

“Hello World!” Deep-CAD

by

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Abstract: Advancement in medical imaging modalities result in huge varieties of images engaged in different management phases, namely prognosis, diagnosis, and treatment. In clinical practice, imaging has reserved a vital role to assist physicians and medical experts in decision-making. However, the counterpart that the physician faces is the complexity to deal with a large amount of data and image contents. Mainly, the interpretation is based on the physician’s observations, which is tedious, subject to error, and highly dependent on the skill and experience of the clinicians. Accordingly, emerging demand for automated tools has become essential for detecting, quantifying and classifying the disease for an accurate diagnosis.

Computer-aided Diagnosis (CAD) is an emergent research area that aims to meet the physicians’ demands, to speed up the diagnostic process, to reduce diagnostic errors, and to improve the quantitative evaluation. It is based mainly on medical images that provide direct visualization of the bodies and information ranging from functional activities, anatomical information, to the cellular and molecular expressions. Recently, varieties of Computer-aided Detection and diagnosis procedures have been established to assist the automated interpretation of the medical images to attain an accurate and reliable diagnosis.

This talk provides a state-of-the-art sight in medical imaging applied to CAD. Besides traditional machine learning, Deep learning is the fastest-growing field in machine learning and is widespread used in disease detection. Recent research shows that deep learning can increase disease detection accuracy significantly. The talk emphasizes on the CAD ability to improve the diagnostic accuracy and different future directions using traditional and as well as deep learning techniques as an opening that gathers the clinicians and engineers for an accurate diagnosis.