

Uncertainty Model for Reliable AI-based Cardiac Image Segmentation and its Quality Control

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Various research results have been published that apply artificial intelligence technology to limited medical problems such as automatic reading of medical images. Furthermore, cases in which these medical artificial intelligence technologies are actually applied to clinical trials have also been reported, but many researchers point to the development of a reliable medical artificial intelligence model as a major prerequisite for applying artificial intelligence technology to medicine. Artificial intelligence as an auxiliary tool for clinical decision-making can help the medical staff to make decisions for diagnosis or treatment of patients only by securing the reliability of the results. To cope with high variance of medical images and safely deploy deep learning-based systems to real world, a novel reliable image segmentation model was developed that can distinguish between in-distribution and out-of-distribution (OOD) samples. And our proposed model showed the feasibility for detecting OOD data while keeping the segmentation performance of FCN. In this lecture, we will examine the technical limitations of artificial intelligence models that are obstacles to securing such reliability and the methodology to deal with them.

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