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International Knowledge Centre for Engineering Sciences and Technology under the Auspices of UNESCO
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MIMOS

XI'AN JIAOTONG UNIVERSITY

International Training Workshop on

BIG DATA AND ARTIFICIAL INTELLIGENCE

25-28 August 2025
Kuala Lumpur, MALAYSIA

With the support of:
Academy of Engineering and Technology for Developing Worlds (AETDEW)

BACKGRO UND

Industry 4.0, also known as the fourth industrial revolution, represents the next significant phase in the digitization of the manufacturing sector. The previous three major shifts in manufacturing include the lean revolution of the 1970s, the outsourcing boom of the 1990s, and the rise of automation in the 2000s. The convergence of big data, advanced analytics, artificial intelligence (AI), the Internet of Things (IoT), human-machine interfaces, and digital-to-physical transfer (such as 3D printing) is driving this new industrial era.

In this new era, data generation is increasing exponentially, presenting fresh challenges in how knowledge should be acquired, disseminated, and utilized to benefit humanity. The vast amount of data distributed across various social institutions comes from diverse backgrounds, structures, and is constantly expanding. Despite its availability, professionals in science, technology, and innovation (STI) often struggle to fully leverage this data due to a lack of interconnection among different sources. A Big Data platform offers a potential solution by collecting and integrating these data resources, fostering collaboration, and strengthening academic exchanges to address these challenges.

Relevant data is crucial not only for providing timely information to support efficient planning but also for effective monitoring. In the context of the UN Sustainable Development Goals (SDGs), Big Data can be used to obtain high-quality, detailed information, integrating insights from new technologies with traditional data sources.

Big Data and artificial intelligence (AI) are central to the industry 4.0 transformation, driving profound changes across the manufacturing sector and beyond. Big Data refers to the enormous volumes of structured and unstructured data generated by digital systems, machines, and sensors. AI uses this data to conduct complex analyses, make predictions, and automate decision-making processes that once required human intervention.

Within Industry 4.0, Big Data and AI are key enablers for smart factories, where interconnected machines and systems operate with high levels of autonomy and efficiency. By leveraging Big Data, businesses can gain deep insights into their operations—from supply chain logistics to product quality control—allowing for real-time adjustments and optimization. AI algorithms can predict equipment failures before they occur, streamline production processes, and customize products to meet specific customer needs with precision.

For professionals in developing countries, understanding the role of Big Data and AI in economic and market development is increasingly crucial. These technologies not only drive productivity and innovation but also create opportunities for transitioning from low-end manufacturing to high-tech industries. However, the rapid pace of technological change presents challenges, particularly in terms of skills development, infrastructure, and regulatory frameworks.

To overcome these challenges, it is essential for professionals to develop strategic capabilities in Big Data and AI. This requires not only technical proficiency but also a comprehensive understanding of how these technologies intersect with broader economic, social, and market trends. With this expertise, professionals can contribute to designing policies and strategies that fully harness the potential of Industry 4.0, driving sustainable growth and development in their countries and organizations.

Recognizing this, ISTIC and IKCEST are committed to ensuring that developing countries are not left behind in the pursuit of economic development. The absence of technological capability to harness new opportunities can impede progress, but with the right tools and knowledge, countries can generate income, jobs, and revenue. The application of Big Data and Artificial Intelligence in engineering, science, and technology offers a promising solution to elevate decision-making and problem-solving in STI to a higher level.

OBJECTIVES

- Knowledge Exchange: Foster a dynamic environment for the exchange of ideas, experiences, and best practices in Big Data and AI.
- Skill Enhancement: Provide participants with essential tools, techniques, and methodologies to effectively manage and leverage Big Data and AI.
- Networking Opportunities: Facilitate connections and collaborations among industry professionals, researchers, and stakeholders from the Global South.
- Drive Innovation: Showcase cutting-edge advancements and success stories to inspire new ideas and creative applications in data-driven technologies.

