

Call for Papers: *The International Journal of Robotics Research (IJRR)*

Special Issue: *Limits and Potentials of Deep Learning in Robotics*

Abstract

This special issue invites papers that identify the limits and potentials of current deep learning techniques in robotics, and that propose directions for future research to overcome those limits and realize the promising potentials. The special issue particularly encourages contributions that analyse why deep learning has not yet had the wide impact in robotics that it had in neighboring research disciplines, especially in computer vision.

Motivation

Deep learning techniques have revolutionised many aspects of computer vision over the past three years and have been tremendously successful at tasks like object recognition and detection, scene classification, action recognition, and caption generation. Despite deep learning thriving in computer vision, it has not yet been nearly as impactful in robotic vision. Although deep learning techniques are successfully applied by a few groups for tasks like visually guided robotic grasping and manipulation, they have not yet evolved into mainstream approaches that are generally adopted and applied.

In a recent workshop at the Robotics: Science and Systems Conference (RSS), the participants and invited speakers identified both advantages and shortcomings/missing features of current deep learning techniques for robotic applications. This special issue will collect contributions that identify such challenges, and propose novel methods to overcome current limits.

The topics of interest for contributed papers comprise, but are not limited to:

- limits of deep learning for robotics
- case studies: when does state-of-the-art deep learning fail in robotics?
- success stories: where did deep learning enable breakthroughs in robotics?
- fundamental differences between typical computer vision tasks and robotic vision
- deep learning for perception, action, and control in robotics contexts
- reliable confidence measures for deep classifiers
- exploitation of semantic information and prior knowledge for deep learning
- deep learning in the context of open set classification
- incremental learning, incorporation of human feedback for classification
- utilizing robotic technology to create novel datasets comprising interaction, active vision etc.
- deep learning for embedded systems or platforms with limited computational power

Important Dates

31 October 2016	Submission deadline
April 2017	Online publication of accepted articles
Summer 2017	Online and hard copy publication

Manuscript Submission

Please submit papers to: <http://mc.manuscriptcentral.com/ijrr> Under “Manuscript Type” select “Deep Learning”. Submission instructions for authors, including information on how to submit multimedia, are available online at:

<http://www.sagepub.com/journals/Journal201324#tabview=manuscriptSubmission>

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