PAST CONFERENCE REFERENCE

AI-MERT 2025 Conference Report

1st International Conference on AI Innovations in Medical Engineering & Robotics Technology

18 December 2025 | AIT Conference Center, Asian Institute of Technology (AIT), Pathum Thani, Thailand

Organized by the Department of Industrial Systems Engineering (ISE), School of Engineering and Technology, AIT

Figure 1. Opening ceremony group photo, AI-MERT 2025 (AIT Conference Center).

Executive Summary

- The Asian Institute of Technology (AIT) hosted the **1st International Conference on AI Innovations in Medical Engineering and Robotics Technology (AI-MERT 2025)** on **18 December 2025** at the **AIT Conference Center,** establishing a dedicated platform to advance interdisciplinary dialogue on **AI-enabled healthcare, medical engineering, robotics, rehabilitation technologies, and smart health care systems.**

- AI-MERT 2025 delivered a **comprehensive technical program** comprising **plenary and invited talks, panel discussions, and student research sessions**, highlighting both emerging research directions and translational pathways from laboratory work to **validated clinical and real-world applications.**
- The conference featured a broad thematic coverage, including **medical robotics, AI-driven medical imaging and decision support, precision medicine, neurorobotics and assistive technologies, ethics and governance in healthcare AI, soft robotics for minimally invasive procedures, and digital-twin-enabled smart healthcare systems,** reflecting the rapidly evolving frontier of AI in healthcare engineering.
- The event strengthened opportunities for **capacity building and talent development** by providing a structured venue for **early-career researchers and students** to present findings, receive expert feedback, and engage with clinicians, researchers, and industry participants.

Conference Overview

On 18 December 2025, the Asian Institute of Technology (AIT) hosted the 1st International Conference on AI Innovations in Medical Engineering and Robotics Technology (AI-MERT 2025) at the AIT Conference Center. Organized by the Department of Industrial Systems Engineering (ISE), the conference convened academicians, clinicians, researchers, students, and industry leaders to exchange insights on advances and future directions in AI-enabled healthcare, medical engineering, robotics, rehabilitation technologies, and smart health systems.

Inaugural Session

The conference opened with an inaugural session featuring senior AIT leadership, including Prof. Manukid Parnichkun, Vice President for Academic and Research (VPAR), and Prof. Siddharth K. Jabade, Vice President for Administration and Development (VPAD), together with Dr. Piyawut Srichaikul, Deputy Executive Director of the National Electronics and Computer Technology Center (NECTEC), NSTDA. Their remarks highlighted the value of interdisciplinary collaboration and responsible innovation in accelerating progress in AI-driven medical and robotic technologies.

Technical Program Highlights

AI-MERT 2025 delivered a technical program comprising plenary lectures, keynote addresses, panel discussions, invited talks, and student research sessions. The program showcased both foundational research and translational perspectives, with emphasis on clinical relevance, safety, and ethics.

- Medical robotics and intelligent assistive systems
- AI-driven medical imaging and medical data analytics
- Precision medicine, multi-omics, and digital twin technologies
- Neurorobotics, brain-machine interfaces, and neuroadaptive systems
- Soft robotics and minimally invasive surgical systems
- Flexible sensing materials and biomedical nanomaterials
- Ethics and governance in AI-enabled healthcare engineering

Participation and Outcomes

- Strengthened collaboration among researchers, clinicians, and industry representatives to align research priorities with real-world healthcare needs and implementation constraints.
- Expanded opportunities for early-career researchers and students to present their work, build visibility, and receive expert feedback and mentoring.

