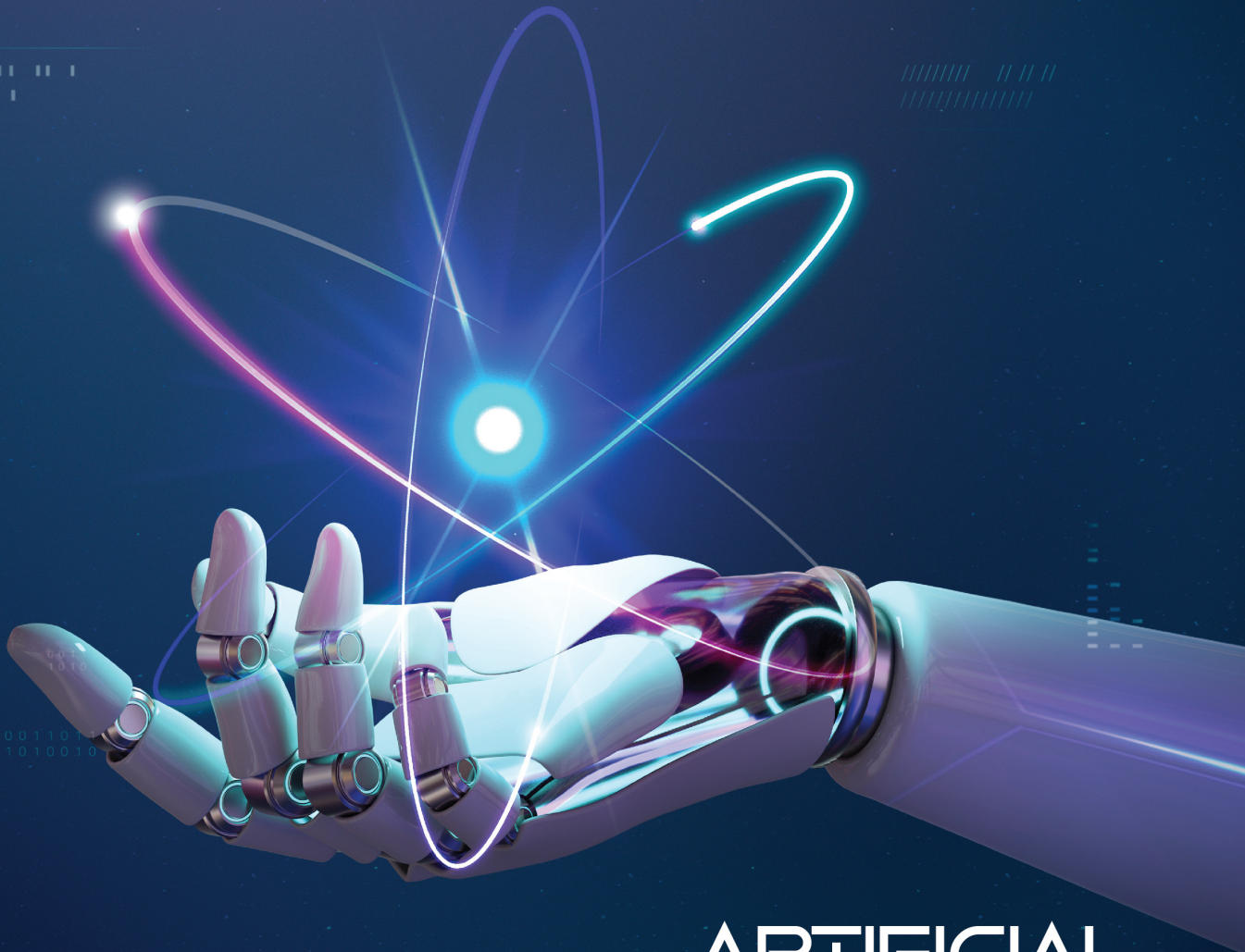


RISE

Catalysing Global Research Excellence



**ARTIFICIAL
INTELLIGENCE (AI):**
Embracing the Future

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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



Revolutionizing Healthcare through Artificial Intelligence

The healthcare industry is continuously evolving, with new advancements and technologies emerging frequently. One of the most promising developments in recent years is the increasing integration of artificial intelligence (AI) in healthcare. AI has the potential to revolutionize healthcare by predicting and preventing disease outbreaks, as well as identifying the most effective treatments for individual patients. With the ability to analyze vast amounts of data, AI algorithms can uncover patterns and relationships that may not be immediately apparent to humans.

