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Medical Image Understanding and Analysis

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Preface

We are very pleased to present the proceedings of the 25th Conference on Medical Image Understanding and Analysis (MIUA 2021), a UK-based international conference for the communication of image processing and analysis research and its application to biomedical imaging and biomedicine. The conference was supposed to be held at St Anne's College, Oxford, UK, during July 12–14; however, due to the COVID-19 pandemic, the conference was again organized as a fully virtual event. The virtual meeting was held on the same dates as originally planned, and featured presentations from the authors of all accepted papers. The conference also featured two workshops: medical image analysis using the MATLAB Deep Learning tools, organized jointly with MathWorks, and optimising deep learning with PyTorch and TensorFlow, organized with the Nvidia Corporation.

This year's edition was organized at the University of Oxford by academic members from the Medical Sciences Division: Nuffield Department of Clinical Neurosciences (https://www.ndcn.ox.ac.uk/), The Big Data Institute (https://www.bdi.ox.ac.uk/), and the Mathematical Physical and Life Sciences Division: Institute of Biomedical Engineering (http://www.ibme.ox.ac.uk/), representing Oxford's core strategic partners in medical imaging research. One of the organizers is from the Mohamed bin Zayed University of Artificial Intelligence, Abu Dhabi, UAE.

The conference was organized with sponsorship received from MathWorks (https://uk.mathworks.com/), Brainomix (https://www.brainomix.com/), the Journal of Imaging (https://www.mdpi.com/journal/jimaging), Oxford University Innovation (https://innovation.ox.ac.uk/), nVidia (https://www.nvidia.com), the Institute of Engineering and Technology (https://www.theiet.org/), and Novo Nordisk (https://www.novonordisk.co.uk/). The conference proceedings were published in partnership with Springer (https://www.springer.com).

The diverse range of topics covered in these proceedings reflect the growth in development and application of biomedical imaging. The conference proceedings feature the most recent work in the fields of: (i) image segmentation, (ii) image registration and reconstruction, (iii) biomarker detection, (iv) classification, (v) radiomics, predictive models, and quantitative imaging, (vi) biomedical simulation and modelling, and (vii) image enhancement, quality assessment, and data privacy.

Despite the COVID-19 pandemic, this year's edition of MIUA received a large number of high-quality submissions making the review process particularly competitive. In total, 77 submissions were submitted to the Conference Management Toolkit (CMT), and after an initial quality check, the papers were sent out for the peer-review process completed by the Scientific Review Committee consisting of 88 reviewers. To keep the quality of the reviews consistent with the previous editions of MIUA, the majority of the reviewers was selected from (i) a pool of previous MIUA conference reviewers and (ii) authors and co-authors papers presented at past MIUA conferences.

Each of the submissions was reviewed in a double-blind manner by at least three members of the Scientific Review Committee. Based on their recommendations, a ranking was created and the best 40 papers (52%) were accepted for presentation at the conference. Furthermore, the papers included in the proceedings were revised by the authors following feedback received from the reviewers.

Submissions were received from authors at 129 different institutes from 20 countries across 4 continents, including the UK (44), India (16), Germany (13), France (10), the USA (7), Portugal (5), Taiwan (4), and a few others. Papers were accepted from a total of 214 authors, with an average of 5 co-authors per paper.

We thank all members of the MIUA 2021 Organizing, Steering, and Scientific Review Committees. In particular, we wish to thank all who contributed greatly to the success of MIUA 2021: the authors for submitting their work, the reviewers for insightful comments improving the quality of the proceedings, the sponsors for financial support, and all participants in this year's virtual MIUA conference.

We also thank our invited keynote speakers Prof. Mihaela van der Schaar, Prof. Ben Glocker, and Prof. Aris Papageorghiou for sharing their success, knowledge, and experiences.

July 2021

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