



PROCEEDINGS OF
**CIVIL ENGINEERING
RESEARCH SYMPOSIUM 2025
CERS 2025**

BOOK OF ABSTRACTS

Department of Civil Engineering
University of Moratuwa
October 2025



CIVIL ENGINEERING RESEARCH SYMPOSIUM

2025

Book of Abstracts

A selected collection of abstracts of the undergraduate research projects
undertaken by the graduands of 2025

Organised by

Department of Civil Engineering

University of Moratuwa

Sri Lanka

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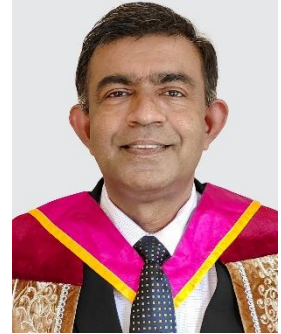
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Message from the Head of the Department

It is with great pleasure that I present this message for the Civil Engineering Research Symposium (CERS) 2025.

CERS stands as the flagship annual event of the Department of Civil Engineering, bringing together industry professionals, academics, and researchers to celebrate and showcase the cutting-edge research conducted by our undergraduate and postgraduate students. The symposium continues to serve as a vibrant platform for knowledge exchange, idea sharing, and fostering meaningful collaborations between academia and industry.



This year, in addition to the **Three-Minute Thesis Competition**, the Department has taken the initiative to recognise undergraduate authors who have contributed to **Q1 and Q2 journal publications**. This acknowledgment not only celebrates their achievements but also serves as an inspiration for young researchers to pursue high-quality research and disseminate their findings through reputed journals.

The evening interactive session will be held under the theme “**From Tradition to Transformation: Reforming Civil Engineering Education for Global Competence**”. This timely discussion aims to reflect on how civil engineering education must evolve to meet emerging global challenges and prepare the next generation of engineers for an interconnected, technology-driven world. It will provide a unique opportunity for academics, researchers, and industry leaders to exchange insights and explore collaborative pathways for shaping the future of civil engineering education.

This event would not have been a success without the generous support of our sponsors. I also wish to extend my sincere appreciation to the Organising Committee for their dedication and tireless efforts in making **CERS 2025** a success.

Prof. Udeni P. Nawagamua

Professor/Head of the Department
Department of Civil Engineering
University of Moratuwa

Preface to the “Civil Engineering Research Symposium 2025”

The Department of Civil Engineering at the University of Moratuwa takes a lot of pride in its achievements in Engineering education and research activities conducted at undergraduate and postgraduate levels. These achievements are well supported by an excellent group of academic staff members, who have strong collaborations with leading academics and research institutes worldwide. The department has taken numerous initiatives to thrive as the leading department of the region in Civil Engineering research and education.

The Civil Engineering Research Symposium 2025 is organised by the department to showcase the most recent achievements of the department, comprising both undergraduate and postgraduate research activities. The book of abstracts contain nearly 50 abstracts, illustrating the broad scope of undergraduate research projects undertaken by the students of the 2020 intake within the fields of Structural, Geotechnical, Hydraulic, Construction Management, Environmental, and Transportation Engineering. A selected number of projects representing their research will be presented during the symposium.

The editors wish to thank the contributors and the support of the academic staff members of the department, whose professionalism and dedication have made this symposium a reality.

Editorial Board

The Civil Engineering Research Symposium 2025

Symposium Agenda

08:00 – 08:30	Registration
08:30 – 08:35	Lighting of the Oil Lamp
08:35 – 08:40	National Anthem
08:40 – 08:55	Welcome Address by the Head, Department of Civil Engineering
08:55 – 09:00	Introductory Remarks by Conference Co-chair
09:00 – 09:20	Address by the Chief Guest Dr Moussa Baalbaki, Director, Products and Solutions Portfolio, INSEE Cement (Pvt) Ltd.
09:20 – 09:50	Keynote Address “<i>Climate Change and the Civil Engineer</i>” Dr Herath Manthrithilake Emeritus Scientist, International Water Management Institute
09:50 – 10:05	Felicitating Student Excellence – Recognising Publications in Q1 and Q2 Journals
10:05 – 10:15	Acknowledgement of Sponsors
10:15 – 10:45	Morning Tea
10:45 – 12:15	Technical Session 1: Research Presentations and Panel Discussion ¹
12:15 – 13:15	Lunch
13:15 – 14:30	Technical Session 2: Research Presentations and Panel Discussion ²
14:30 – 14:45	3-MT Challenge Video Presentations and Award Ceremony
14:45 – 15:00	Concluding Remarks and Vote of Thanks by Conference Secretary
15:00 onwards	Afternoon Tea

