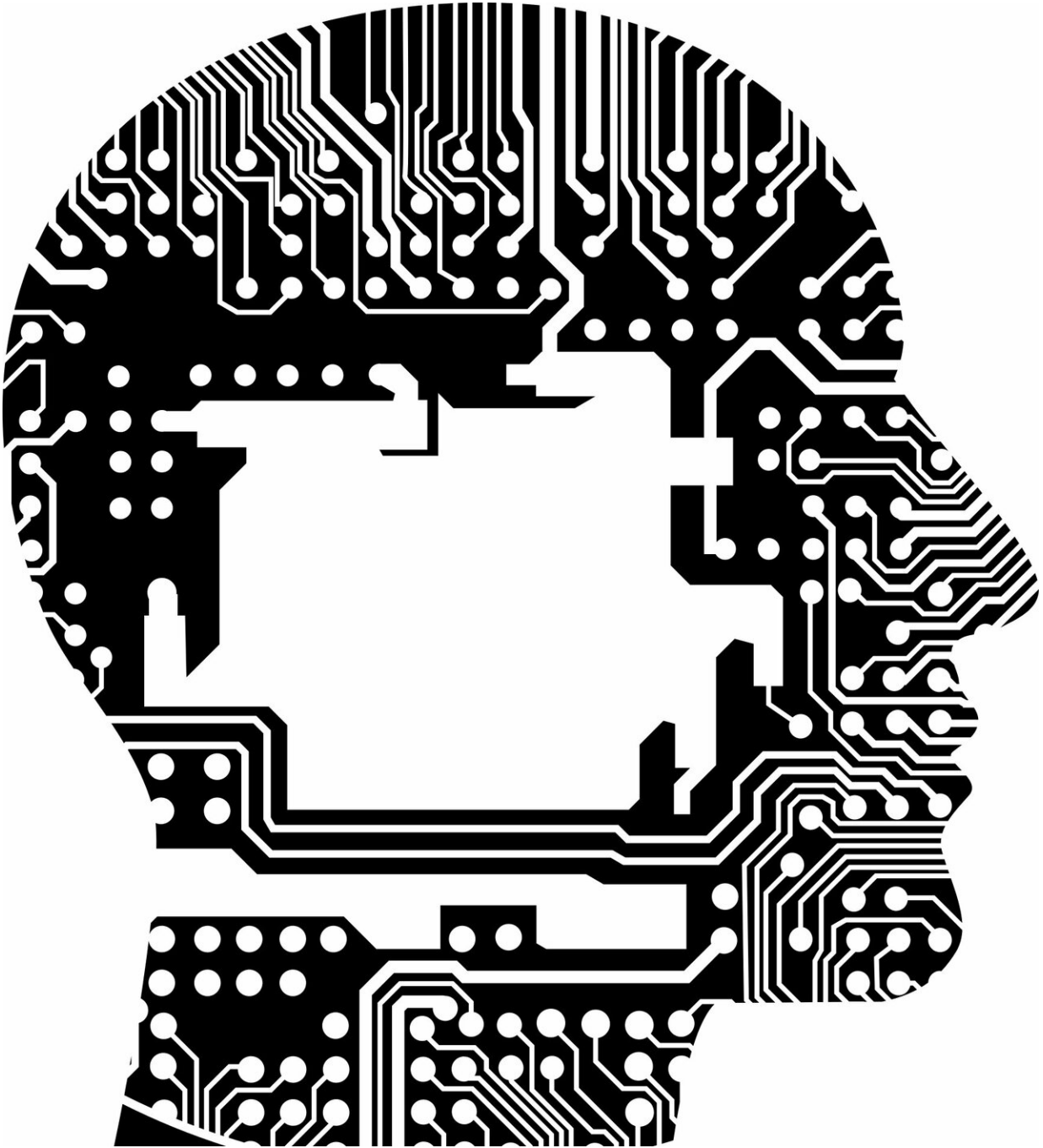


Diagnosis of neurological diseases to benefit from AI

September 11 2020



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Cutting-edge artificial intelligence technology for diagnosing

neurological disease such as Parkinson's and Alzheimer's from eye scans will be tested and scaled in the NHS.

The Newcastle University-led project working with partners at the RVI in Newcastle part of the Newcastle NHS Foundation Trust and Sunderland Eye Infirmary is one of the first winners of the AI in Health and Care Award sharing part of £50m.

