

Preface

The 4th SLIIT International Conference on Engineering and Technology (SICET 2025) served as a platform for researchers, academics, and industry practitioners to share applied research outcomes and emerging developments in engineering and technology. This proceedings volume presents peer-reviewed papers selected for publication, reflecting the multidisciplinary scope of the conference and the emphasis on research that addresses real-world challenges.

The contributions cover applied research and practical innovations across engineering and technology, including sustainable construction materials, industrial automation and mechatronics, communication, water and wastewater treatment, and some approaches of industrial management. Across these topics, the contributions highlight practical methodologies, validated analyses, and implementable solutions that can support continued innovation in both academic and industrial settings.

We sincerely thank all authors for their valuable contributions and timely cooperation throughout the submission and revision process. We also acknowledge the reviewers for their careful evaluations and constructive feedback, which strengthened the quality, clarity, and technical depth of the accepted papers. Our appreciation is extended to the organising committee and the technical program committee for their dedication in coordinating the review process and ensuring the successful preparation of these proceedings.

We hope this volume will serve as a useful reference for researchers, students, and professionals, and will stimulate further collaboration and impactful research in engineering and technology.

Editors

Prof. Dushantha Nalin K. Jayakody

Prof. Prasanna Gunawardena

Prof. Manjula Fernando

Dr. Lakmini Marasinghe

SICET 2025 Organizing Committee

- Prof. Dushantha Jayakody — General Chair
- Mr. (Eng). Anuradha Kumarasinghe — Conference Co-Secretary
- Mr. (Eng). Sudara Withana — Conference Co-Secretary
- Prof. Manjula Fernando — Chair: Technical Programme Committee
- Prof. Prasanna Gunawardane — Chair: Publication Committee
- Dr. Lasantha Seneviratne — Chair: Finance
- Dr. Chandima Somarathna — Chair: Workshops
- Dr. Eranga Wijesinghe — Chair: Media, Communication and Publicity Committee
- Eng. Hemantha Bandara — Chair: Logistics
- Mr. (Eng). Gayal Rangajeewa — Chair: Inauguration and Closing Ceremony
- Mr. Pramuditha Coomasaru — Chair: Registrations and Invitations; Chair: Excursion

Technical Program Committee (TPC)

- Chair: Prof. Manjula Fernando
- Co-Chair: Dr. Lakmini Malasinghe

Track Committees

Sustainable Built Environment and Smart Cities

- Chair: Prof. Priyan Mendis (University of Melbourne, Australia)
- Co-Chair: Prof. Priyan Dias (Consultant Professor, SLIIT, Sri Lanka)
- Co-Chair: Prof. Shiromi Karunaratna (SLIIT, Sri Lanka)

Thermal & Fluid Engineering

- Chair: Prof. Young-Do Choi (Mokpo National University, Republic of Korea)
- Co-Chair: Dr. Priyantha Bandara (SLIIT, Sri Lanka)

Next-Gen Transportation and Mobility Solutions

- Co-Chair: Dr. Perumalla Venkata Mallikarjun Rao (IIT Bombay, India)
- Co-Chair: Prof. Saman Bandara (Consultant Professor, SLIIT, Sri Lanka)
- Co-Chair: Prof. Anurudda Puswewala (SLIIT, Sri Lanka)

Circular Economy and Sustainable Production

- Chair: Dr. Asela K. Kulatunga (University of Exeter, UK)
- Co-Chair: Mr. Ayal Piyathilaka (United States Agency for International Development)
- Co-Chair: Dr. Nandika Miguntanna (SLIIT, Sri Lanka)

ICT for Societal Development and Digital Inclusion

- Chair: Prof. Murad Khan (Kuwait College of Science and Technology, Kuwait)
- Co-Chair: Dr. Nathali de Silva (SLIIT, Sri Lanka)

Next Generation Communications and Networking

- Chair: Prof. Rui Dinis (NOVA University, Portugal)
- Co-Chair: Dr. Tharindu Ponnimbaduge (University of Melbourne, Australia)
- Co-Chair: Prof. Dejan Vukobratovic (University of Novi Sad, Serbia)
- Co-Chair: Mr. Hanojhan Rajarajam (SLIIT, Sri Lanka)

AI and Data-Driven Engineering

- Chair: Prof. Prayag Tiwari (Halmstad University, Sweden)
- Co-Chair: Prof. Mashook Khan (Qilu University of Technology, China)
- Co-Chair: Dr. Hansani Weerathunga (SLIIT, Sri Lanka)

Clean and Renewable Energy Innovations

- Chair: Prof. Sumedha Rajakaruna (Curtin University, Australia)
- Co-Chair: Prof. Honnyong Cha (Kyungpook National University, South Korea)
- Co-Chair: Dr. Ruwan Chandrasena (SLIIT, Sri Lanka)

Mechatronics, Robotics, and Autonomous Systems

- Chair: Prof. Sérgio D. Correia (Polytechnic Institute of Portalegre, Portugal)
- Co-Chair: Dr. Sivaram NM (NIT Puducherry, India)
- Co-Chair: Dr. Kumara Jayawickrama (SLIIT, Sri Lanka)

Construction Dynamics and Digitalization

- Chair: Dr. Mohan Siriwardena (Liverpool John Moores University, UK)
- Co-Chair: Mr. Tilanka Wijesinghe (SLIIT, Sri Lanka)

Bio Medical Engineering & Smart Health Systems

- Chair: Prof. Alessandro Puiatti (University of Applied Sciences and Arts of Southern Switzerland, Switzerland)
- Co-Chair: Prof. Mansik Jeon (Kyungpook National University, South Korea)
- Co-Chair: Prof. Jeehyun Kim (Kyungpook National University, South Korea)
- Co-Chair: Dr. Lakmini Malasinghe (SLIIT, Sri Lanka)

SICET 2025 – Official Sponsors

Platinum Sponsor

- National Science Foundation



Gold Sponsors

- Curtin University



- International Construction Consortium (ICC)



Bronze Sponsors

- LTL Holdings



- Civil & Structural Engineering Consultants (CSEC)



Other Sponsors

- PILETest



- EnCare

