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Recipients of the IES Prestigious Engineering Achievement Awards 2016

TWO NUS Engineering teams are among the recipients of the IES Prestigious Engineering Achievement Awards 2016, which recognise the outstanding achievements of engineers in Singapore. They received their awards from Mr Ng Chee Meng, Acting Minister for Education (Schools) and Senior Minister of State, Ministry of Transport, during the National Engineers Day (NED) on 23 July 2016.

Prof Lim Chwee Teck (left) and his PhD students, Mr Yeo Joo Chuan (centre) and Mr Kenry (right), receiving their IES Prestigious Engineering Achievement Awards 2016 on National Engineers Day (NED).

Professor Lim Chwee Teck and his PhD students – Mr Yeo Joo Chuan and Mr Kenry - from the Department of Biomedical Engineering received the IES Prestigious Engineering Achievement Awards 2016 for their project titled 'Highly Flexible and Wearable Sensors for Real-Time Healthcare Monitoring Applications'. Their novel device is simple and cost-effective. It is also small, thin, highly flexible and durable, and is suitable for applications such as soft robotics, wearable consumer electronics, smart medical prosthetic devices, as well as real-time healthcare monitoring. Conventional tactile devices that are currently available are rigid and bulky, restricting natural body movements when used. They may also be subjected to plastic deformation and failure when pressure is exerted.

Prof Lim and his PhD students also participated in TECH PLANTER Singapore 2016, held on 23 July, and their innovation received the JT award. More than a hundred teams participated, and only sixteen teams, including the NUS Engineering team, were selected. TECH PLANTER is a real tech seed accelerator programme (business plan competition) run by Leave a Nest, a Japanese accelerator, and it provides a unique platform for academics and researchers to pitch their business ideas directly to large businesses and corporates.

The future for the novel device looks bright. Prof Lim and his team have already filed a patent for their creation. In the past few months, they have received a POC research grant from the National Research Foundation for their project, and have tied-up with the National University Healthcare System (NUHS) and Tan Tock Seng Hospital (TTSH) for pilot trials. PhD students, Mr Yeo and Mr Kenry, are exploring setting up a startup to commercialise the novel device.

Assoc Prof Chua Kian Jon, Ernest (extreme right) and team members – Mr Kwek Wen Lin (extreme left); Dr Md Raisul Islam (second from left) and Mr Balamuniappan Pranesh (second from right) - receiving their IES Prestigious Engineering Achievement Awards 2016 on National Engineers Day (NED).

Engineering Science Programme students - Messrs Au Khai Xiang, Balamuniappan Pranesh and Kwek Wen Lin - under the supervision of Associate Professor Anjam Khursheed, Associate Professor Chua Kian Jon Ernest, Dr Md Raisul Islam, and Mr Nelliyan Karuppiah, received the IES Prestigious Engineering Award 2016 for their project titled ‘Smart White Cane’ that caters to the needs of the visually impaired.

The white cane was invented in 1921 as a mobility tool for the visually impaired. Since its development, there has not been any significant innovation or improvement in its functionality. For Project ‘Smart White Cane’, the NUS Engineering team redesigned the white cane to better aid the visually impaired, and their invention is a smart white cane that is capable of obstacle detection and wet surface sensing.

The sonar white cane has its circuit hardware housed in an ergonomic mechanical body, with its operations controlled by an Arduino UNO microprocessor. Obstacle detection is made possible with a system of ultrasonic proximity sensors, which is able to detect obstacles above waist level. This feature is not attainable with the conventional white cane, and it will help aid the visually impaired to navigate his or her surroundings with ease and reduce travel time. A wetness sensor is installed at the tip of the white cane.

The team has put the device through rigorous tests. It is keen to explore partnerships in the commercial development of the smart white cane, and hopes to bring the innovation to a global audience. Currently, the filing of a technological disclosure is in the pipeline.