

Proposal for a Special Session at the 2018 IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL'2018)

Special Session Title: Deep Learning and Reinforcement Learning for Games

Organized by Yuanheng Zhu, Dongbin Zhao, Risto Miikkulainen

Aims and Scope

Games have always been one of the most attractive fields for computational intelligence. Researchers in this field are making effort to let computer beat human experts, and a lot of games have been conquered by computers, such as Chess, Atari, Go, No-limited Texas Hold'em poker. Games provide a convenient and comparative platform to test performance of methods in various areas, such as perception, strategy, planning, multi-agent, adaptation, etc. Nowadays with the development of deep learning and reinforcement learning, computers have gained more and more power in game intelligence. But for more complicated games like StarCraft that involves more game rules, more characteristics, more strategies, computers are still far from intelligence. New theories, algorithms and experiments need to be exploited to promote the community.

Topics

The topics of the special session include, but are not limited to:

- Deep/reinforcement learning for one-character games;
- Deep/reinforcement learning for multi-character games;
- Deep/reinforcement learning for real-time strategy games;
- Deep/reinforcement learning for zero-sum games;
- Deep/reinforcement learning for game perception;
- Deep/reinforcement learning for state representation in games;
- Deep/reinforcement learning for human-computer interaction in games;
- Deep/reinforcement learning for multi-agent operation in games;
- Deep/reinforcement learning for long-term strategy and planning in games;
- Deep/reinforcement learning for a wide range of games.

Organizers:

Dr. Yuanheng Zhu, Institute of Automation, Chinese Academy of Sciences, (yuanheng.zhu@ia.ac.cn)

Yuanheng Zhu received the B.S. degree from Nanjing University in 2010 and received the Ph.D. degree from Institute of Automation, Chinese Academy of Sciences in 2015.

He is currently an Associate Professor at the State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences. His research interests include optimal control, adaptive dynamic programming, and reinforcement learning.

Prof. Dongbin Zhao, Institute of Automation, Chinese Academy of Sciences, (dongbin.zhao@ia.ac.cn)

Dongbin Zhao received the Ph.D. degrees from Harbin Institute of Technology, Harbin, China, in 2000. Dr. Zhao was a postdoctoral fellow with Tsinghua University, Beijing, China, from May 2000 to Jan. 2002. He was an associate professor from 2002, and now is a professor at the State Key Laboratory of Management and Control for Complex Systems from 2012 with the Institute of Automation, Chinese Academy of Sciences, China. He is also a professor with the University of Chinese Academy of Sciences, China. He has published 4 books, and over 50 international journal papers. His current research interests are in the areas of computational intelligence, adaptive dynamic programming, robotics, intelligent transportation systems, and smart grids.

Dr. Zhao is the Associate Editor of IEEE Transactions on Neural Networks and Learning Systems (2012-), IEEE Computation Intelligence Magazine (2014-), etc. He serves as the Chair of Adaptive Dynamic Programming and Reinforcement Learning Technical Committee (2015-), Multimedia Subcommittee (2015-) of IEEE Computational Intelligence Society (CIS). He works as several guest editors of international journals. He is involved in organizing several international conferences.

Prof. Risto Miikkulainen, University of Texas at Austin, (risto@cs.utexas.edu)

Risto Miikkulainen is a Professor of Computer Science at the University of Texas at Austin and VP of Research at Sentient Technologies. He received an M.S. in Engineering from the Helsinki University of Technology (now Aalto University) in 1986, and a Ph.D. in Computer Science from UCLA in 1990. His current research focuses on methods and applications of neuroevolution, as well as neural network models of natural language processing and vision; he is an author of over 380 articles in these research areas.

Important dates

Paper Submission	15th June 2018
Decision	15th August 2018
Early Bird Registration	15th September 2018

Paper submission

<http://ieee-ssci2018.org/submission.html>