EXPECTED OUTCOMES

The expected outcomes of the training programme are:

- All participants will gain the necessary knowledge and experience on the big data systems for STI knowledge management strategies for their countries/organisations.
- The establishment of networking among and between participants from the various countries in the Developing Countries.
- Participants trained in the workshop will be able to provide training and leadership in the formulation of Big Data and AI systems to others within their own organisations or countries.

PARTICIPANTS

About 40 local and international participants from developing countries are expected to participate in this programme. The combination of participants from other developing countries will allow for exchange of knowledge, ideas and experiences as well as opportunities for networking and collaboration.

Logistics and Sponsorship

The organizers will provide local hospitality, including accommodation, meals, airport transfers, and transportation between the program venue and the hotel. Participants are

expected to secure their own travel funding from their respective organizations to cover international travel expenses to Kuala Lumpur.

Criteria of participants

The participants should possess the following criteria:

- Those who have a Bachelor's, Master's, or PhD degree in the STEM discipline, preferably in Information and Communication Technology (ICT) or related fields.
- Have experience or have been involved in the development and implementation of ICT policy in their home countries.
- Participants who perform management functions in the middle and upper level of a government organization are preferred.
- Participants must have good command of English, both in verbal and writing.
- Participants must be in good health.

TIME AND VENUE

Date: **25-28 August 2025 (4 Days)**
Venue: **Kuala Lumpur, Malaysia**

SPEAKERS

The organiser of the training workshop will invite experienced experts and specialists from Xi'an Jiaotong University, MIMOS or other institutions.

MODES OF DELIVERY

The training workshop will be conducted in English and will utilize a combination of the following methods:

- **Series of Lectures:** Expert-led sessions providing in-depth insights into key topics.
- **Demonstration:** The demonstration of new trend and technology in Big Data and Artificial Intelligence.
- **Discussions and Presentations:** Interactive discussions and participant presentations to encourage knowledge sharing and engagement.
- **Study Visits:** On-site visits to selected local organizations for practical exposure and learning.

Upon completion of the training workshop and the presentation, participants will be awarded a certificate issued by the organizers.

APPLICATION

Interested applicants are encouraged to apply online through the following link
https://forms.gle/Zg1hgKpoPVwkFFme7

CLOSING DATE OF APPLICATIONS

All applications must be submitted to the ISTIC Secretariat Office by **7 August 2025**. Successful applicants will be notified before or by **12 August 2025**. Applicants who do not receive notification by this date should consider their application unsuccessful.

GENERAL INFORMATION

Visa Application

Participants from countries requiring a visa to enter Malaysia must ensure they obtain their visa prior to departure. To facilitate the visa application process, participants will need to present an official invitation letter from the organizer when applying at the Embassy, or High Commission. The organizer will promptly issue the invitation letter to all selected overseas participants to support their visa applications and travel.

Computer requirement

Each participant is expected to bring a computer (laptop or tablet) for study, presentation preparation, and communication during the course.

Contact information

For further information, please contact the Secretariat:

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TENTATIVE PROGRAMME

DAY 1 – 25 AUGUST 2025 (MONDAY)	
08:30 – 09:00	Registration
09:00 – 9.45	**OPENING CEREMONY** ➢ Welcome Remarks by Dr Saat Shukri Embong, President and Group Chief Executive Officer of MIMOS ➢ Welcome Remarks by Dr Cathy Liu Chang, Secretary-General of IKCEST ➢ Welcome Remarks by Professor ChM. Dr. Mohd Basyaruddin Abdul Rahman, Chair of ISTIC Governing Board ➢ Opening by Academician Dato' Ir. (Dr.) Lee Yee Cheong Honorary Chair of ISTIC, Former Commissioner of UNESCO–ITU Broadband Commissioner for Sustainable Development, Former President of World Federation of Engineering (WFEO) ➢ Group photo
09:45 – 10:00	Tea Break
10:00 – 12:00	**Introduction to Big Data and Artificial Intelligence Technology** Professor Tian Feng, Xi'an Jiaotong University
12:00 – 14:00	Lunch
14:00 – 15:45	**New Generation Artificial Intelligence and its empowering Higher Education: A Case of Xi'an Jiaotong University** Professor Tian Feng, Xi'an Jiaotong University
15:45 - 16:00	Tea Break
16:00 – 17:00	**New Generation Artificial Intelligence and its empowering Higher Education: A Case of Xi'an Jiaotong University (continued)** Professor Tian Feng, Xi'an Jiaotong University
17:00	End of Day 1

