

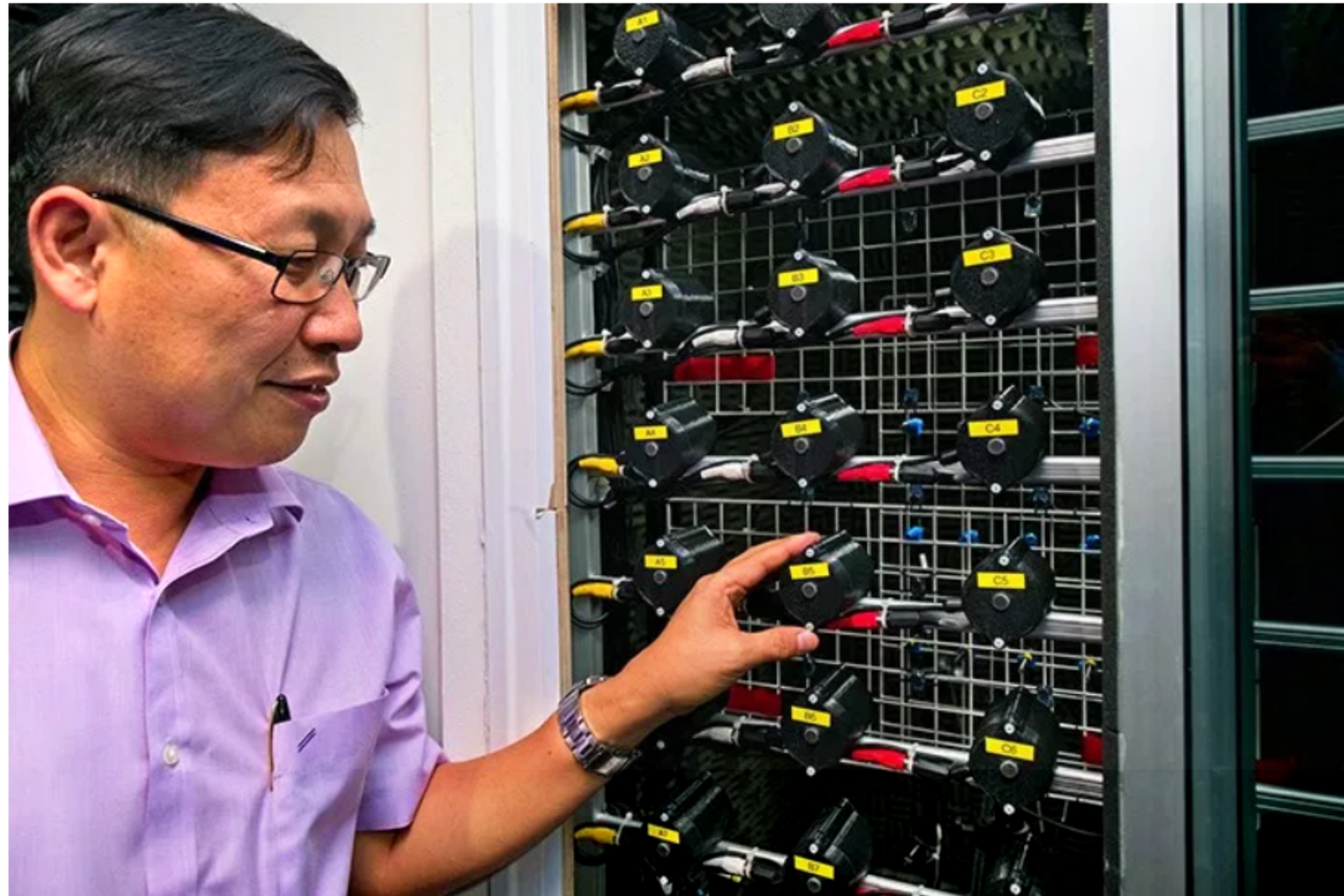
## Scientists create noise-cancelling device for buildings



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Cameron Jewell | 2 May 2018

Imagine opening up a window onto a busy road and hearing... not much. That's what scientists at Singapore's Nanyang Technological University (NTU) have developed, with a device that can reduce outdoor noise pollution entering through open building windows by 50 per cent.

The researchers said the technology, which attaches to window grilles, could be used to reduce impacts of nearby construction activities, roads and train tracks.

The device is based on "active noise control" technology – the same technology used in noise-cancelling headphones, but adapted to work in a large open area. It has a microphone that can pick up noise and a speaker-like device that then emits an "anti-noise" – a waveform that is the inverse of the noise detected. When the noise and anti-noise converge, they cancel one another out, the result of which is a "softer ambient sound entering living spaces".

"Our innovation not only computes the right amount and type of 'anti-noise' to emit, but also does it faster than the detected noise can reach inside the building," research lead professor Gan Woon Seng said.

The benefits are two-fold: first, windows can be left open for fresh air without some of the associated noise pollution; and second, the need for air-conditioning could be reduced in some environments.

Professor Gan, who is director of NTU's Centre for Infocomm Technology, said compared to noise-cancelling headphones the technology was much more technically challenging due to the large open areas needing to be targeted.

It is currently in prototype stage with each device using eight watts of power, similar to a portable Bluetooth speaker. Multiple units can be placed together to form a grid-like array on a window grille to reduce external noise. The next stage of the project is to improve noise-cancelling efficiency, reduce the somewhat imposing size of the devices and make them cost-effective to produce en masse.

"We are currently finding ways to improve the technology further so that it can be used not only at window grilles with large openings, but also provide a cost-effective solution that can be easily installed and replaced," Professor Gan said.

"Ultimately, we aim to integrate this technology into window grilles that can help mitigate urban noise pollution conveniently."

Other project partners include the University of Southampton in the UK and Tottori University in Japan.

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