UNIVERSITI TEKNOLOGI MARA

Issue #3 | November 2023

RISE

Catalysing Global Research Excellence

ARTIFICIAL INTELLIGENCE (AI): Embracing the Future

eISSN 2805-5683

9 772805 568009

UNIVERSITI TEKNOLOGI MARA

RISE

Phone: +603-5544 2004 | E-mail: tncpi@uitm.edu.my | Web: https://tncpi.uitm.edu.my/
Facebook: tncpi.uitm | Youtube: TNCPI UiTM
Instagram: tncpi_uitm | Twitter: tncpi_uitm

ADMINISTRATION

PROF. TS. DR NORAZAH ABD RAHMAN
Deputy Vice-Chancellor (Research & Innovation)
Office of Deputy Vice-Chancellor (Research & Innovation)
noraz695@uitm.edu.my
+603 – 5544 2004

ASSOC. PROF. DR MOHD MUZAMIR MAHAT
Head of Research Communication & Visibility Unit (UKPV)
mmuzamir@uitm.edu.my
+603 – 5544 3097

ABOUT THE MAGAZINE

RISE Magazine is published by Office of the Deputy Vice-Chancellor (Research and Innovation) with aims to highlight a research and innovation on multidisciplinary expert of fields in UiTM. It serves as a platform for researcher to showcase their high quality and impactful findings, activities and innovative solution through publication. Contribution of these ideas come from academicians, researchers, graduates and universities professionals who will enhance the visibility of research and stride to elevate Universiti Teknologi MARA to global standards. This is an effort to promote research as a culture that is accepted by all expertise.

ABOUT UiTM

Universiti Teknologi MARA (UiTM) is a public university based primarily in Shah Alam, Malaysia. It has grown into the largest institution of higher education in Malaysia as measured by physical infrastructure, faculty and staff, and student enrollment. UiTM is the largest public university in Malaysia with numerous campuses throughout all 13 states in Malaysia. There is a mixture of research, coursework and programmes offered to the students. The Office of the Deputy Vice-Chancellor (Research and Innovation) also known as PTNCPI *(Pejabat Timbalan Naib Canselor (Penyelidikan dan Inovasi))* serves as a *Pusat Tanggungjawab* (PTJ) for navigating the research and innovation agenda of the university to achieve UiTM's goals.The PTNCPI office strives to mobilize faculty and campuses, fostering collaboration among researchers, with the aim of transforming the University into a Globally Renowned University by 2025

Maximizing Efficiency and Sustainability: The Role of AI in Facility Management

Facility Management (FM) is a complex discipline that can benefit from the use of Artificial Intelligence (AI). AI has the potential to revolutionize FM by enabling data-driven decision-making and automation of routine tasks. This article explores the various applications of AI in FM and examines its potential benefits and challenges.

Predictive maintenance is one area where AI can be applied in FM. By analyzing data from building systems and equipment, AI can predict when maintenance or repairs will be needed, allowing facility managers to schedule activities efficiently and minimize downtime and repair costs. AI monitors the performance of equipment, such as HVAC systems, elevators, and lighting, and analyzes data like temperature, vibration, noise, and energy consumption to identify potential issues before they become critical.

Energy management is another area where AI can be valuable. By analyzing data from various building systems, such as HVAC, lighting, and electrical equipment, AI algorithms can identify patterns and inefficiencies in energy consumption. This enables facility managers to optimize energy usage, reduce costs, and improve sustainability. For example, AI can suggest modifications to improve energy efficiency, such as by installing energy-efficient lighting and adjusting HVAC settings. AI can also predict energy usage patterns and optimize energy usage accordingly.

AI can also contribute to space utilization within a facility. By collecting and analyzing data on space usage, such as occupancy frequency and duration, AI can provide insights on how to optimize space usage. Facility managers can identify underutilized areas and repurpose them to better meet the needs of occupants. This optimization of space usage can reduce the overall footprint of the building, leading to lower energy consumption and costs.

Security and safety systems can benefit from AI as well. AI can analyze video surveillance footage in real-time to detect suspicious behavior and alert security personnel. It can also recognize specific objects or individuals and identify potential security threats based on access control data. Furthermore, AI can analyze fire alarm data to proactively address safety risks and ensure the well- being

of building occupants. Additionally, AI can automate routine security and safety tasks, such as monitoring security cameras and unlocking/locking doors, thereby improving efficiency and response times.

Building automation is another area where AI can be employed. AI can automate building systems such as lighting, HVAC, and security. By optimizing lighting based on occupancy rates and natural light levels, AI helps reduce energy costs. It can also adjust temperature and humidity levels based on occupancy and weather conditions, enhancing occupant comfort and reducing energy usage. Automation of security systems, including access control and video surveillance, also improves operational efficiency and response to security threats.

While AI offers numerous benefits, there are also challenges to consider. The initial implementation cost can be high, and FM professionals may need additional training or specialized staff. Data quality is crucial for AI to make accurate decisions, requiring investments in data collection and management systems. Privacy and security concerns must be addressed to protect sensitive data and ensure ethical use of AI.

In conclusion, AI has the potential to transform FM by enabling data-driven decision-making and automation. Its applications in predictive maintenance, energy management, space utilization, security and safety and building automation offer significant benefits. However, FM professionals need to understand the opportunities and limitations of AI and consider the associated challenges when incorporating this technology. By doing so, they can enhance the overall experience of the building's occupants and improve the efficiency and sustainability of their facilities

Ts. Elma Dewiyana Ismail
College of Built Environment,
UiTM Shah Alam