

Lay Summary

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Artificial intelligence-based reconstruction of the WHO 2021 diagnostic algorithm for adult-type diffuse gliomas

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The diagnosis of a brain tumour is complex and involves many different people and steps. Since there are several different types of brain tumour, tumour samples collected during surgery, or another procedure must be thoroughly examined both under a microscope and in the laboratory. This process is important as it can help us to decide which treatment might be suitable and how well the treatment is likely to work.

The process of diagnosing a brain tumour and identifying the type can take several days or weeks. In this project, we will develop a new artificial intelligence (AI) method to automate parts of this process and thereby speed it up.

Tissue that has been prepared for examination under a microscope can now be scanned to produce a digital image, much like how you would scan a document. Once we have a digital copy of the tissue, we can then use AI to inspect the image.

We and others have previously shown that AI can identify certain details in tumour images that doctors cannot see. This includes detecting the specific cancer type that would usually require additional testing in the laboratory. This would mean that patients could begin treatment sooner, something that we know increases the chances of the treatment working.