

## SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING  
COLLEGE OF DESIGN AND ENGINEERING

Website: <https://cde.nus.edu.sg/ece>

**Area: Control, Intelligent Systems & Robotics (CISR)**

**Host: Assoc Prof Arthur Tay & Dr Yen Shih-Cheng**

TOPIC	:	Markerless Mobile Gait Assessment Using Monocular Pose Estimation: System Design and Validation
SPEAKER	:	Mr Du Yutong Graduate Student, ECE Dept, NUS
DATE	:	Monday, 1 December 2025
TIME	:	12:00PM-1:00PM
VENUE	:	E2-03-32

### ABSTRACT

Gait assessment plays an important role in evaluating mobility, neurological conditions, and rehabilitation progress, yet conventional motion-capture systems are expensive and limited to controlled laboratory environments. This seminar presents MobileGait, a markerless mobile system developed to provide automated gait analysis using only a single sagittal-view video recorded on a mobile device. The system integrates mobile data acquisition, server-side pose estimation, gait event detection, and web-based reporting.

MobileGait uses monocular 2D pose estimation (OpenPose), keypoint smoothing, and a corrected coordinate-based algorithm to detect heel-strike and toe-off events. Validation against a Vicon motion-capture system suggests that the method can capture key temporal gait parameters and general sagittal kinematic patterns with reasonable accuracy. Ongoing clinical studies with healthy elderly and stroke survivors further assess its applicability in non-laboratory settings.

This seminar will describe the system architecture, algorithmic workflow, validation results, and ongoing efforts to improve spatial estimation and support broader deployment.

### BIOGRAPHY

Mr. Du Yutong is a Master's student in the Department of Electrical and Computer Engineering at the National University of Singapore, working under the supervision of A/Prof. Arthur Tay and Dr. Yen Shih-Cheng. His research focuses on markerless gait analysis, computer vision, and mobile health applications.

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