Trustworthy Deep Learning for Medical Imaging and Analysis

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Artificial intelligence (AI), especially deep learning with large-scale annotated datasets, has dramatically advanced the recognition performance in many domains including speech recognition, visual recognition and natural language processing. Despite its breakthroughs in above domains, its application to medical imaging and analysis remains yet to be further explored, where large-scale fully and high-quality annotated datasets are not easily accessible. In this talk, I will share our recent progress on developing trustworthy AI for medical imaging and analysis, including label-efficient deep learning methods by leveraging an abundance of weakly-labelled and/or unlabelled datasets, domain generalization, uncertainty quantification, with versatile applications to image enhancement, disease diagnosis, anomaly detection, lesion segmentation, hybrid human-machine collaboration, etc. Challenges and future directions will also be discussed.