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12 OCT, 2021

UTP associate professor awarded TRSM

Borneo Post (Kuching), Malaysia

UTP associate professor awarded TRSM

SERI ISKANDAR: Dr Tang Tong Boon, an associate professor with Universiti Teknologi Petronas (UTP), has been awarded the Top Research Scientists Malaysia (TRSM) by Academy of Sciences Malaysia (ASM) recently.

He was one of the 22 Malaysian research scientists recognised by ASM this year. The award winners were announced by Science, Technology and Innovation Minister Datuk Seri Dr Adham Baba virtually recently.

Dr Tang received the TRSM award for his contribution to the advancement and promotion of neurotechnology and its applications in mental healthcare, as well as his pioneering work on functional near-infrared spectroscopy or fNIRS in Malaysia.

"I am deeply humbled and honoured to receive this award, and I appreciate the recognition from ASM. The award means a lot to me as it is a timely boost of confidence in pursuing excellence in research especially under the current volatility, uncertainty, complexity and ambiguity environment, where constant and ongoing change is the new normal.

"This recognition is a testament of UTP being one of the top research universities in Malaysia that is capable to produce leading research scientists who innovate, create value-added opportunities and translate their research into meaningful and impactful outcomes that can significantly contribute to the nation.

"I am thankful to the collaborators, graduate students and UTP Management for their support," said Dr Tang in a press release by UTP.

Dr Tang received a BEng (Hons) and PhD in Electronics and Electrical Engineering from the School of Engineering, University of Edinburgh in 1999 and 2006 respectively and was with Lucent Technologies (Singapore) and University of Edinburgh between 1999 and 2012.

He joined UTP in 2012 as an associate professor in Electrical and Electronic Engineering and began to work on medical image analysis.

In 2013, he visited Hitachi Japan to transfer the fNIRS technology to Malaysia. The fNIRS works on the principle that at near infrared

Dr Tang Tong Boon

frequency, the human scalp appears almost transparent, and the light will be absorbed by oxy- and deoxy-haemoglobin in the red blood cells and haemoglobin carries the oxygen, which is the food for the brain to function.

"By measuring the amount of light absorption, we can tell which brain region is active. Such brain imaging technique is particularly interesting as the fNIRS offers a cost-effective way to scan our brains, as compared to Magnetic Resonance Imaging and Magnetoencephalography (MEG).

"In Japan, fNIRS has been accepted as a screening tool to differentiate between different mental disorders; namely depression, bipolar disorder, and schizophrenia," he said.

Dr Tang also said that one of the major challenges in fNIRS is inter-subject variability in brain activation, i.e., how one brain response is quite different from another, which can lead to bias in data analysis.

His research thus aims to address the issue by developing new computational techniques to minimise the variation in brain response such that one can estimate more accurately the actual brain activation. This in turn improves the effectiveness of brain scans.

"For instance, we have applied the techniques to analyse brain connectivity patterns of the Alzheimer's disease patients and to study the stress tolerance of nursing students.

"More recently, we have developed a new neurofeedback system which aims to slow down the development of Alzheimer's disease.

"This work is an on-going collaboration with the Perak Dementia Society," Dr Tang said.

Dr Tang is currently the director for Institute of Health and Analytics at UTP.

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SUMMARIES

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