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Letter to the Editor

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Integration of AI hardware in cardiovascular clinician education

Dear Editor-in-Chief,

As a cardiologist and a cardiovascular surgeon who have worked together in harmony, we have had the opportunity to witness firsthand the rapid advancements in artificial intelligence (AI). Today, AI-powered tools play a crucial role in areas such as cardiac imaging, electrophysiology, risk prediction, and decision support systems. However, the lack of formal training on AI hardware in traditional medical education presents a significant gap. Modern cardiovascular care has become highly dependent on high-performance computing systems. Technologies such as GPUs (Graphics Processing Units), TPUs (Tensor Processing Units), FPGAs (Field-Programmable Gate Arrays), and ASICs (Application-Specific Integrated Circuits) accelerate AI applications in echocardiography analysis, ECG interpretation, and personalized treatment planning. Additionally, IoT (internet of things)-enabled wearable devices facilitate continuous patient monitoring, generating real-time data processed by AI models (1-3). While these technologies are increasingly integrated into daily practice, many clinicians remain unfamiliar with the hardware infrastructure that enables them.

Recent developments, such as the cost-effective implementation of AI hardware seen in the latest Deep-Seek AI model, demonstrate that AI development can be made more affordable. Of course, the primary responsibility for these advancements lies with AI and computer engineers. However, if physicians possess sufficient knowledge and experience at this stage, they can contribute significantly to the process. By involving end-users, clinicians, from the early stages of AI development, we can ensure that these innovations are optimally tailored for real-world medical applications.

To effectively integrate AI into cardiovascular care, physicians must understand not only the software but also the hardware that makes these innovations possible. Medical education should be expanded to cover fundamental AI hardware principles, including computing architectures, cloud-based AI platforms, and edge computing in clinical settings. This knowledge will enable cardiovascular care givers to critically evaluate AI-powered tools, collaborate effectively with engineers, and ensure the ethical implementation of these technologies in patient care.

The future of cardiovascular care is intertwined with AI, and we must keep pace with this transformation. We urge medical schools and professional organizations to incorporate AI hardware literacy into their curricula to prepare future cardiovascular care givers for this technological era. Only by doing so can we fully realize AI's potential in cardiology and provide the best possible care for our patients.

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