ORGANISED BY GEOTECHNICAL ENGINEERING TECHNICAL DIVISION (GETD)

IEM
The Institution of Engineers, Malaysia

WEBINAR TALK ON

THE FUTURE OF LANDSLIDE EARLY WARNING SYSTEMS: INTEGRATING TECHNOLOGY, DATA, AND DECISION-MAKING

SPEAKER:

Prof Naoki SAKAI

10 MAR 2026, TUESDAY

2.00PM - 4.00PM

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BEM Approved CPD: 2
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Registration Fees:
Student Members : Free
IEM Members : RM 15.00
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SYNOPSIS

Landslide Early Warning Systems (LEWS) must bridge geotechnical mechanisms and real-world decisions. This talk links rainfall infiltration, suction loss, groundwater rise, progressive failure, and post-failure debris-flow transformation with evidence from element tests, real-scale slope-failure experiments, debris-flow flume tests, and field monitoring. We then connect observation technologies—IoT sensors (moisture, pore pressure, deformation), UAV/3D point-cloud change detection, InSAR and satellite rainfall—with hybrid physics-based, AI models and digital-twin dashboards. The focus is how to design actionable thresholds, uncertainty-aware alerts, and operational workflows for roads, cut slopes, and communities. Finally, we discuss ASEAN's rising landslide risk under intensifying extreme rainfall and land-use change, and discuss a staged implementation roadmap from minimum viable monitoring to scalable LEWS.

SPEAKER'S BIODATA

Prof. Naoki Sakai is a principal senior researcher in geotechnical and landslide risk at Japan's National Research Institute for Earth Science and Disaster Resilience (NIED) and a professor of University of Tsukuba. He leads rainfall-induced slope failure experiments using a large-scale rainfall simulator and develops end-to-end landslide early warning concepts integrating lab testing, field monitoring, UAV/3D point clouds, satellite data, IoT sensing, and hybrid AI-physics modeling. He collaborates internationally across ASEAN and Europe on multi-hazard risk reduction and practical deployment of monitoring and decision-support systems.