Chatbot for lab reports among AI healthcare tools in the works

Being developed by public sector, they are poised to help patients and healthcare staff

Sarah Koh

A chatbot that breaks down the jargon in medical reports and an app that assesses one's health by analysing a photo of one's tongue are among a slew of artificial intelligence (AI) tools that the public sector is developing here.

Showcased at the inaugural AI Accelerate conference organised by national healthcare tech provider Synapxe on June 16, these innovations are poised to help patients and boost the productivity of healthcare workers.

Synapxe provides tech solutions for all three public sector healthcare clusters – SingHealth, National Healthcare Group (NHG) and National University Health System (NUHS).

Here are some key projects.

1 HEALTHHUB A.I.

This AI assistant will be rolled out on national healthcare portal HealthHub's website later in 2025. The feature might be introduced on the app in the future, depending on feedback from users.

It will be able to answer healthcare-related and administrative questions from users in English, Chinese, Malay and Tamil. Users can enter their gender, age and any pre-existing condition to receive a more tailored response.

"It serves as a convenient tool to enhance health literacy by improving access to credible, evidence-based information that is curated for Singapore's unique context," said Mr Andy Ta, chief data officer and director of data analytics and AI at Synapxe.

Information given to users is sourced from HealthHub's website, which contains content contributed by public healthcare agencies and workgroups such as the Health Promotion Board and National Medication Information Workgroup.

"It supports our public health goals by guiding users to relevant content quickly, helping them make informed decisions and ultimately encouraging better health outcomes," added Mr Ta.

A beta version has been available for use on HealthHub's website since April, and people can give feedback until end-August. So far, frequently asked questions include subsidies on health screenings and vaccinations, and lifestyle tips.

There are plans to expand the range of supported languages, with Synapxe exploring the feasibility and stability of open-source and proprietary large-language models such as Sea-Lion developed by AI Singapore and Meralion developed by A*Star Institute for Infocomm Research.

Meralion is able to understand at least eight regional languages, including Singlish, and multiple languages when spoken in the same sentence. Sea-Lion supports 13 languages, such as Thai and Vietnamese.

Synapxe is exploring a feature that lets users manage appointment bookings via the AI assistant.

Apart from the new AI boost, there are plans to unify HealthHub with cluster-specific apps – Health Buddy, NHG Cares and NUHS App – by 2027 into one platform to improve online accessibility of public healthcare services.

2 LAB REPORT BUDDY

Developed by Synapxe, this chatbot analyses medical lab reports uploaded by users and breaks down medical jargon, providing a comprehensible summary and explanation of the results.

Lab Report Buddy aims to reduce the struggle that patients often face in understanding reports due to the limited consultation time to go over the details.

For instance, a blood work report that contains results on haemoglobin and platelet levels might be displayed in numbers that are not interpreted. The chatbot would be able to summarise the results and inform the patient if the levels are considered low or high, and if a follow-up review with a doctor is necessary.

The bot is trained to avoid phrases that might cause panic, lead the patient to self-diagnose or make assumptions about the patient's health status or medical history.

The bot will be considered for testing and validation in real-world settings.

3 SYNSEH

An app is being developed to allow users to take a photo of their tongue and answer questions to receive wellness recommendations.

Synseh will base its recommendations on the teachings of traditional Chinese medicine (TCM). For instance, a tongue's colour, shape, coating and moisture level can provide insights into the condition of a patient's internal organs, the presence of pathogenic factors and the flow of blood and qi (life force).

The app uses advanced computer vision techniques to detect subtle changes in tongue features.

"A pale tongue may indicate a deficiency in qi or blood, while a red tongue might point to an excess of heat in the body," said a Synapxe spokesperson.

A physician can then give advice on how to combat excess body heat, such as incorporating cooling fruits and vegetables into the diet.

The app is trained based on tongue photos that are openly sourced data, which are then labelled by physicians and lecturers from the Singapore College of TCM.

The app is currently a proof-of-concept, and Synapxe said it is closely monitoring the outcome before making plans for further deployment.

"Tongue diagnosis is just a start for us to venture into the TCM domain," added the spokesperson.

"Through this, we hope to evaluate and gather feedback on the application of AI in TCM in Singapore."

