observing 90 Untrained Participants Abusing a Flying Robot. In *Proceedings of the AAAI Fall Symposium on Artificial Intelligence and Human Robot Interaction AI-HRI*, November 2015.

Bei Peng, Robert Loftin, James MacGlashan, Michael L. Littman, Matthew E. Taylor, and David L. Roberts. Language and Policy Learning from Human-delivered Feedback. In *proceedings of the Machine Learning for Social Robotics Workshop (at ICRA)*, May 2015.

Gabriel V. de la Cruz Jr., Bei Peng, Walter S. Lasecki, and Matthew E. Taylor. Generating Real-Time Crowd Advice to Improve Reinforcement Learning Agents. In *Proceedings of the Learning for General Competency in Video Games workshop (at AAAI)*, January 2015.

James Macglashan, Michael L. Littman, Robert Loftin, Bei Peng, David Roberts, and Matthew E. Taylor. Training an Agent to Ground Commands with Reward and Punishment. In *Proceedings of the Machine Learning for Interactive Systems workshop (at AAAI)*, July 2014.

AWARDS AND HONORS

- WSU EECS Scholarship for Grace Hopper Celebration, 2017
- Travel Award: AAMAS 2016, 2017; IJCAI 2016; Grad Cohort for Women 2014, 2015; HCOMP 2014
- National Encouragement Scholarship (1%), HUST, China, 2011
- Model Student of Academic Records (1%), HUST, China, 2010
- Individual Scholarship (5%), HUST, China, 2009

CONFERENCE AND WORKSHOP PRESENTATIONS

Oral

- Adaptive Learning Agents Workshop (ALA) at International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), Brazil, 2017.
- Interactive Machine Learning Workshop at International Joint Conference on Artificial Intelligence (IJCAI), New York City, NY, 2016. ([slides](#))
- International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), Singapore, 2016. ([slides](#)) ([video](#))
- The 10th Barbados Workshop on Reinforcement Learning, Barbados, 2016.
- Machine Learning for Social Robotics Workshop (MLSR) at IEEE International Conference on Robotics and Automation (ICRA), Seattle, WA, 2015. ([slides](#))

Poster

- International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), Brazil, 2017.
- Interactive Machine Learning Workshop at International Joint Conference on Artificial Intelligence (IJCAI), New York City, NY, 2016. ([poster](#))

- International Conference on Autonomous Agents and Multi-agent Systems (AAMAS), 2016. ([poster](#))
- WSU GPSA Research Exposition, Pullman, WA, 2016.
- Computing Research Association - CRA-W Grad Cohort Workshop, San Francisco, CA, 2015.
- ACM Conference on Intelligent User Interfaces (IUI), Atlanta, GA, 2015. ([poster](#))
- IEEE International Conference on Robotics and Automation (ICRA) Machine Learning for Social Robotics Workshop, Seattle, WA, 2015.

PROFESSIONAL SERVICE

Workshop Organizer

- Adaptive Learning Agents Workshop (ALA) at AAMAS 2018, 2019

Program Committee Member

- AAMAS 2019
- Adaptive Learning Agents Workshop (ALA) at AAMAS 2017
- First Scaling-Up Reinforcement Learning Workshop (SURL) at ECML PKDD 2017
- First Workshop on the Future of Interactive Learning Machines (FILM) at NIPS 2016

Reviewer

- NeurIPS 2019, AAMAS 2019, IEEE Geoscience Remote Sensing Letters 2017
- FILM-NIPS 2016, SURL-ECML 2017, 2019, ALA-AAMAS 2017, 2018, 2019