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Stefanie Speidel · Shuo Li (Eds.)

Medical Image Computing and Computer Assisted Intervention – MICCAI 2022

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Proceedings, Part IV

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Preface

We are pleased to present the proceedings of the 25th International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI) which – after two difficult years of virtual conferences – was held in a hybrid fashion at the Resort World Convention Centre in Singapore, September 18–22, 2022. The conference also featured 36 workshops, 11 tutorials, and 38 challenges held on September 18 and September 22. The conference was also co-located with the 2nd Conference on Clinical Translation on Medical Image Computing and Computer-Assisted Intervention (CLINICCAI) on September 20.

MICCAI 2022 had an approximately 14% increase in submissions and accepted papers compared with MICCAI 2021. These papers, which comprise eight volumes of Lecture Notes in Computer Science (LNCS) proceedings, were selected after a thorough double-blind peer-review process. Following the example set by the previous program chairs of past MICCAI conferences, we employed Microsoft's Conference Managing Toolkit (CMT) for paper submissions and double-blind peer-reviews, and the Toronto Paper Matching System (TPMS) to assist with automatic paper assignment to area chairs and reviewers.

From 2811 original intentions to submit, 1865 full submissions were received and 1831 submissions reviewed. Of these, 67% were considered as pure Medical Image Computing (MIC), 7% as pure Computer-Assisted Interventions (CAI), and 26% as both MIC and CAI. The MICCAI 2022 Program Committee (PC) comprised 107 area chairs, with 52 from the Americas, 33 from Europe, and 22 from the Asia-Pacific or Middle East regions. We maintained gender balance with 37% women scientists on the PC.

Each area chair was assigned 16–18 manuscripts, for each of which they were asked to suggest up to 15 suggested potential reviewers. Subsequently, over 1320 invited reviewers were asked to bid for the papers for which they had been suggested. Final reviewer allocations via CMT took account of PC suggestions, reviewer bidding, and TPMS scores, finally allocating 4–6 papers per reviewer. Based on the double-blinded reviews, area chairs' recommendations, and program chairs' global adjustments, 249 papers (14%) were provisionally accepted, 901 papers (49%) were provisionally rejected, and 675 papers (37%) proceeded into the rebuttal stage.

During the rebuttal phase, two additional area chairs were assigned to each rebuttal paper using CMT and TPMS scores. After the authors' rebuttals were submitted, all reviewers of the rebuttal papers were invited to assess the rebuttal, participate in a double-blinded discussion with fellow reviewers and area chairs, and finalize their rating (with the opportunity to revise their rating as appropriate). The three area chairs then independently provided their recommendations to accept or reject the paper, considering the manuscript, the reviews, and the rebuttal. The final decision of acceptance was based on majority voting of the area chair recommendations. The program chairs reviewed all decisions and provided their inputs in extreme cases where a large divergence existed between the area chairs and reviewers in their recommendations. This process resulted

in the acceptance of a total of 574 papers, reaching an overall acceptance rate of 31% for MICCAI 2022.

In our additional effort to ensure review quality, two Reviewer Tutorials and two Area Chair Orientations were held in early March, virtually in different time zones, to introduce the reviewers and area chairs to the MICCAI 2022 review process and the best practice for high-quality reviews. Two additional Area Chair meetings were held virtually in July to inform the area chairs of the outcome of the review process and to collect feedback for future conferences.

For the MICCAI 2022 proceedings, 574 accepted papers were organized in eight volumes as follows:

- Part I, LNCS Volume 13431: Brain Development and Atlases, DWI and Tractography, Functional Brain Networks, Neuroimaging, Heart and Lung Imaging, and Dermatology
- Part II, LNCS Volume 13432: Computational (Integrative) Pathology, Computational Anatomy and Physiology, Ophthalmology, and Fetal Imaging
- Part III, LNCS Volume 13433: Breast Imaging, Colonoscopy, and Computer Aided Diagnosis
- Part IV, LNCS Volume 13434: Microscopic Image Analysis, Positron Emission Tomography, Ultrasound Imaging, Video Data Analysis, and Image Segmentation I
- Part V, LNCS Volume 13435: Image Segmentation II and Integration of Imaging with Non-imaging Biomarkers
- Part VI, LNCS Volume 13436: Image Registration and Image Reconstruction
- Part VII, LNCS Volume 13437: Image-Guided Interventions and Surgery, Outcome and Disease Prediction, Surgical Data Science, Surgical Planning and Simulation, and Machine Learning – Domain Adaptation and Generalization
- Part VIII, LNCS Volume 13438: Machine Learning – Weakly-supervised Learning, Machine Learning – Model Interpretation, Machine Learning – Uncertainty, and Machine Learning Theory and Methodologies

We would like to thank everyone who contributed to the success of MICCAI 2022 and the quality of its proceedings. These include the MICCAI Society for support and feedback, and our sponsors for their financial support and presence onsite. We especially express our gratitude to the MICCAI Submission System Manager Kitty Wong for her thorough support throughout the paper submission, review, program planning, and proceeding preparation process – the Program Committee simply would not have be able to function without her. We are also grateful for the dedication and support of all of the organizers of the workshops, tutorials, and challenges, Jianming Liang, Wufeng Xue, Jun Cheng, Qian Tao, Xi Chen, Islem Rekik, Sophia Bano, Andrea Lara, Yunliang Cai, Pingkun Yan, Pallavi Tiwari, Ingerid Reinertsen, Gongning Luo, without whom the exciting peripheral events would have not been feasible. Behind the scenes, the MICCAI secretariat personnel, Janette Wallace and Johanne Langford, kept a close eye on logistics and budgets, while Mehmet Eldegez and his team from Dekon Congress & Tourism, MICCAI 2022's Professional Conference Organization, managed the website and local organization. We are especially grateful to all members of the Program Committee for

their diligent work in the reviewer assignments and final paper selection, as well as the reviewers for their support during the entire process. Finally, and most importantly, we thank all authors, co-authors, students/postdocs, and supervisors, for submitting and presenting their high-quality work which made MICCAI 2022 a successful event.

We look forward to seeing you in Vancouver, Canada at MICCAI 2023!

September 2022

Linwei Wang
Qi Dou
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