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EXPERT COMMENTARY

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New advances in technology, including artificial intelligence (AI), big data, cloud-based servers, 5G internet, robotics, and virtual reality, are becoming increasingly important elements for emerging innovations in the field of medicine. These advances should also provide excellent opportunities for evolution and development of ultrasound imaging systems.

Since real-time ultrasound instruments became available in the 1970s, this imaging modality has made great contributions to clinical practice and raised physician's and patient's perceptions for clinical applications [1,2]. Since then, the perception of ultrasound imaging equipment has become solidified and even stereotypical: a bulky console desk-top unit with several probes attached and a display monitor. More recently, the emergence of portable ultrasound devices has dramatically miniaturized ultrasound equipment to some extent. However, compared to console-based ultrasound instruments, portable ultrasound devices are still a supplement tool and do not have a dominant role due to their limited imaging quality and functionality [3].

Advances in technologies, such as nano-chips, high-speed communication, cloud platforms, and AI have opened up the possibility of new strategies for developing ultrasound imaging systems in the future. In current issue of AUDT, Zhou wrote a technological article to prospectively review an innovative pathway for the development of ultrasound imaging systems, termed as a distributed cloud-based ultrasound system (DCUS) [4]. This is a new concept and proposal for creating ultrasound imaging instrument, which leverages the technology of ultra-bandwidth high-speed information transmission, high computing power platform, distributed terminals and centralized cloud-based servers, as well as combination with AI applications. By incorporating several emerging and advanced technologies, DCUS could become a unique pathway to make improved ultrasound systems and an alternative platform for diagnostic ultrasound.

The potential advantages and benefits with DCUS could include reduction of hardware distribution, standardization of exam protocols, extension of clinical applications, and optimization of the imaging quality. Cloud-based centralized DCUS associated with AI and network connection could improve remote examination and consultation, and even provide remote interventional guidance and procedures. Exploring new and creative ideas that employ the use of multiple advances in technology are critical to the continuous evolution of ultrasound imaging systems that can adapt to the new digital era in medicine.

Conflict of Interest

Author has no conflict of interest to declare.

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