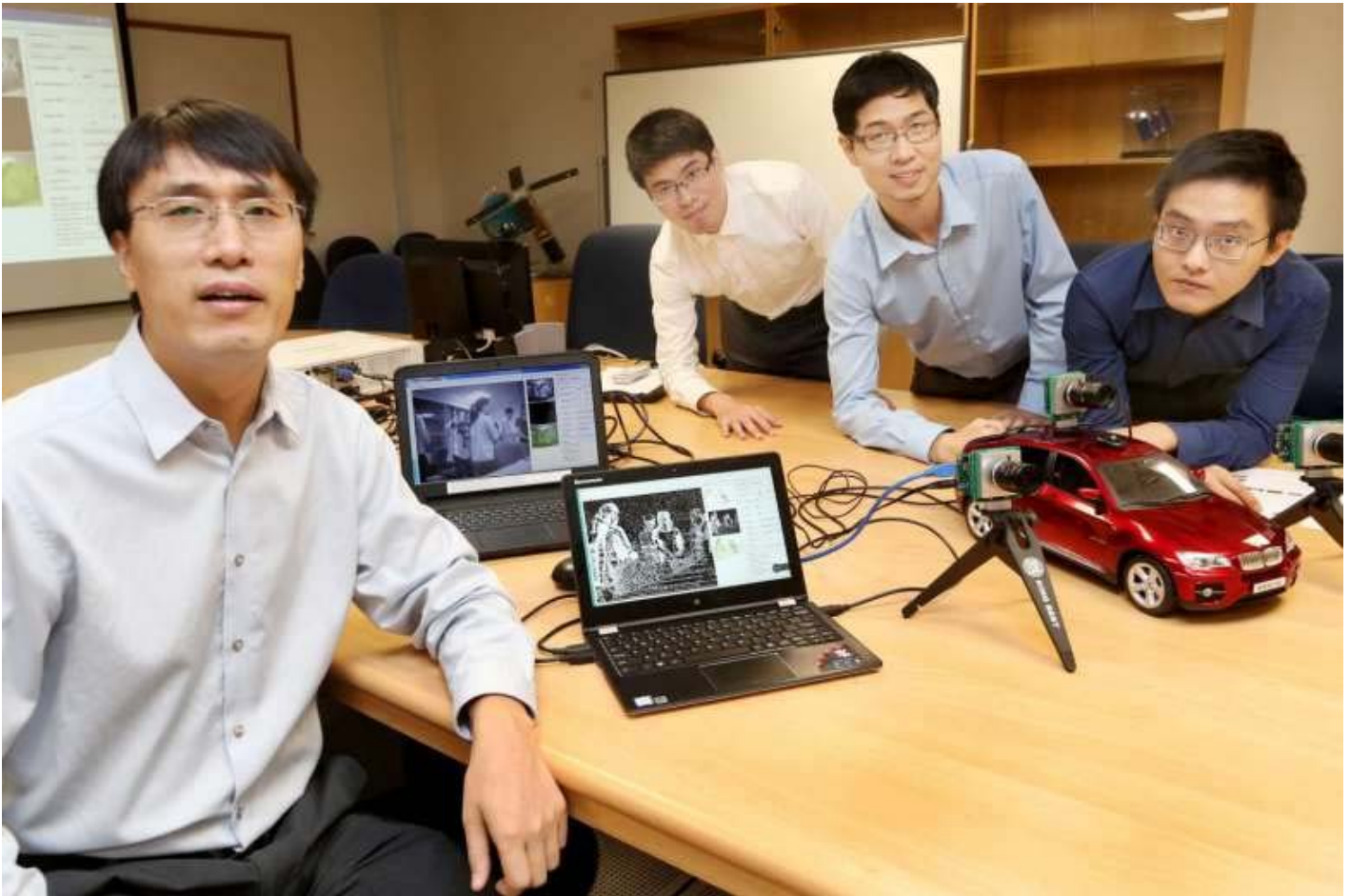


NTU scientists develop ultrafast camera that mimics human eye in tracking moving objects



(From left) Mr Chen Shoushun, Mr Guo Meng han, Mr Li Wan Long and Mr Yang Wen Lei, scientists from NTU who developed an ultrafast high-contrast camera. ST PHOTO: LAU FOOK KONG

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SINGAPORE - The human eye is adept at spotting and tracking moving objects in its field of vision, but not a camera sensor, which captures what it "sees" in its entirety, like a photograph.

But scientists at the Nanyang Technological University (NTU) have developed an ultrafast camera which mimics the capability of the human eye, and can track minute changes in the scene being viewed, even in low light.

The prototype camera named Celex, which has a patent pending, was showcased to the media on Thursday (Feb 16), and its developers say the technology can be useful for autonomous vehicles and self-flying drones.

Work for the Celex started in 2009, and involved a team of 10 scientists, led by Assistant Professor Chen Shoushun from NTU's School of Electrical and Electronic Engineering.

Prof Chen said that for a conventional camera, many frames of pictures have to be continuously taken to track a moving object. This generates huge amounts of data, much of which is wasted, he adds.

A camera sensor has millions of pixels, or sensor sites, which record light information and collectively form a picture.

With the Celex, individual pixels only record information relevant to movement, in other words, when there is a change of light intensity. Where there is no movement, the pixels are inactive and do not record information.

In this way, the need to capture an entire scene like a photograph is negated, allowing the Celex camera to process and track what it "sees" much faster.

This also helps the camera's processors to differentiate between objects in the foreground and the background.

"With its continuous tracking feature and instant analysis of a scene, it complements existing optical and laser cameras and can help self-driving vehicles and drones avoid unexpected collisions that usually happens within seconds," he added.

The project has received a total of \$500,000 in funding, from grants awarded by the Ministry of Education and the Singapore-MIT Alliance for Research and Technology (Smart).

A start-up named Hillhouse Tech was set up in July 2015, to bring the camera to the market.

Prof Chen said that Hillhouse Tech is now in talks with automakers and a self-driving car company to use its technology, but declined to reveal names.