Lecture Notes in Computer Science 13542

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Domain Adaptation and Representation Transfer

4th MICCAI Workshop, DART 2022
Held in Conjunction with MICCAI 2022
Singapore, September 22, 2022
Proceedings

Springer

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ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-031-16851-2 ISBN 978-3-031-16852-9 (eBook)
https://doi.org/10.1007/978-3-031-16852-9

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

Computer vision and medical imaging have been revolutionized by the introduction of advanced machine learning and deep learning methodologies. Recent approaches have shown unprecedented performance gains in tasks such as segmentation, classification, detection, and registration. Although these results (obtained mainly on public datasets) represent important milestones for the Medical Image Computing and Computer Assisted Intervention (MICCAI) community, most methods lack generalization capabilities when presented with previously unseen situations (corner cases) or different input data domains. This limits clinical applicability of these innovative approaches and therefore diminishes their impact. Transfer learning, representation learning, and domain adaptation techniques have been used to tackle problems such as model training using small datasets while obtaining generalizable representations; performing domain adaptation via few-shot learning; obtaining interpretable representations that are understood by humans; and leveraging knowledge learned from a particular domain to solve problems in another.

The fourth MICCAI workshop on Domain Adaptation and Representation Transfer (DART 2022) aimed at creating a discussion forum to compare, evaluate, and discuss methodological advancements and ideas that can improve the applicability of machine learning (ML)/deep learning (DL) approaches to clinical settings by making them robust and consistent across different domains.

During the fourth edition of DART, 25 papers were submitted for consideration and, after peer review, 13 full papers were accepted for presentation. Each paper was rigorously reviewed by at least three reviewers in a double-blind review process. The papers were automatically assigned to reviewers, taking into account and avoiding potential conflicts of interest and recent work collaborations between peers. Reviewers were selected from among the most prominent experts in the field from all over the world. Once the reviews were obtained, the area chairs formulated final decisions over acceptance or rejection of each manuscript. These decisions were always taken according to the reviews and were unappealable.

Additionally, the workshop organization committee granted the Best Paper Award to the best submission presented at DART 2022. The Best Paper Award was assigned as a result of a secret voting procedure where each member of the committee indicated two papers worthy of consideration for the award. The paper collecting the majority of votes was then chosen by the committee.

We believe that the paper selection process implemented during DART 2022, as well as the quality of the submissions, resulted in scientifically validated and interesting contributions to the MICCAI community and, in particular, to researchers working on domain adaptation and representation transfer.

We would therefore like to thank the authors for their contributions and the reviewers for their dedication and professionality in delivering expert opinions about the submissions.

August 2022

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