¹ Research Presentations: Technical Session 1 (10:15 – 12:15)

10:45 – 10:55	Analysis of bending stiffness reduction in thin woven composites under large curvatures by R.G.P.M. Ranatunga
10:55 – 11:05	Assessing spatio-temporal drought dynamics using a satellite-derived composite index by J.B.A. Srimali
11:05 – 11:15	Design and development of smart soil nail for real time slope monitoring by D.M.M.D.B. Dissanayake
11:15 – 11:25	Life cycle cost analysis of micro concrete roofing tiles with waste glass by M.S. Darshana
11:25 – 11:35	Standardised safety assessment framework for road users in Sri Lankan road work zones by K.H.S. Madusanka
11:35 – 11:45	Investigating the performance of glass facades under blast loadings by S. Nirushan
11:45 – 12:15	Panel discussion – Session 1

² Research Presentations: Technical Session 2 (13:15 – 14:30)

13:15 – 13:25	Evaluation of coir fibre and rice husk ash as alternative stabilisers for cement-based peat stabilisation by J.H.M.Y.U. Jayapathma
13:25 – 13:35	HEC-HMS and machine learning approaches for streamflow forecasting: a comparative study by H.H.U. Manjitha
13:35 – 13:45	Modelling blast response of reinforced concrete structures with coupled smoothed particle hydrodynamics and arbitrary Lagrangian–Eulerian approach by D.M.L.S. Dissanayaka
13:45 – 13:55	Assessment of floating debris transport in Puttalam lagoon by M.A.T.I. Mapa
13:55 – 14:05	Parametric optimisation of two-way slabs on beams for early-stage low-carbon design by J. Nithuran
14:05 – 14:30	Panel discussion – Session 2

Chief Guest



Dr Moussa Baalbaki

Dr Baalbaki is an internationally respected expert in concrete technology with over 35 years of academic, research, and industry leadership. He holds a Ph.D. in Civil Engineering from the University of Sherbrooke, Canada, where his pioneering research examined the influence of cement–superplasticiser interactions on concrete properties. Beginning his career in 1989 as a research engineer for the Industrial Chair on Concrete Technology and the Canadian Network of Excellence on High-Performance Concrete, he later joined the Holcim Group Support in Switzerland in 1998, where he held senior roles in research and development, open innovation, advanced concrete technology, and technology transfer until 2017. Since 2018 he has led INSEE Cement’s Products and Solutions Portfolio, driving innovation in sustainable cementitious systems and customer-centric construction solutions. Dr. Baalbaki has authored numerous refereed publications and holds several international patents including on high-strength acid-resistant concrete reflecting his lifelong commitment to advancing sustainable, high-performance materials and bridging research with industrial practice across the global cement and concrete sectors.

Keynote: “Climate Change and the Civil Engineer”



About the Keynote Speaker

Dr Herath Manthirithilake is an Emeritus Scientist at the International Water Management Institute (IWMI), where he led major research programs and represented the institute in Sri Lanka, India, and Central Asia. He has authored over 70 scientific publications on water management and presented his work at numerous international forums. Prior to IWMI, he served the Mahaweli Authority of Sri Lanka (MASL) for over 27 years, beginning as a Civil Engineer and later becoming a Director. He also helped establishing the Civil Engineering program at the Open University of Sri Lanka in 1983 and currently serve as a visiting lecturer at the universities of Peradeniya, Ruhuna, and Rajarata. Dr Manthirithilake founded Natural Resources Management Services (NRMS) and played key roles in forming the Geoinformatics Society of Sri Lanka (GISSL) and the Lanka Organic Agricultural Movement (LOAM). He holds a Ph.D. in Stochastic Hydrology from the Moscow Civil Engineering Institute (1982) and is a graduate of Moscow Friendship University (1976).

Synopsis

This talk explores the vital intersection between climate change and civil engineering, emphasising how infrastructure professionals can lead the transition toward a more resilient and sustainable future. It begins by framing the global climate crisis and its direct implications for infrastructure systems, underscoring the dual responsibility of civil engineers as both contributors to and mitigators of environmental change. The discussion highlights three key roles of civil engineers in addressing this challenge: mitigation, through the adoption of low-carbon materials, energy-efficient designs, and sustainable transport systems; adaptation, by enhancing resilience through flood defences, climate-resilient infrastructure, and urban greening initiatives; and leadership, by championing policy reform, fostering cross-sector collaboration, and promoting inclusive community engagement. The talk concludes with a forward-looking perspective on digital innovation, circular economy practices, and global partnerships, positioning civil engineers at the forefront of climate action and sustainable development.

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