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BEI PENG

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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
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- Performed research in deep multi-agent reinforcement learning, mainly focused on developing more sample-efficient deep multi-agent reinforcement learning algorithms for tasks with discrete or continuous actions.
- Performed research in exploration in reinforcement learning, mainly focused on developing new exploration schemes to encourage the agent to explore novel states and actions.
- Supervised multiple PhD students in our lab and undergrad/master students in University of Oxford.

Non-Stipendiary Lecturer	St Catherine's College, University of Oxford	Nov 2019 - Present
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- Tutoring Artificial Intelligence and Machine Learning classes.

Graduate Research Assistant	IRL Lab, Washington State University	Jan 2014 - Feb 2018
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- 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.

Graduate Teaching Assistant	Washington State University	Aug 2013 - May 2015
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- Classes: Introduction to Computer Architecture (Fall 2013), Reinforcement Learning (Spring 2015).

PROFESSIONAL EXPERIENCE

Research Internship	Microsoft Research (Redmond)	Oct 2018 - Dec 2018
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- 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

Jul 23, 2018

- | Research Internship | Borealis AI (Edmonton) | Mar 2018 - Jun 2018 |
|---|-------------------------------|----------------------------|
| <ul style="list-style-type: none"> – 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. | | |

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.

Aug 2017 - Nov 2017

- Front-end Web Developer** **Tencent (China)** **Jun 2012 – May 2013**
– Implemented web extensions and web games in mobile platform by JavaScript.

Jun 2012 – May 2013

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

Journal Articles

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.

Tabish Rashid, Bei Peng, Wendelin Böhmer, Shimon Whiteson. Optimistic Exploration even with a Pessimistic Initialisation. *In International Conference on Learning Representations (ICLR)*, April 2020.

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.

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

Leo Feng, Luisa Zintgraf, Bei Peng, Shimon Whiteson. VIABLE: Fast Adaptation via Backpropagating Learned Loss. *In 3rd Workshop on Meta-Learning at NeurIPS, 2019*.

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 2020, AAAI 2019, NeurIPS 2019, AAMAS 2019, IEEE Geoscience Remote Sensing Letters 2017.
- ALA-AAMAS 2017, 2018, 2019, SURL-ECML 2017, 2019, FILM-NIPS 2016.