Deep Reinforcement Learning and Its Latest Applications

Guest Editor:

Prof. Dr. Andrea Asperti
Department of Computer Science and Engineering, University of Bologna, 40126 Bologna, Italy

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Message from the Guest Editor

Despite a few remarkable achievements, reinforcement learning is a field within artificial intelligence that has seen a relatively limited impact of deep learning techniques thus far. While neural networks have helped overcome some scalability issues associated with traditional methods, the fundamental methodologies have remained largely unchanged, leaving many traditional problems unresolved. There are several challenges that still need to be addressed or better understood in RL: sample efficiency and moving beyond the current "tabula rasa" approach, the exploitation vs. exploration dilemma, the lack of generalization and difficult adaptation to different scenarios, intrinsic vs. extrinsic rewarding systems, and intelligent transfer learning, among many others.

There is a widely held belief that solving the aforementioned challenges, which are interconnected to some extent, requires a significant paradigm shift in the field of RL. This shift is likely to be centered around a more comprehensive and extensive utilization of deep learning techniques.

Special issue

Editor-in-Chief

Prof. Dr. Flavio Canavero
Department of Electronics and
Telecommunications,
Politecnico di Torino, 10129
Torino, Italy

Message from the Editor-in-Chief

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