Neurological diseases like Parkinson's and Alzheimer's affect over one million people in the UK. As they are progressive it is important to diagnose them as soon as possible.

Anya Hurlbert, professor of visual neuroscience at Newcastle University is leading the Octahedron project and explains: "The retina at the back of the eye is basically an outpost of the brain and the only part of the central nervous system we can see directly from the outside. We know that in Alzheimer's disease and Parkinson's disease the retina is affected."

Using optical coherence tomography, OCT scanning, which is quick and cheap and increasingly available at high street opticians, incredibly detailed images of the retina can be captured. However, getting information out of the scans needs further development.

AI tools have already been developed to interpret the OCT images and detect common eye diseases. AI tools are going to be further developed by the Octahedron team to capture signs of neurological disease, using the vast quantities of OCT scans required.

"The aim of the project is to use NHS data to teach computers how to detect early signs of neurological disease via retinal imaging. Ultimately, the project will help to catch those at risk earlier, before other symptoms develop," added Professor Hurlbert.

"All of a sudden, I couldn't dance"

Charlotte Allen from Durham, lives with Parkinson's as a patient and carer, and recalled when she first noticed something was wrong: "I went to a friend's wedding reception and all of a sudden, I couldn't dance. I think this study to me is extremely important being able to spot Parkinson's earlier—that is an amazing thing to think about."

Russ Bradford also has Parkinson's and alongside Charlotte has set up Parkinson's Concierge, an organization which works to improve the quality of life of all those affected and living with the disease. He stated: "We are so passionate about helping with Parkinson's Research, that Charlotte and I have dedicated the rest of our lives to doing this. We do this for the benefit of the global community, currently 10 million people around the world are living with Parkinson's."

The Octahedron project—which involves colleagues from FMS and SAgE in computing, neuroscience, vision science and aging—is part of a wider commitment by the NHS to becoming a world leader in the use of artificial intelligence (AI) and machine learning and harness the benefits on offer from the technology that range from faster and more personalized diagnosis to potential efficiencies in screening services.

AI revolution

Today's announcement supports a range of technologies at different stages of development, from concepts to first real-world tests to the scaling of AI products to a number of NHS sites to generate further evidence for potential adoption in the NHS. Each product will undergo robust testing and independent evaluation to ensure they are effective, accurate, safe and value for money.

Sir Simon Stevens, NHS Chief Executive, said: "The NHS is determined to take advantage of the artificial intelligence revolution and ensure we are harnessing the latest and best technologies to improve care and save more lives. The technologies we're funding today have the potential to transform how we deliver services such as screening tests, cancer treatment and stroke care for thousands of patients right across the country."

Matt Hancock, Secretary of State for Health and Social Care, said: "AI has huge potential for transforming healthcare and freeing up medical professionals' time—these awards are just the start of an exciting pipeline of new technology that will identify new ways to diagnose, screen and treat illnesses ranging from dementia and sepsis to antibiotic resistant infections and problems in pregnancy."

The AI in Health and Care Award forms part of the NHS AI Lab and is managed by the Accelerated Access Collaborative in partnership with NHSX and the National Institute for Health Research.

Matthew Gould, chief executive of NHSX, said: "We have seen through the NHS response to COVID how the adoption of new technology can transform and open up the NHS from increasing use of video and online consultations to the significant rise in the use of 111 online and other digital services. Through the NHS AI Lab we want to see this transformation continue with the safe adoption and spread of state of the art data driven technologies that will save the NHS money through better internal systems and enhance the care our clinical teams can provide to patients."

Lord Darzi, chair of the Accelerated Access Collaborative, said: "The AAC and the AI in Health and Care Award are helping to cement the UK's international reputation as the perfect location to trial and test new technologies. Today we have backed a range of innovators from

academia, industry and the NHS to develop and deliver AI tools and products that can transform our health system and ensure we continue to be a world leader in medical science and research."

The NHS AI Lab, announced by the Prime Minister last year, is a key part of the health services' efforts to drive up the use of innovative new technologies.

As part of the selection process each applicant had to commit to complying with the laws and regulations that protect health and care data as well as the NHS's Code of Conduct for data-driven technologies.

This is ensuring that AI is developed in a safe, ethical, evidenced and transparent way that puts patient privacy first.

Provided by Newcastle University

Citation: Diagnosis of neurological diseases to benefit from AI (2020, September 11) retrieved 20 April 2024 from

<https://medicalxpress.com/news/2020-09-diagnosis-neurological-diseases-benefit-ai.html>

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