

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: Assoc Prof Vincent Lee Chengkuo

TOPIC	:	Robust Triboelectric Information-Mat Enhanced by Multi-Modality Deep Learning for Smart Home
SPEAKER	:	Ms. Yang Yanqin Graduate Student, ECE Dept, NUS
DATE	:	Friday, 29 July 2022
TIME	:	2.00PM to 2.40PM
WEBINAR	:	Join Zoom Meeting https://nus-sg.zoom.us/j/88529664157?pwd=VEYxbktEcFBSYTBTc2JOR2Jnc0ZRUT09 Meeting ID: 885 2966 4157 Passcode: 504953

ABSTRACT

In metaverse, a digital-twin smart home is a vital platform for immersive communication between the physical and virtual world. Triboelectric nanogenerators (TENGs) sensors contribute substantially to providing smart-home monitoring. However, TENG deployment is hindered by its unstable output under environment changes. Herein, we develop a digital-twin smart home using a robust all-TENG based information mat (InfoMat), which consists of an in-home mat array and an entry mat. The interdigital electrodes design allows environment-insensitive ratiometric readout from the mat array to cancel the commonly experienced environmental variations. Arbitrary position sensing is also achieved because of the interval arrangement of the mat pixels. Concurrently, the two-channel entry mat generates multi-modality information to aid the 10-user identification accuracy increase from 93% to 99% compared to the one-channel case. Furthermore, a digital-twin smart home is visualized by real-time projecting the information in smart home to VR, including access authorization, position, walking trajectory, dynamic activities/sports, etc.

BIOGRAPHY

Yang Yanqin received her B.Eng. degree and M.Eng degree from Soochow University, Suzhou, China. She is now a Ph.D. student at ECE of NUS. Her research interests mainly focus on wearable sensors for smart home and smart farm applications.

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