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Ahmed Abdulkadir · Deepti R. Bathula ·
Nicha C. Dvornek · Sindhuja T. Govindarajan ·
Mohamad Habes · Vinod Kumar ·
Esten Leonardsen · Thomas Wolfers ·
Yiming Xiao
Editors

Machine Learning in Clinical Neuroimaging


6th International Workshop, MLCN 2023
Held in Conjunction with MICCAI 2023
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Proceedings

Editors

Ahmed Abdulkadir 
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Rupnagar, India

Sindhuja T. Govindarajan 
University of Pennsylvania
Philadelphia, PA, USA

Vinod Kumar 
Max Planck Institute for Biological
Cybernetics
Tübingen, Germany

Thomas Wolfers 
University of Tübingen
Tübingen, Germany

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Preface

The rise of neuroimaging data, bolstered by the rapid advancements in computational resources and algorithms, is poised to drive significant breakthroughs in clinical neuroscience. Notably, deep learning is gaining relevance in this domain. Yet, there's an imbalance: while computational methods grow in complexity, the breadth and diversity of standard evaluation datasets lag behind. This mismatch could result in findings that don't generalize to a wider population or are skewed towards dominant groups. To address this, it's imperative to foster inter-domain collaborations that move state-of-the-art methods quickly into clinical research. Bridging the divide between various specialties can pave the way for methodological innovations to smoothly transition into clinical research and ultimately, real-world applications. Our workshop aimed to facilitate this by creating a forum for dialogue among engineers, clinicians, and neuroimaging specialists.

The 6th International Workshop on Machine Learning in Clinical Neuroimaging (MLCN 2023) was held on October 8th, 2023, as a satellite event of the 26th International Conference on Medical Imaging Computing & Computer-Assisted Intervention (MICCAI 2023) in Vancouver to continue the yearly recurring dialog between experts in machine learning and clinical neuroimaging. The call for papers was made on May 2nd, 2023, and submissions were closed on July 4th, 2023. Each of the 27 submitted manuscripts was reviewed by three or more program committee members in a double-blinded review process.

The sixteen accepted papers showcase the integration of machine learning techniques with clinical neuroimaging data. Studied clinical conditions include Alzheimer's disease, autism spectrum disorder, stroke, and aging. There is a strong emphasis on deep learning approaches to analysis of structural and functional MRI, positron emission tomography, and computed tomography. Research also delves into multi-modal data synthesis and analysis. The conference encapsulated the blend of methodological innovation and clinical applicability in neuroimaging. The proceedings mirror the hallmarks in the sections "Machine learning" and "Clinical applications", although all papers carry clinical relevance and provide methodological novelty.

For the sixth time, this workshop was put together by a dedicated community of authors, program committee, steering committee, and workshop participants. We thank all creators and attendees for their valuable contributions that made the MLCN 2023 Workshop a success.

Ahmed Abdulkadir
Deepti R. Bathula
Nicha C. Dvornek
Sindhuja T. Govindarajan
Mohamad Habes
Vinod Kumar
Esten Leonardsen
Thomas Wolfers
Yiming Xiao

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