



Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/tciv20>

Special issue: 4th MICCAI workshop on deep learning in medical image analysis

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To cite this article: Gustavo Carneiro , João Manuel R. S. Tavares , Andrew P. Bradley , João Paulo Papa , Vasileios Belagiannis , Jacinto C. Nascimento & Zhi Lu (2020) Special issue: 4th MICCAI workshop on deep learning in medical image analysis, Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, 8:5, 501-501, DOI: [10.1080/21681163.2020.1847815](https://doi.org/10.1080/21681163.2020.1847815)

To link to this article: <https://doi.org/10.1080/21681163.2020.1847815>



Published online: 21 Dec 2020.



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EDITORIAL



Special issue: 4th MICCAI workshop on deep learning in medical image analysis

Deep-learning-based solutions have experienced a massive interest from the medical image analysis community. The main reasons behind this attention lie in the ability of such solutions to process huge training datasets, to transfer learned features between databases, and to taking into account multi-modal data. These advantages are providing important opportunities for the development of more competent medical image analysis systems, such as for computer-aided diagnosis, planning, intervention and follow-up. *Deep Learning in Medical Image Analysis (DLMIA)* is a workshop, organised since 2015 under the scope of the *International Conference on Medical Image Computing & Computer Assisted Intervention (MICCAI)*, dedicated to the discussing of works focused on the design and use of deep learning methods in medical image analysis applications. Since its first edition, this workshop is setting the trends and identifying the challenges of the use of deep learning methods in medical image analysis. Another important objective of the workshop is to continue and increase the connection between software developers, specialist researchers and applied end-users from diverse fields related to Medical Image and Signal Processing and Machine Learning.

The 4th MICCAI workshop on *Deep Learning in Medical Image Analysis (DLMIA 2018)* was organised under the auspices of the 21st *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2018)*, which was held from 16 September to 20 September, in Granada, Spain.

This special issue of the journal *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualisation* contains the extended and revised manuscripts of three contributions presented at *DLMIA 2018*, which were reviewed according to the journal policy. The included manu-

scripts present and discuss methods, techniques, challenges and new trends related to Deep Learning in Medical Imaging Analysis: *Behnami et al.* propose the use of dual-channel deep neural networks for segmentation-free classification of echo cine loops towards the detection of patients at high risk of heart failure with reduced ejection fraction; a fully automated lung lobe segmentation method based on a Progressive Dense V-Network, which received the *Best paper DLMIA 2018 award* sponsored by NVIDIA, is proposed by *Imran et al.*; and *Vandewinckele et al.* describe a tool for the automated segmentation of head-and-neck organs-at-risk in longitudinal CT scans based on deformable image registration and convolutional neural networks.

The Guest-Editors wish to thank all the *DLMIA 2018* Authors, particularly the authors of the three articles included in this special issue, the Program Chair Dr. Sailesh Conjeti, the members of the Program Committee for sharing their expertise, *The MICCAI Society* for having hosted and supported the workshop within *MICCAI 2018*, and also the *CMBBE: Imaging & Visualisation Editors and Reviewers* for helping improving the manuscripts accepted.

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