DAY 2 – 26 AUGUST 2025 (TUESDAY)	
09:00 – 10:30	**AI-Driven Transformation in Higher Education: From Digital Empowerment to Ecosystem Reconfiguration** Professor Chen Ling, Xi'an Jiaotong University
10:30 – 10:45	Tea Break
10:45 – 12:30	**AI-Driven Transformation in Higher Education: From Digital Empowerment to Ecosystem Reconfiguration (continued)** Professor Chen Ling, Xi'an Jiaotong University
12:30 – 14:00	Lunch
14:00 – 15:30	**Technical Visit to MIMOS R&D Lab** MIMOS
15:30 – 15:45	Tea Break
15:45 – 17:00	**Technical Visit to MIMOS Lab** MIMOS
17:00	End of Day 2

DAY 3 – 27 AUGUST 2025 (WEDNESDAY)	
09:00 – 10:30	**ILMU: From MalayMMLU to Ryt Bank, Made in Malaysia, by Malaysians, for Malaysians** Machine Learning Infrastructure and Deployment Universiti Malaya (UM), Professor Ir. Dr. Chan Chee Seng
10:30 – 10:45	Tea Break
10:45 – 12:30	**Seeing the Future: AIoT & Computer Vision for Smarter Industrial System** Machine Learning Infrastructure and Deployment MIMOS, Dr. Mohd Ismifaizul Mohd Ismail
12:30 – 14:00	Lunch
14:00 – 15:30	**Advanced Deep Learning Model for Glaucoma Screening** Artificial Intelligence Concepts and Interface UKM, Mohammad Jassim Mohammad/ Prof. Dr. Mohd Asyraf Zulkifley
15:30 - 15:45	Tea Break
15:45– 17:00	**Empowering Medical Devices & Agriculture Through AI-Driven Spectroscopy Technology Platform** Emerging AI Technology Applications and Smart Systems MIMOS, Zalhan Md Yusof
17:00	End of Day 3

DAY 4 – 28 AUGUST 2025 (THURSDAY)	
09:00 – 10:30	**Building and Scaling LLMs: From LLM Fundamentals to Real-World Deployment** Emerging AI Technology Applications and Smart Systems MIMOS, Dr. Lau Phooi Yee
10:30 – 10:45	Tea Break
10:45 – 12:30	**Artificial General Intelligence: Quantum-Enhanced Large Language Models for Abstract Reasoning** Artificial Intelligence Concepts and Interface UPM, Dr. Azree Shahrel Bin Ahmad Nazri
12:30 – 14:00	Lunch
14:00 – 15:30	**AI to Quantum Intelligence** MIMOS, Muhammad Hafiz Laili
15:30 - 15:45	Tea Break
15:45– 17:00	**Closing Ceremony** • Summary and Wrap-up by XJTU • Closing Addresses by MIMOS • Closing Addresses by ISTIC • Presentation of Certificates
17:00	End of Workshop

ORGANISER

INTERNATIONAL SCIENCE, TECHNOLOGY AND INNOVATION CENTRE FOR SOUTH- SOUTH COOPERATION (ISTIC) UNDER THE AUSPICES OF UNESCO

The International Science, Technology and Innovation Centre (ISTIC) is a UNESCO Category 2 Centre, established in 2008 through an agreement between the Government of Malaysia and UNESCO. Funded by Malaysia's Ministry of Science, Technology and Innovation (MOSTI), ISTIC is headquartered in Kuala Lumpur and serves as a strategic international platform dedicated to advancing South-South Cooperation in science, technology and innovation (STI). For over 15 years, ISTIC has contributed to UNESCO's STI agenda and supported development priorities across the Global South. Acting as a connector, catalyst, and advocate, ISTIC facilitates sustainable development through capacity building, policy engagement, and innovation-driven collaboration. Its initiatives are co-designed, co-funded, and co-implemented, leveraging collective expertise, resources, and ownership to address systemic capacity gaps, promote equitable access to knowledge, and unlock the transformative potential of STI as a driver of development.

