

# Foreword

Computational Medical Image Analysis has become a prominent field of research at the intersection of Informatics, Computational Sciences, and Medicine, supported by a vibrant community of researchers working in academics, industry, and clinical centers.

During the past few years, Machine Learning methods have brought a revolution to the Computer Vision community, introducing novel efficient solutions to many image analysis problems that had long remained unsolved. For this revolution to enter the field of Medical Image Analysis, dedicated methods must be designed which take into account the specificity of medical images.

Indeed, medical images capture the anatomy and physiology of patients through the measurements of geometrical, biophysical, and biochemical properties of their living tissues. These images are acquired with algorithms that exploit complex medical imaging processes whose principles must be well understood as well as those governing the complex structures and functions of the human body.

The book *Deep Learning for Medical Image Analysis* edited by S. Kevin Zhou, Hayit Greenspan, and Dinggang Shen, top-notch researchers from both academia and industry in designing machine learning methods for medical image analysis, covers state-of-the-art reviews of deep learning approaches for medical image analysis, including medical image detection/recognition, medical image segmentation, medical image registration, computer aided diagnosis and disease quantification, to name some of the most important addressed problems. The book, which starts with an introduction to Convolutional Neural Networks for Computer Vision presents a set of novel deep learning methods applied to a variety of clinical problems and imaging modalities operating at various scales, including X-ray radiographies, Magnetic Resonance Imaging, Computed Tomography, microscopic imaging, ultrasound imaging, etc.

This impressive collection of excellent contributions will definitely serve and inspire all the researchers interested in the development of new machine learning methods in the rapidly evolving field of medical image analysis.

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