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Resource-Efficient Medical Image Analysis

First MICCAI Workshop, REMIA 2022
Singapore, September 22, 2022
Proceedings

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Preface

The 1st International Workshop on Resource-Efficient Medical Image Analysis (REMIA 2022) was held on September 22, 2022, in conjunction with the 25th International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2022). This will be the first MICCAI conference hosted in Southeast Asia. Due to COVID-19, this year it was a hybrid (virtual + in-person) conference.

Deep learning methods have shown remarkable success in many medical imaging tasks over the past few years. However, it remains a challenge that current deep learning models are usually data-hungry, requiring massive amounts of high-quality annotated data for high performance. Firstly, collecting large scale medical imaging datasets is expensive and time-consuming, and the regulatory and governance aspects also raise additional challenges for large scale datasets for healthcare applications. Secondly, the data annotations are even more of a challenge as experienced and knowledgeable clinicians are required to achieve high-quality annotations. The annotation becomes more challenging when it comes to the segmentation tasks. It is infeasible to adapt data-hungry deep learning models to achieve various medical tasks within a low-resource situation. However, the vanilla deep learning models usually have the limited ability of learning from limited training samples. Consequently, to enable efficient and practical deep learning models for medical imaging, there is a need for research methods that can handle limited training data, limited labels, and limited hardware constraints when deploying the model.

The workshop focused on the issues for practical applications of the most common medical imaging systems with data, label and hardware limitations. It brought together AI scientists, clinicians, and students from different disciplines and areas for medical image analysis to discuss the related advancements in the field. A total of 19 full-length papers were submitted to the workshop in response to the call for papers. All submissions were double-blind peer-reviewed by at least three members of the Program Committee. Paper selection was based on methodological innovation, technical merit, results, validation, and application potential. Finally, 13 papers were accepted at the workshop and chosen to be included in this Springer LNCS volume.

We are grateful to the Program Committee for reviewing the submitted papers and giving constructive comments and critiques, to the authors for submitting

high-quality papers, to the presenters for excellent presentations, and to all the REMIA 2022 attendees from all around the world.

August 2022

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