INTERNATIONAL KNOWLEDGE CENTREFOR ENGINEERING SCIENCES ANDTECHNOLOGY (IKCEST) UNDER THE AUSPICES OF UNESCO

The International Knowledge Centre for Engineering Sciences and Technology (shortened as "IKCEST") is a Category 2 Centre under the auspices of the United Nations Educational, Scientific and Cultural Organization (shortened as "UNESCO"). IKCEST was established on June 2, 2014. The Chinese Academy of Engineering is responsible for the operation and management of the IKCEST.

IKCEST is a comprehensive and international knowledge centre devoted to the engineering sciences, technology and applied technology. IKCEST aims at connecting engineering sciences and technology institutions globally, assembling various digital resources relating to engineering sciences and technology, building up a public data service platform and corresponding service environment, and coordinating the building of various professional knowledge systems, thus providing knowledge- based services at a global scale in the form of consultancies, scientific research and education for policy-makers and engineering science and technology professionals in the world, with particular reference to the developing countries.

The specific tasks and functions of IKCEST are as follows: to establish an international engineering and technology resources hub; to establish a public data service platform, and to develop the technology for mining and analyzing knowledge from big data; to cooperatively build professional knowledge service systems, and to build capacity in developing countries; to foster interdisciplinary engineering talents with big data processing ability; and to assist UNESCO to fulfill its aims and support its action plans.

MIMOS BERHAD

MIMOS was established to initiate research and development (R&D) in Microelectronics in 1985 under the Prime Minister's Department. Throughout its journey, MIMOS has evolved into the national Applied R&D Centre to be a catalyst of growth for the electrical and electronic industry and to realise the Nation's Information and Communications Technology (ICT) vision propelling Malaysia into a high-technology country.

Currently, MIMOS is a strategic agency under the Ministry of Science, Technology and Innovation (MOSTI) and a premier innovation centre in Semiconductors, Microelectronics, and ICT technologies, contributing to Malaysia's socio-economic growth through patentable technology platforms, products, and solutions. Since its inception, MIMOS has filed more than 2,000 patents in various technology domains and across key socio-economic areas driving Malaysia's digital transformation journey into the international arena.

As a centre of research excellence, MIMOS is focusing on Semiconductors & Thin Film Research, Advance Electronics & Embedded Systems, and Technologies for Manufacturing and Smart Nation. The R&D on Semiconductors & Thin Film Research will enhance Malaysia's position in the global semiconductor value chain through homegrown technology infusion and strengthen the existing semiconductor technology for increased competitiveness and sustainability.

The R&D on Advance Electronics & Embedded Systems will lead toward the development of core electronic reference designs and embedded systems for creating indigenous products that will be supporting critical requirements in relevant industries, as well as develop cutting-edge Embedded Systems and IoT systems that enable transformative applications in a wide range of industries.

XI'AN JIAOTONG UNIVIERSITY (XJTU)

Xi'an Jiaotong University (XJTU) is a key university under the direct administration of the Ministry of Education of China and is one of the oldest universities in China. The predecessor of Xi'an Jiaotong University was Nanyang College, which was founded in 1896 in Shanghai and renamed Jiaotong University in 1921. In 1956, the main part of Jiaotong University was relocated to Xi'an according to the decision of the State Council, and this relocated part of Jiaotong University was later officially renamed Xi'an Jiaotong University in 1959. In 2000, approved by the State Council, the former Xi'an Medical University and former Shaanxi Institute of Finance and Economics were merged with Xi'an Jiaotong University. XJTU, as one of the first batch of the universities in China, was supported by the central Government at the seventh and eighth five- year plan, as well as China's "Project 211" and "Project 985" to develop into a world-class university. Now, Xi'an Jiaotong University is on the List of World-class Universities and First-class Disciplines (abbreviated as "Double First-class") released in 2017 by the Ministry of Education of China, as a Double First-class university in Category A, which means that the government will support it financially to develop into a world-class university, and its eight disciplines into the first-class level in the world.

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