ISSMGE FOUNDATION
REPORT ON CONFERENCE ATTENDANCE

Your Name: Balaji Sai Kumar Bandaru	***Your Organization:*** IIT Madras	***Date of report:*** 26.12.2025
Conference Title: 17th international conference of the International Association for Computer Methods and Advances in Geomechanics	***Location of Conference:*** Hong Kong	***Dates of Conference:*** 18.12.2025-21.12.2025

What you learned:

The conference provided a comprehensive overview of advanced numerical techniques in geotechnical engineering, spanning from Discrete Element Method (DEM) and peridynamics to phenomenological and thermodynamics-based constitutive models.
The following findings are particularly salient for refining my current research methodology:

1. Mechanical Response of Waste-Based Composites by Dr. Yujie Qi: Investigations into synthetic energy-absorbing layers (comprising steel furnace slag, coal wash, and rubber crumbs) revealed that increasing rubber crumb content facilitates a distinct brittle-to-ductile transition under static triaxial loading.
2. Advanced Rock Constitutive Modelling: A new model based on bounding surface plasticity successfully captures the brittle-to-ductile transition and subsequent strength degradation in rocks, providing a robust framework for simulating post-peak behaviour under triaxial conditions.
3. Multi-Phase Modelling of Frozen Soils: A constitutive approach based on the Clay and Sand Model (CASM) was adapted for frozen soils. By treating the material as a tri-phase system (ice, water, and soil solids), the model effectively simulates the complex thermal-mechanical response of permafrost-like conditions.
4. Micromechanical Rock Fracture: Research by Dr. Pengzhi Pan on the CASRock numerical code demonstrated how porosity and micro-crack distribution dictate rock fracture toughness. This DEM-based approach allows for a high-fidelity simulation of multiple fracture interactions.
5. Geosynthetic Performance Dynamics: A comparative study on Geosynthetic Reinforced Soil (GRS) abutments highlighted that reinforcement tensile loads are highly sensitive to both time-dependent creep and strain rates, necessitating more nuanced stiffness characterization in design.

People you met:

In the conference, I had the privilege to interact with the following:

1. Dr. John CARTER
2. Dr. Richard Bathurst
3. Dr. Musharraf M.
4. Dr. D. N. Singh
5. Dr. Lidija Zdravkovic
6. Dr. Buddhima Indraratna
7. Dr. Yujie Qi

8. Dr. Daichao SHENG
9. Dr. Wei WU
10. Dr. Zirui LU
11. Dr. Lalit Borana

Main features of conference:

A hallmark of the conference was the keynote and State-of-the-Art (SOTA) lectures delivered by leading experts in geomechanics. These lectures were concisely structured and covered a broad spectrum of advances in computational methods, ranging from elasto-plastic constitutive modelling to the transformative potential of machine learning (ML) in geotechnical engineering. In addition, well-organized mini-symposia provided dedicated platforms for researchers to present and discuss their latest findings within their respective fields.

Your comments on the conference:

It was a great privilege to participate in the 17th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG 2025), held at The Hong Kong Polytechnic University. The conference provided an invaluable platform to engage with leading experts and peers at the forefront of geotechnical engineering. As the symposium's themes align closely with my doctoral research on probabilistic methods in slope stability, the insights gained have significantly enriched my academic perspective. Beyond the technical sessions, the networking opportunities have established a foundation for future collaborations and expanded my professional horizons within the field.

Please attach short report (maximum 400 words) suitable for publication in the ISSMGE Bulletin:

The conference opened with a series of keynote and state-of-the-art (SOTA) lectures. The sessions were rich with technical insights, ranging from John Carter's presentation on elasto-plastic constitutive modelling to Hongwei Huang's talk on Vision-Informed Phase-Field Analysis (VIPFA) for evaluating the resilience and safety of concrete tunnel linings.

I was honoured to present my paper titled "Early-Age Prediction of Compressibility in Cement-Stabilized Clays Using Critical State Framework" at 17th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG 2025), held at The Hong Kong Polytechnic University. Accurately assessing the behaviour of cement-stabilized clay under various loading conditions is essential for optimal design and efficient cement utilization. Several conventional elasto-plastic models incorporate inherent bonding and damage variables to estimate the response of cement-stabilized clays. Models based on the critical state framework are widely adopted for simulating the behaviour of various geomaterials, including cemented clay. The material and model parameters of cemented clays are significantly influenced by factors such as cement dosage, curing period, binder type, and soil plasticity. The current study investigates the effects of these key factors on the mechanical response through a series of strain-controlled consolidation tests. A non-linear regression model was developed to represent the material and model parameters for cement-stabilized clay. Using these parameters, two critical state-based damage constitutive models were evaluated to assess the performance

and identify limitations in these critical state models. The performance of these models was validated through strain-controlled constant rate of strain (CRS) experiments conducted for different cement dosages and curing durations considering two marine clays - a highly plastic and a low-plastic clay were stabilized using Ordinary Portland Cement (OPC) and Portland Pozzolana Cement (PPC) at a specific remoulding water content. The present study provides fundamental insights into the evolution of material properties under varying conditions.

"Beyond the sessions, the conference dinner and tea breaks provided a relaxed backdrop for meaningful networking and vibrant discussion among colleagues.

Photographs from Conference: Insert here or attach to email

The following photos were taken at the conference venue during the conference.



Day-1 of the conference: Registration



Keynote lectures (Morning session) on Day-2



Photo with Dr. John CARTER on Day-1



Dr. Lidija Zdravkovic presenting on "Numerical modelling approach for thermo-active structures"



Interaction session during poster presentation on Day-2



Photo with other Indian Ph.D. Scholars from India on Day-2



Photo with Dr. Lidija Zdravkovic on Day-2



Photo with Dr. Richard Bathurst on Day-2



Photo with Dr. Giang D. Nguyen on Day-3

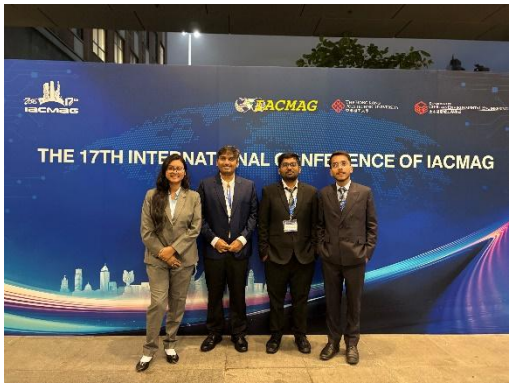


Photo with Indian collegues on Day-3



Presentation on Day-4



Presentation certificate on the Day-4



Closing ceremony