The Role of Artificial Intelligence Diagnosis in Medical Images

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ABSTRACT

Artificial intelligence has become a popular technique nowadays including the processings of big data, intelligent robots, and machine vision. Especially for pattern recognition, the automatic classifications of human face, fingerprint, and iris are already implemented in consumer electronics. Based on the success of pattern recognition and artificial intelligence, computer-aided diagnosis (CAD) is thus developed to provide diagnostic suggestions on clinical examination. After quantitative measurement or feature extraction from medical images such as ultrasound, magnetic resonance imaging, CAD can be a second reader in improving reader performance for malignancy evaluation. Additionally, CAD would be promising in tumor detection from screening populations to reduce the workload of radiologists. The diagnosis of heterogeneous malignant tumors is a challenge to doctors due to the consideration of numerous image features simultaneously. CAD combines features to generate a prediction model can immediately provide quantitative assessment. Finally, the use of CAD can be extended to precision medicine. Past gene researches are isolated to clinical examinations due to the cost and the invasive procedures. The recent development of computational ability and image processings brings hundreds of image features extracted from computed tomography, magnetic resonance imaging, ultrasound, and so on. Consequently, the correlations between image features and gene expressions become emerging research topics, i.e. radiogenomics.

Resume

Work Experience

- Assistant Professor, Graduate Institute of Biomedical Informatics, Taipei Medical University (2015.8~)
- Adjunct Assistant Professor, Department of Computer Science and Information Engineering, National Taipei University (2015.2~)
- Postdoctoral Researcher, Department of Computer Science and Information

Engineering, National Taiwan University (2013.3~2015.7)

- Ph.D. Department of Computer Science and Information Engineering, National Taiwan University (2013)

Academic Interest

- Artificial Intelligence Diagnosis
- Medical Image Processing
- Computer-aided Detection

Award

- 2015-12th National Innovation Award
- 2015-MOST Reward of Excellent Faculty Recruitment
- 2014-MOST Postdoc Academic Publication Award
- 2014-International Federation for Medical and Biological Engineering, Young Investigator Award
- 2013-26th IPPR CVGIP Excellent Paper Award