

# Yichi Zhang

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## EDUCATION

<b>Beihang University</b>	Sep 2020 - Jan 2023
Master · School of Biological Science and Medical Engineering	Beijing
<b>Beihang University</b>	Sep 2016 - Jun 2020
Bachelor · School of Biological Science and Medical Engineering	Beijing

## RESEARCH EXPERIENCE

### [ Semi-Supervised Learning for Medical Image Segmentation ] Jan 2021 - Present

[1] Propose a dual-task mutual learning framework to jointly learning the segmentation probability maps and signed distance maps of targets for semi-supervised medical image segmentation. The method outperforms the state-of-the-art semi-supervised segmentation methods on Left Atrium Segmentation (LA) Dataset.

- **Y. Zhang**, et al. Dual-Task Mutual Learning for Semi-Supervised Medical Image Segmentation. Chinese Conference on Pattern Recognition and Computer Vision (PRCV), 2021. (CCF-C)

[2] Propose a novel uncertainty-guided mutual consistency learning framework to integrate intra-task consistency learning from up-to-date predictions and cross-task consistency learning from task-level regularization to exploit geometric shape information. The method outperforms existing semi-supervised segmentation methods on two publicly benchmark datasets.

- **Y. Zhang**, et al. Uncertainty-Guided Mutual Consistency Learning for Semi-Supervised Medical Image Segmentation. Artificial Intelligence In Medicine. (Q1, IF=7.011)

[3] Present a comprehensive review of recently proposed semi-supervised learning methods for medical image segmentation and summarize both the technical novelties and empirical results.

- R. Jiao\*, **Y. Zhang**\*, et al. Learning with Limited Annotations: A Survey on Deep Semi-Supervised Learning for Medical Image Segmentation. Submitted to Medical Image Analysis. (Q1, IF=13.828)

### [ Annotation-Efficient COVID-19 CT Lung Infection Segmentation ] Sep 2020 - Jul 2021

Propose a novel relation-driven collaborative learning model to exploit shared knowledge from non-COVID lesions for annotation-efficient COVID-19 CT lung infection segmentation. Extensive experiments demonstrate that trained with limited COVID-19 data, exploiting shared knowledge from non-COVID lesions can further improve state-of-the-art performance with up to 3.0% in dice similarity coefficient and 4.2% in normalized surface dice.

- **Y. Zhang**\*, Q. Liao\*, et al. Exploiting Shared Knowledge from Non-COVID Lesions for Annotation-Efficient COVID-19 CT Lung Infection Segmentation. IEEE Journal of Biomedical and Health Informatics, 2021. (Q1 IF=7.021)

### [ Automatic Myocardial Infarction Segmentation from Delayed-Enhancement Cardiac MRI ] Aug 2020 - Oct 2020

Propose a cascaded convolutional neural network for automatic myocardial infarction segmentation from delayed-enhancement cardiac MRI. The method is evaluated on the MICCAI 2020 EMIDEC challenge dataset and achieves average

Dice score of 0.8786, 0.7124 and 0.7851 for myocardium, infarction and no-reflow respectively, outperforms all the other teams of the segmentation contest.

- **Y. Zhang**. Cascaded Convolutional Neural Network for Automatic Myocardial Infarction Segmentation from Delayed Enhancement Cardiac MRI. International Workshop on Statistical Atlases and Computational Models of the Heart, 2020.
- Alain Lalande, et al. Deep learning methods for automatic segmentation of delayed enhancement-MRI. The results of the EMIDEC challenge. Medical Image Analysis, 2022. (Q1, IF=13.828)

### [ 2.5D Methods for Computation Efficient Volumetric Medical Image Segmentation ] Mar 2019 - Oct 2020

[1] Apply the attention mechanism for the utilization of inter-slice information in 3D segmentation tasks based on 2D convolutional networks for spine MRI segmentation. Experimental results demonstrate higher accuracy and efficiency of proposed method.

- **Y. Zhang**, et al. SAU-Net: Efficient 3D Spine MRI Segmentation Using Inter-Slice Attention. Medical Imaging with Deep Learning (MIDL), 2020.
- First Prize of National Biomedical Engineering Innovation and Design Contest of China, 2019. (Top 5%)

[2] A large-scale empirical study of 2.5D methods for volumetric medical image segmentation on three representative segmentation tasks involving different modalities and targets to compare the performance and effectiveness of these methods.

- **Y.Zhang**, et al. Bridging 2D and 3D Segmentation Networks for Computation Efficient Volumetric Medical Image Segmentation: An Empirical Study of 2.5D Solutions. Computerized Medical Imaging and Graphics, 2022. (Q1, IF=7.422)

## PROFESSIONAL ACTIVITIES

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### [ Journal / Conference Reviews ]

- IEEE Transactions on Medical Imaging (TMI)
- IEEE Journal of Biomedical and Health Informatics (JBHI)
- Medical Imaging with Deep Learning (MIDL) 2022-2023

### [ Honors & Awards ]

[2022] Finalist of TOP 10 Graduate Student of Beihang University

[2022] Outstanding Graduate Student Award 2022

[2021] National Scholarship in China (Top 1.6%)

[2020] Graduate President Scholarship for Science and Technology Competition (10 every year in Beihang University)

[2020] Scholarship of Outstanding Graduate Students

[2020] Champion, Myocardial Infarction Segmentation (EMIDEC Challenge in MICCAI 2020)

[2019] First Prize of National Biomedical Engineering Innovation and Design Contest of China (Top 5%)