

SEMINAR ANNOUNCEMENT

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

Area: Integrated Circuits & Embedded Systems (ICES)

Host: Dr Karim Ali

TOPIC	:	Temporal Similarity-Aware Silicon Architecture for Energy-Efficient Multi-Scale Transformer
SPEAKER	:	Mr Xie Zhongheng Graduate Student, ECE Dept, NUS
DATE	:	Monday, 11 August 2025
TIME	:	11:00AM-12:00PM
VENUE	:	Join Zoom Meeting https://nus-sg.zoom.us/j/5121978262?pwd=VErp78cMagnayx326cz1v0JXseALFk.1&omn=87995006440 Meeting ID: 512 197 8262 Passcode: 994994

ABSTRACT

Recognizing human actions in video sequences has become an essential task in video surveillance applications. In such applications, transformer models have rapidly gained wide interest thanks to their performance. However, their advantages come at the cost of a high computational and memory cost, especially when they need to be incorporated in edge devices. In this work, temporal similarity tunnel insertion is utilized to reduce the overall computation burden in video transformer networks in action recognition tasks. Furthermore, an edge-friendly video transformer model is proposed based on temporal similarity, which substantially reduces the computation cost. Its smaller variant EMViT achieves 38% computation reduction under the UCF101 dataset, while keeping the accuracy degradation insignificant (<0.02%).

BIOGRAPHY

Xie Zhongheng is now pursuing his Ph.D. Degree under the supervision of Prof. Massimo Alioto in Electrical Engineering & Computer Engineering department from the National University of Singapore, specialized in Nanoelectronics. Currently he is working on energy-efficient silicon & circuit architecture for Large Language Model and Large Multimodal Model.

<https://cde.nus.edu.sg/ece/highlights/events/>