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COMMENT

Accessible artificial intelligence for ophthalmologists

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Artificial intelligence (AI) is starting to be widely leveraged for ophthalmic classification tasks [1–3]. One of the primary goals of such technology is to aid ophthalmologists and optometrists in the more accurate and timely management of disease. Thus, research mainly targets the development of AI systems to target image intensive clinical data such as optical coherence tomography (OCT) classification to fundoscopy image recognition and segmentation. While these studies have proven high levels of accuracy and the ability to be potentially clinically beneficial, we feel as though more work should be focused on the accessibility of such technologies for the clinician. The vast majority of work solely focuses on the development of novel AI solutions but disregard the integration at the point-of-care, and how it may augment or benefit clinical workflows.

A lack of appreciation of how an AI system will perform within a clinical setting can lead to many problems with respect to implementation. Pristine datasets are critical for accurate AI classification systems and poor image resolution, non standardized data types, and crooked pictures barely describe the vast majority of errors that can occur in data acquisition. When deploying AI systems into accessible formats, it is also essential for computation to be fast. Mobile applications are one of the most widely used platforms with many technologies available to streamline the deployment of AI systems. With mobile AI systems, clinicians can conveniently utilize technologies from the palm of their hand.

Our prior work focused not only on the development of an AI system for ophthalmic classification but also on accessibility [4]. We developed an end-to-end OCT image analysis system that can accurately categorize scans into various disease categories and then studied the optimization and processes required for smooth deployment onto an iPhone. We compressed our model through various tools and during the training processes built resilience to image resolution and augmentations. By doing so, we were able to create a robust mobile tool that can be used by ophthalmologists at the point-of-care and were also able to understand the limitations and processes required for accessible deployment.

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AUTHOR CONTRIBUTIONS

AR wrote the main body of the text regarding technology and HF added clinical information.

COMPETING INTERESTS

The authors declare no competing interests.

ADDITIONAL INFORMATION

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