



Artificial intelligence in diabetic retinopathy

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Received: 12 March 2020 / Revised: 19 March 2020 / Accepted: 20 March 2020 / Published online: 14 April 2020
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It was of great interest to read the two editorials, one paper and a review on the application of artificial intelligence (AI) in ophthalmology [1–4], and in particular diabetic retinopathy screening. John McCarthy (a computer scientist of renown) first used the phrase AI in 1956. He stated “We propose that a 2-month, 10-man study of AI be carried out during the summer of 1956 at Dartmouth College in Hanover, New Hampshire. The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it.” We are now belatedly seeing the application of technology in this way.

The first applications of AI in ophthalmology involved the use of artificial neural networks [5] (the building blocks of deep learning) to examine visual field defects. It was then applied to identification of fundal features [6] and with some success to diabetic retinopathy [7] with sensitivities and specificities, which have now been iteratively improved upon. Initially computer processing capacities required segmentation of images but, as was anticipated, increased computing powers have allowed an incremental improvement in performance [8, 9] over the decades from its first descriptions in ophthalmology in the 1990s.

There is no doubt that further improvements in computing hardware and software mean that many diagnostic processes will be taken over by AI, in time, not just diabetic screening. Indeed, any data which is digitised is amenable to AI processing and clinical decision making on EPR data may in fact be an easier goal than processing of variable digital images. Even such areas as communication with patients traditionally involving the human interface, but as a result highly variable, may be improved upon eventually with AI.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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