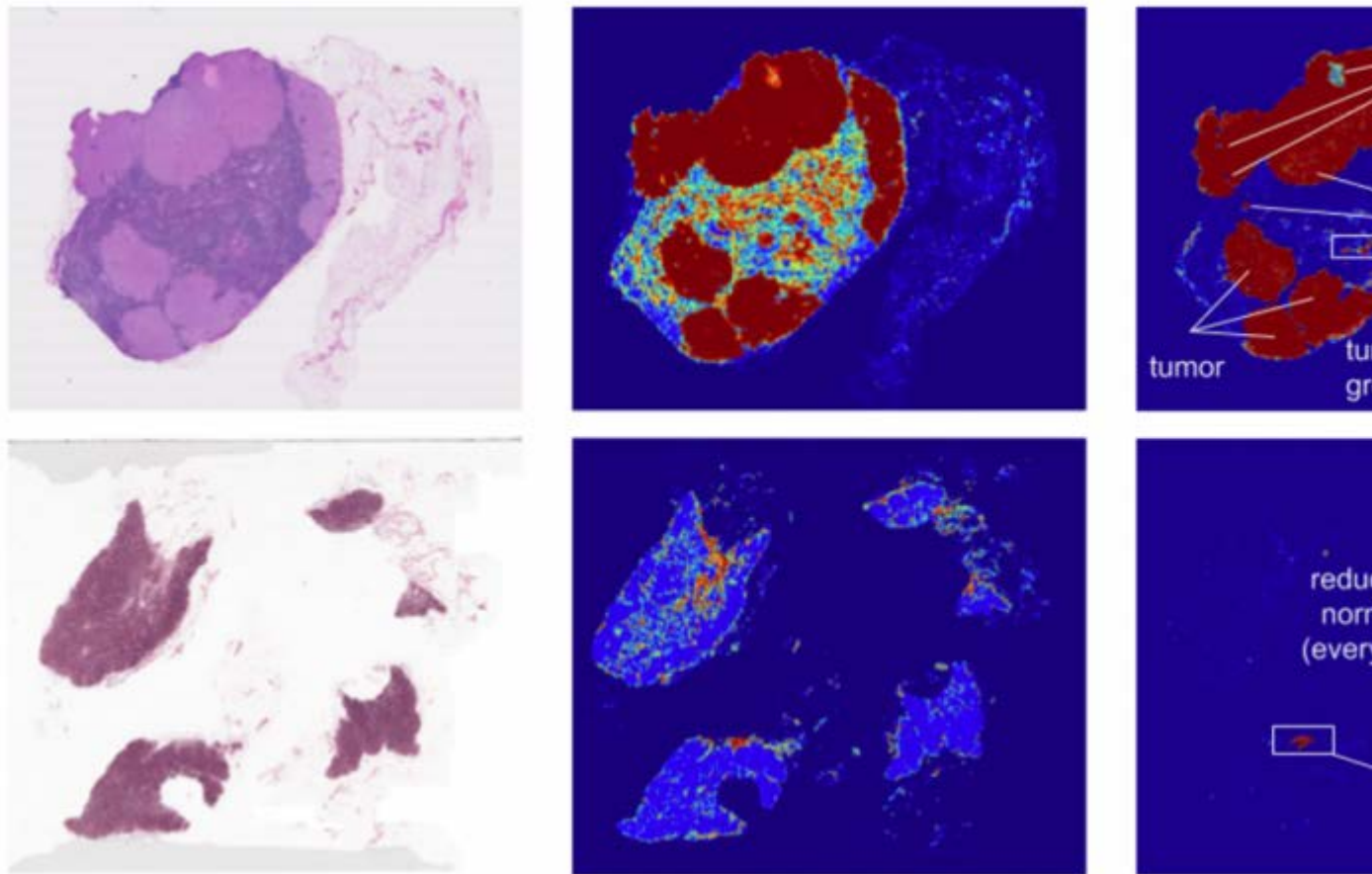# Google's Deep Learning AI project diagnoses cancer faster than pathologists

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research.googleblog.com

The hardest job for a pathologist is to determine whether or not a patient has cancer. Many lives hang on that one decision. But the task is so vast and difficult that agreement between different pathologists studying the same slides can be as low as only 48 per cent, according to reports. Which is why Google is working on an automated system to complete this task wih a Deep Learning AI project and the results are astonishing.

"There can be many slides per patient, each of which is 10+ gigapixels when digitized at 40X magnification. Imagine having to go through a thousand 10 megapixel (MP) photos, and having to be responsible for every pixel. Needless to say, this is a lot of data to cover, and often time is limited," says experts.

That's why Google has been working on an advanced image-recognition system for several years now through the GoogLeNet projects. This project was initially for the autonomous car project of the company, to teach the self-driving cars to recognise road layouts, stop signs etc. Now Google is applying the same GoogLeNet tech for the cancer diagnosis system.

"After additional customization, including training networks to examine the image at different magnifications (much like what a pathologist does), we showed that it was possible to train a model that either matched or exceeded the performance of a pathologist who had unlimited time to examine the slides," says Google.

Recently the AI system was pitted against an experienced expert pathologist to examine slides in an unlimited time frame. While the human being achieved 73 per cent accuracy, by the end of tweaking, GoogLeNet scored a smooth 89 per cent accuracy.

However, Google has said that they do not expect this AI system to replace pathologists, as the system still generates false positives. Moreover, this system cannot detect the other irregularities that a human pathologist can pick.

The plan, as Google says, is to point out the suspected regions for a pathologist to review them. It could also help measure the tumor size more accurately, which is very significant in developing a prognosis for cancer.

Google has published a white paper explaining the project.