

Home / Innovation / Artificial Intelligence

# Singapore looks for 'practical' medical breakthroughs with new AI research center

The new research facility will focus its AI development efforts on four clinical areas, including mental health and cancer screening.



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Singapore is eyeing to uncover advancements in healthcare with the help of artificial intelligence (AI), with a special focus on four clinical areas including mental health, elderly frailty, and cancer screening.

A new Centre of AI in Medicine has been established to "bridge the gap" between AI innovation and practical applications in medicine, according to a joint statement by Singapore's Nanyang Technological University (NTU) and National Healthcare Group (NHG).

The facility will be led by NTU's Lee Kong Chian School of Medicine and its research initiatives will look to "revolutionize" patient care as well as support public health policies. These are in line with the country's second national AI strategy to drive AI-powered healthcare products and services.

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The new center will house more than 100 researchers and clinicians and gather local and international academic and industry partners, including Yale School of Medicine and Olympus Singapore. These organizations will participate in research across various fields, such as computer engineering, data analytics, and social science and ethics.

While Singapore offers a strong foundation for the "safe growth of AI" in healthcare, more needs to be done to bridge the gap between technology development and real-world clinical application, noted the new center's co-director Joseph Sung, who also serves as the dean of Lee Kong Chian School of Medicine.

"Our unique multidisciplinary research across fields will ensure that AI solutions are not only innovative, but also accessible, affordable, and scalable," Sung said.

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It is important to facilitate human-machine interactions to create human-focus AI systems that healthcare professionals can use in a natural and intuitive way, said Miao Chun Yan, the center's co-director and senior deputy dean and associate vice

president of capacity building at NTU's College of Computing & Data Science. Ensuring AI applications are adopted and impactful, Miao explained.

"The true test for AI is how its deployment in the hospital, clinic, or community impacts health outcomes for patients and the population," said NHG's group chairman of the medical board for research, Benjamin Seet. "We would want to see its impact and value in a real-world setting."

"In addition to enhancing research and discovery and improving patient outcomes, AI will create more space for humans to be humans," added Waldemar von Zedtwitz Lucila Ohno-Machado, who is Yale School of Medicine's deputy dean for biomedical informatics and chair of its Department of Biomedical Informatics and Data Science. "By automating documentation processes and the mechanical aspects of healthcare, AI will provide more time for listening and interaction between clinicians and their patients."

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According to NTU and NHG, the adoption of AI in healthcare, including generative AI (gen AI) and machine learning, already have made significant strides in diagnostics and treatment. They noted that AI, for instance, is used to detect abnormalities in chest X-rays, mammograms, and brain CT scans. Deep-learning models, such as SELENA+2, also are used to detect diabetic retinopathy.

Despite these advancements, the adoption of AI in clinical practice in Singapore has been slower than in other industries, the two Singapore organizations noted. Through the new center, they hope to address challenges that have hindered the full integration of AI in healthcare, including the lack of clinical data to demonstrate the effectiveness of AI in improving patient outcomes as well as the uncertainty surrounding the ethical and legal aspects of AI.

The facility will run AI simulation and implementation studies, enabling healthcare professionals to test AI tools before they are deployed in real-world settings.

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Equipped with GPU systems, the center also will conduct research for accelerating AI and machine learning applications, while safeguarding data privacy, said NTU and NHG.

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"The studies will offer critical insights into how AI can be effectively integrated into clinical workflows, with a focus on addressing the specific needs of local healthcare systems," they added.

Singapore has looked to embrace the use of technologies to overcome its constraints while remaining "clear-eyed about the tradeoffs" and actively working to minimize the downsides, Tan Kiat How, Singapore's Senior Minister of State for the Ministry of Digital Development and Information, said at the launch.

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This "pragmatic" approach has led to the country's use of general-purpose technologies, spanning computers and the internet, Tan said. "We adopt the same attitude and approach to AI, which has seen rapid advancements in recent times, especially in the field of generative AI," he said.

Pointing to industry discussions around AI that have now moved beyond hype, he noted that the focus on returns on investment has fueled more viable business models -- without which, it will be difficult to establish a sustainable AI ecosystem.

He further underscored the role of AI in healthcare, where the technology significantly accelerated discoveries in treatment.

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"For example, it took us half a century to understand the structures of a few hundred thousand proteins. With AI tools such as AlphaFold, scientists have predicted the structures and interactions of over 600 million proteins in just a few

years," Tan said. "This has revolutionized drug discovery and we are just scratching at the surface of the potential of applying AI in this area.

AI also can address challenges related to workforce shortages and rising healthcare costs, which will continue to grow with an aging population worldwide, he said.

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