Aims and Scope:

Recent advances in deep learning techniques have made impressive progress in many areas of computer vision, including classification, detection, and segmentation. Robotics, at the same time, presents new challenges for visual algorithms which require specialized approaches. For example, challenges include the need for operation under open-set and sometimes detrimental conditions, the need for continuous learning, reliable uncertainty estimates, real-time analysis, the need for accurate 3d understanding of scenes, and the difficulty of doing experiments at scale, as well as, for data collection and evaluation metrics in the robotics domain. There are also a number of opportunities which robotics uniquely brings to computer vision, for example, the ability to use additional sensors, such as depth or point clouds, or to control where the camera is looking, or the ability for self-supervision, reducing the need for manual labeling. We consider work related to deep learning techniques in computer vision applied to a broad range of robotic devices, from self driving cars to drones to bipedal robots.

In this special issue, authors are invited to submit manuscripts on topics related to computer vision for robotics, related to deep learning. We welcome work showing new learning algorithms, applications, and deployed vision systems, as well as, providing insights into the capabilities and limitations of such approaches.

Topics:

The topics of interest include, but are not limited to:

- Deep learning for robotics vision.
- DNN based object recognition, detection and segmentation for robotics, especially under open-set or detrimental conditions.
- End-to-end perception algorithms.
- Deep learning in navigation and autonomous driving
- Vision-based Semantic Simultaneous Localization and Mapping (SLAM).
- 3D Scene understanding.
- Semi-supervised and self-supervised learning for robotics.
- Real-time algorithms for robotics perception.
- Deep learning in human-robot interaction, learning from human demonstrations.
- Deep learning for visually guided grasping and manipulation.
- Lifelong and continuous deep learning in robotics.
- Active learning and active perception.
- Meta learning for robotic vision.
- Perception algorithms deployed on various robotic systems.
- Reliable confidence measures for deep classifiers, Bayesian Deep Learning, and uncertainty estimation.
- Deep learning for embedded systems and platforms with limited computational power.
- Deep learning for smart environments.
- Deep learning applications for the visually impaired and for the ageing society.
- Deep learning vision algorithms deployed in real-life robotic systems.
- Large-scale datasets relevant to robotics learning.
- Data collection and simulation challenges for robotics perception and control.
- Limits of deep learning for robotic vision.

**Submission:**

Submitted papers should present original, unpublished work, relevant to one of the topics of the Special Issue. All submitted papers will be evaluated on the basis of relevance, significance of contribution, technical quality, scholarship, and quality of presentation, by at least three independent reviewers. It is the policy of the journal that no submission, or substantially overlapping submission, be published or be under review at another journal or conference at any time during the review process. There is no page limit and we encourage both short and extended papers.

Please find publication details at: https://sites.google.com/view/robotic-vision-ijcv
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