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Lessons in implementing AI technology in Medicine and Healthcare

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报告摘要

Artificial intelligence (AI) has vast potential to impact on healthcare. Deep learning in particular has been now applied to various platforms (e.g., data, imaging, blood markers) and various diseases, offering substantial opportunities to change current models of clinical care such as in screening, diagnosis, prognosis and precision medicine. However, actual integration and implementation of AI technology has been extremely slow in many healthcare settings. Many computer scientists do not understand the reasons for this. Clinical integration, adoption and implementation is related to a complex interaction of not just technical factors (how advance or mature is the AI technology?) but a range of non-technical factors. For example, many AI algorithms have been only tested in highly experimental “lab settings” and not validated in “real-world” clinical settings and in local patient populations and context, making physicians and policy makers hesitant to embrace AI technology safely. Non-technical factors (e.g., patient and physician acceptance, clinical workflow process change, government funding and reimbursement) also impede the adoption and scaling of such AI technology in healthcare. This talk will share concepts of AI and deep learning, and cover the lessons learnt in developing and scaling of a national telemedicine-based screening program in diabetic retinopathy, a blinding eye disease in diabetes and the challenge of integration and deployment of an AI algorithm into this telemedicine program. Understanding issues and challenges are critical for scientists, engineers, healthcare policy makers, healthcare leaders and managers to implement AI in healthcare settings. In healthcare, “...change is not merely installing or using new technology but introducing and sustaining major changes to a complex system...”.