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Myocardial Pathology Segmentation Combining Multi-Sequence Cardiac Magnetic Resonance Images

First Challenge, MyoPS 2020
Held in Conjunction with MICCAI 2020
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Proceedings

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Preface

Assessment of myocardial viability is essential in the diagnosis and treatment management for patients suffering from myocardial infarction (MI). Different cardiac magnetic resonance (CMR) sequences can image and provide unique information of the heart. These sequences include the late gadolinium enhancement (LGE) CMR, which visualizes MI, the T2-weighted CMR, which images the acute injury and ischemic regions, and the balanced steady-state free precession (bSSFP) cine sequence which captures cardiac motions and presents clear boundaries. Combining these multi-sequence CMR data can provide rich and reliable information with regards to the pathological as well as the morphological information of the myocardium.

MyoPS 2020 provides the three-sequence CMR, i.e., bSSFP CMR, T2 CMR, and LGE CMR, from 45 patients. All the clinical data has received institutional ethic approval and has been anonymized. The data released here has been pre-processed using the multivariate mixture model method, to align the three-sequence CMR images into a common space and to resample them into the same spatial resolution. The training images are provided with gold standard labels, including left ventricular (LV) blood pool, right ventricular blood pool, LV normal myocardium, LV myocardial edema, and LV myocardial scars. MyoPS 2020 also intended to present an open and fair platform for various research groups to test and validate their methods on these datasets acquired from the clinical environment. The aim is not only to benchmark various myocardial pathology segmentation algorithms, but also to cover the topic of general cardiac image segmentation, registration, and modeling, and raise discussions for further technical development and clinical deployment.

A total of 16 papers were accepted and presented at MyoPS 2020, and are published by Springer in this LNCS volume. MyoPS 2020 was held in conjunction with the MICCAI 2020 international conference. MyoPS 2020 was scheduled to be held in Lima, Peru on October 4, 2020, but finally was held through a virtual conference management platform due to the COVID-19 pandemic. The readers can find more information about MyoPS 2020 at the website:
http://www.sdspeople.fudan.edu.cn/zhuangxiahai/0/myops20/.

We would like to thank all organizers, reviewers, authors, and sponsors for their time, efforts, contributions, and support in making MyoPS 2020 a successful event.

October 2020

Xiahai Zhuang
Lei Li

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http://www.sdspeople.fudan.edu.cn/zhuangxiahai/0/myops20/
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