- Highlighted pathways for technology translation, including standardization, readiness assessment (TRL/MRL), clinical validation, and strategies to support adoption in healthcare settings.
- Reinforced AIT's commitment to research excellence and talent development in AI, medical engineering, robotics, and rehabilitation technologies.
- Enabled cross-disciplinary knowledge exchange across engineering, medicine, data science, and health innovation ecosystems, promoting integrated solutions to complex clinical challenges.
- Emphasized responsible and trustworthy innovation through discussion of ethics, safety, governance, and human-centered design considerations for AI-enabled healthcare.
- Supported long-term partnership building by connecting participants for prospective joint research, training programs, industry collaboration, and multi-institutional initiatives.
- Provided a platform to identify emerging research directions and shared priorities, helping shape future work in medical robotics, AI-driven diagnostics, assistive technologies, and smart health systems.
- Strengthened AIT's international engagement by convening experts from diverse institutions and regions, enhancing global visibility and collaborative reach.

Conference Photos

Figure 2. Plenary and invited sessions.

Figure 3. Participants and organizing team.

Invited and Keynote Speakers

AI-MERT 2025 featured invited experts from universities, research centers, hospitals, and industry. The speakers and their talk titles are listed below.

- **Dr. Jackrit Suthakorn — The Future of Medical Robotics Innovations from Lab to Market: The Power of Standardization, TRL/MRL, and Emerging Talent**
- **Dr. Rajneesh Verma — IPS cells technology: A new hope for clinical applications**
- **Dr. Sorayuth Chumnanvej — From Labs to Industries: Ethical Implications of AI-Driven Healthcare Engineering Solutions.**
- Dr. Krishna Mohan Kotra — From Labs to Industries: Ethical Implications of AI-Driven Healthcare Engineering Solutions.
- Dr. Sasitorn Srisawadi — Development of natural rubber-based composite materials for flexible sensing systems
- Dr. Shen Treratanakulchai — Soft robotic systems for colonoscopy and minimally invasive surgery
- Dr. Parth S. Thakar — On some advanced control for underactuated mechatronic systems and 6DoF robotic manipulators

- Mr. Sam Yamdagni — From Labs to Industries: Ethical Implications of AI-Driven Healthcare Engineering Solutions.
- Dr. Nantida Nillahoot — From Labs to Industries: Ethical Implications of AI-Driven Healthcare Engineering Solutions
- **Dr. Winai Chonnaparamutt — Tangible Intelligence: From Hospital to Home - Bridging Service Reliability and Neurorobotics**
- **Dr. Nitin Kumar Tripathi — Smart Trauma Assistance and Cardiac Alert Systems using sensors and DSAI**
- **Dr. Ramana Kumar Vinjamuri — Synergy-based brain-machine interfaces for human-robot collaboration and neuroadaptive technologies**
- Dr. Rajesh Kannan Megalingam — Netravaad: A deep learning-based multilingual eye-sign communication system for speech-impaired individuals
- Dr. Jamie A. O'Reilly — Event-related potential blind source separation with recurrent neural networks
- Dr. Bradha Madhavan — Nanomaterials for biomedical applications
- Dr. Ron Tan — Integrating Gen-AI with multi-omics and digital twin technologies for precision medicine
- Dr. Anthoney Swamy Thangiah — Natural products as a gateway to modern therapeutics: Integrating ancient wisdom with contemporary science
- Dr. Jayant Jagtap — Generative intelligence in the medical imaging workflow for enhanced clinical practice and patient care
- Mr. Sethu Narayanan Ragupathy — Precision medicine in wound/skin care
- Dr. Madhu Vadali — Soft continuum robotics for safer and smarter minimally invasive surgery: Modeling, control, and cadaveric validation
- Dr. Francesco Enrichi — Luminescent nanostructured materials for biological applications and sensing

Organizing Team and Acknowledgements

AI-MERT 2025 was co-chaired by Dr. Branesh M. Pillai, Assistant Professor, Department of Industrial Systems Engineering and Director, Center of Excellence in Nanotechnology (CoEN), AIT. The organizing committee gratefully acknowledges the support of AIT leadership, collaborating institutions, NECTEC (NSTDA), invited speakers, student presenters, volunteers, and participants who contributed to the successful inaugural edition.