SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: https://cde.nus.edu.sg/ece

Area: Microelectronic Technologies & Devices

Host: Dr. He Tianyiyi

TOPIC	:	**Artificial Intelligence of Things (AIoT) Enabled Floor Monitoring System for Smart Home Applications**
SPEAKER	:	**Mr. Zhang Zixuan** **Graduate Student, ECE Dept, NUS**
DATE	:	**Tuesday, 14 February 2023**
TIME	:	**9.00AM to 9.30AM**
VENUE	:	**Join Zoom Meeting** **https://nus-sg.zoom.us/j/88539105750?pwd=SjJlT2tOTVhRZ3hDUUtUUUUvR25rZz09** **Meeting ID: 885 3910 5750** **Passcode: 147315**

ABSTRACT

With the development of 5G and Internet of Things (IoT), the era of artificial intelligence-driven products is booming. One area of particular interest is the development of smart flooring systems for smart buildings and homes. Flooring, as a frequently interacted interface, has the potential to capture a wealth of sensory information from daily activities, while avoiding the privacy concerns associated with camera-based monitoring. However, current floor mat sensors are limited by factors such as small scale, high implementation cost, large power consumption, and complicated device configuration. Here we develop a robust and smart floor monitoring system through the synergistic integration of highly reliable triboelectric coding mats and deep-learning-assisted data analytics. The floor mats are produced using low-cost and scalable screen-printing technology, and potential limitations such as high sensitivity to humidity and long-term stability of triboelectric sensors are addressed. Deep learning data analytics help the smart floor monitoring system with a variety of applications in smart home, including location/tracking, identity recognition, and automatic control. The developed smart floor mat systems can use the floor as the functional interface for diverse applications, e.g., intelligent automation, healthcare, and security.

BIOGRAPHY

Mr. Zhang Zixuan is currently working towards his Ph.D. degree in electrical and computer engineering at the National University of Singapore, Singapore. His research interests mainly focus on wearable sensors, energy harvesters and smart sensing systems.