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국문 강연제목: 의료 초음파 하드웨어에서 인공지능의 새로운 가능성

영문 강연제목: New possibilities of artificial intelligence in medical ultrasound
hardware

Abstract

In recent years, artificial intelligence (AI) has shifted from traditional machine learning to advanced deep learning techniques, making significant strides in various medical imaging applications. This noteworthy development is primarily underpinned by the improved image processing capabilities of computing hardware, in conjunction with the pervasive digitization of medical equipment. Within diagnostic ultrasound, AI is actively used for tasks like automating image data extraction and anatomical structure identification or segmentation. However, it is worth noting that the majority of AI applications have thus far focused on the analysis of pre-acquired ultrasound image data, with relatively little emphasis on enhancing the performance of ultrasound image acquisition hardware. In this presentation, we will introduce an innovative AI technique that mitigates the inherent 'ringing' artifact observed in piezoelectric ultrasonic transducers. This breakthrough promises significant enhancement of the ultrasound image resolution. This exciting development could have a profound impact on the field of medical imaging, improving diagnosis and patient care.

Brief Biosketch

Byung Chul Lee (S'03-M'07) received the B.S. degree (Summa Cum Laude) from Korea University, the M.S. degree from Korea Advanced Institute of Science and Technology (KAIST), and the Ph.D. degree from Stanford University, all in electrical engineering, in 2003, 2005, and 2015, respectively. His research interests include MEMS/NEMS technology for diverse biomedical applications such as bioelectronics, biosensors, micro-nanofluidics, micro-nanofabrications, and novel micromachined ultrasonic transducers including its ASIC and integrated systems.