AI Models: Supervised and Unsupervised Learning

There are two main categories of AI models: supervised and unsupervised learning. Supervised learning involves training a computer program to make predictions or decisions based on labeled data or known outcomes, while unsupervised learning involves recognizing patterns in the data without any explicit labeling. By utilizing these computational models, healthcare providers and policymakers can make more informed decisions about patient care, leading to better outcomes and more efficient resource allocation.

The Impact of AI in Addressing the COVID-19 Pandemic

The COVID-19 pandemic has witnessed a significant increase in the use of AI models, including supervised and unsupervised learning. Publicly available bioactivity databases have been instrumental in repurposing old drugs and predicting compounds that may inhibit the virus, as well as developing vaccine prototypes. Additionally, deep learning AI models have been utilized to predict the structure of proteins associated with the SARS-CoV-2 virus. This application of AI in drug discovery extends beyond COVID-19, as evidenced by Exscientia, an AI-driven pharma company that reported the first AI-designed drug candidate to enter clinical trials in early 2020. Numerous biotech companies adopting an AI-first approach have over 150 small-molecule drugs in discovery, with more than 15 already in clinical trials. Established tech giants such as IBM, Microsoft, and Google are also investing in AI drug discovery, with investment in AI-driven drug discovery companies reaching \$24.6 billion in 2022, tripling over the past four years.

AI's Contribution to Public Health During the Pandemic

AI has been instrumental in addressing public health concerns during the pandemic. Initiatives that make data publicly available have facilitated several decision-making processes and policies. For example, the Harvard Dataverse COVID-19 Initiative collaboratively collects and shares data related to the COVID-19 pandemic worldwide. The data shared includes epidemiological data, clinical trial data, and social media data. AI models constructed using these data were used to track cases and deaths, analyze patterns of misinformation related to Ivermectin and COVID-19 spread, understand population movement to minimize risk and maximize operational efficiency, and identify the optimal time to reopen universities for students.



AI in Medical Diagnosis

Another area where AI has been applied is in medical diagnosis. AI algorithms analyze medical images, such as chest X-rays, MRI, and CT scans, to detect the presence of diseases, making it an essential tool in medical diagnosis. This is particularly valuable in diseases like Alzheimer's Disease, which affects memory and cognitive function and is challenging to diagnose, especially in the early stages when symptoms are mild and easily overlooked. However, machine learning algorithms can analyze large amounts of patient data, including brain scans and medical histories, to identify patterns and detect early signs of the disease that may not be visible to the naked eye. AI-based diagnostic tools can accurately predict Alzheimer's Disease years before symptoms appear, enabling early intervention and treatment. Early detection allows patients to receive treatments and interventions that may slow the progression of the disease, improve quality of life, and delay the need for long-term care.

Privacy Concerns and Wastewater Analysis

Despite the great potential of AI in healthcare, privacy concerns arise when dealing with patient data. However, wastewater analysis offers a solution to this issue. AI algorithms can analyze large amounts of data generated from wastewater testing to detect patterns and trends that may indicate the presence of a virus. This approach has been successfully implemented in several countries, including Australia, the Netherlands, and the United States. The benefits of using AI for wastewater analysis include its ability to detect outbreaks in areas with a large population, where testing every individual may not be feasible. This can aid public health officials in making informed decisions about implementing measures to control the spread of the virus, such as lockdowns or targeted testing and tracing. While AI technology in wastewater analysis for outbreak detection is still in its early stages, it has shown great promise in detecting COVID-19 outbreaks and has the potential to detect future outbreaks.



Looking Ahead: The Future of AI in Healthcare

The examples presented in this article provide only a glimpse into the vast possibilities of how AI can revolutionize healthcare. As AI technology advances, we can anticipate even more innovative applications in the future, such as tailored treatments, early disease identification, and outbreak forecasting. Nevertheless, as we incorporate AI into healthcare, it is crucial to consider the ethical implications and ensure a balance between technology and human expertise. By thoughtfully integrating AI and implementing it responsibly, we can transform healthcare and achieve better outcomes for patients worldwide.



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