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Prof. Huiqi Li got her PhD from Nanyang Technological University. Currently she is a professor at School of Information and Electronics, Beijing Institute of Technology. She is an IEEE senior member. Her research interests include medical image processing and pattern recognition, especially in ocular image processing and AI-based diagnosis. She was awarded New Century Excellent Talents Award, and Most cited Chinese researchers (Elsevier), 2014- 2022.

报告题目:

先验知识在医学影像处理算法中的融合

Fusion of prior knowledge in data-driven medical image processing

摘要:

医学影像是疾病诊疗和早期预测的重要依据之一。随着深度学习算法的发展，使用数据驱动方式应用深度学习网络进行医学图像分类和分割已经成为研究热点，并在不同的医学影像处理任务中取得了较好的算法性能。但是由于实际临床影像的复杂性和多样性，目前辅助检测和诊断算法的可靠性和泛化性都有进一步提升的空间，不同来源的数据集可迁移性较差，离实际临床应用还有较大差距。为提高深度学习网络的算法性能，本报告重点介绍使用先验知识优化深度学习网络的医学影像处理算法，并以眼底数据为例，探讨医学图像深度学习算法中先验特征融入的重要性。

Medical imaging is an important tool for early diagnosis and disease treatment. With the development of deep learning, data driven medical image classification and segmentation via deep learning network has become a hot research topic. Impressive achievement has been presented in various image processing tasks. Due to the complexity and diversity of clinical images, the transfer of current algorithms to different dataset is still challenging. It is still a long way to be employed in clinical usage. In order to improve the algorithm performance, this report focuses on fusion prior-

knowledge into deep learning network. Given ocular image as an example, we will show the importance of applying prior-knowledge into data-driven networks.