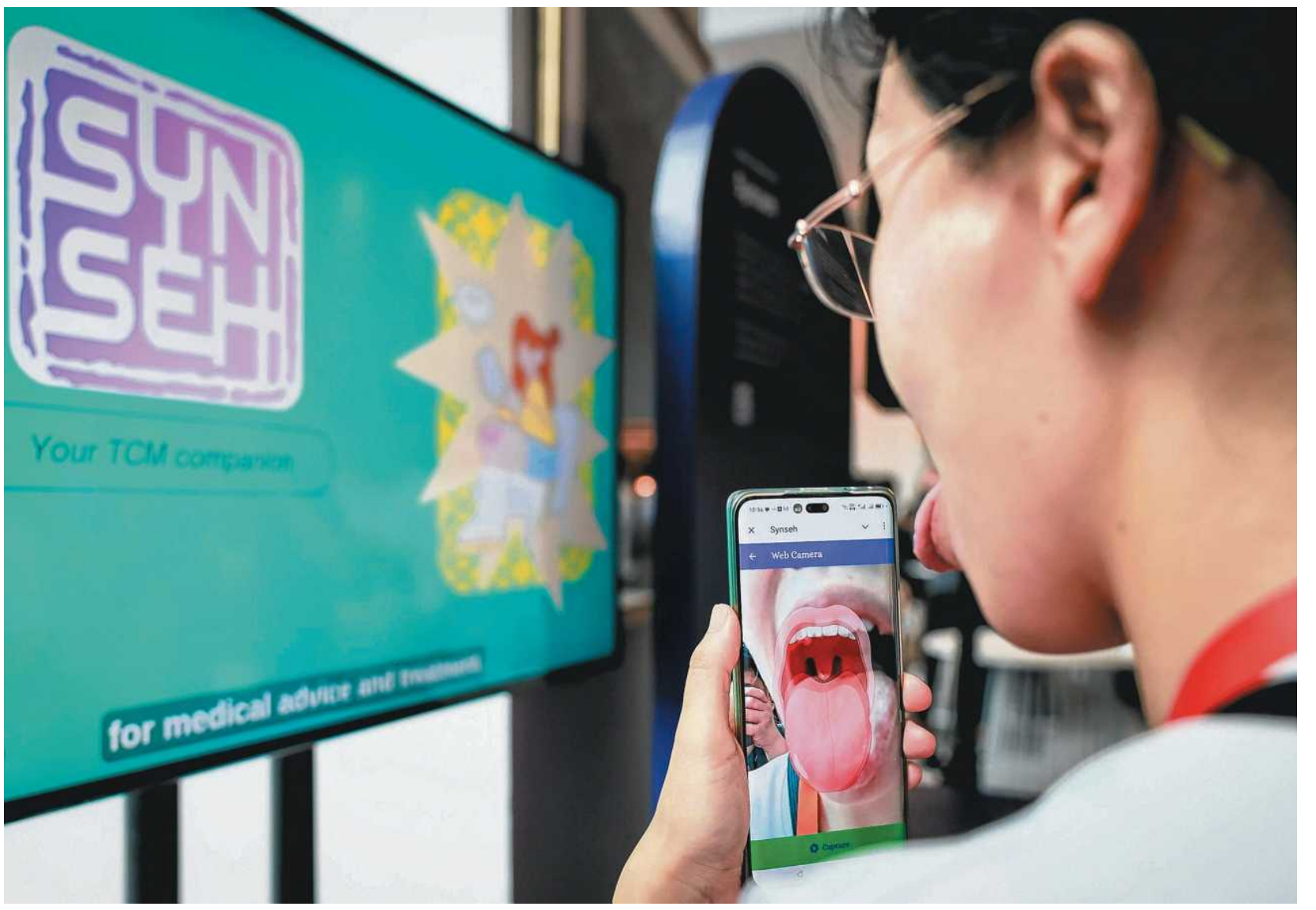
4 CARESCRIBE

It often takes up to one hour to hand over information about patients between nurses during shift changes.

An AI tool called CareScribe, developed by Alexandra Hospital's Research Office team with the help of IT services and consulting firm Avanade, aims to make this process shorter and neater.

"Most handovers are currently conducted through verbal communication with handwritten documentation, which can present challenges in maintaining consistency and completeness," said Dr Ravi Shankar, principal investigator and research fellow at Alexandra Hospital's medical affairs research office.

CareScribe, which can be accessed via a webpage, allows nurses to upload photos or voice notes, which would then be transcribed and summarised in a structured format.



A demonstration of Synseh, an app being developed to allow users to take a photo of their tongue and answer a few questions to receive wellness recommendations, at the AI Accelerate conference on June 16. Recommendations will be based on the teachings of traditional Chinese medicine. ST PHOTOS: GAVIN FOO

The AI-enabled Short Performance Physical Battery Evaluation (Aspire) tool allows clinicians to screen for the prevalence and severity of frailty and sarcopenia by getting patients to do a series of physical tests on camera. Sarcopenia is the loss of muscle mass and strength associated with older adults.

Handover notes usually include information – such as a patient's medical background, current condition, prescribed medication, acuity levels, fall risks and clinical observations – in unstructured paragraphs.

The tool is able to organise information in an ABCDEFG template, which stands for acuity assessment, background history and behaviour, conditions and care plans, drugs, equipment, family and goals.

Critical clinical information such as patient safety alerts, medication-related updates and scheduled procedures would also be highlighted by the system.

After it recently received approval from the ethics board, the tool is undergoing preliminary evaluation at Alexandra Hospital with a group of nursing staff. Any plans to integrate it with existing hospital systems will depend on research outcomes, security assessments and institutional requirements, added Dr Shankar.

5 HEALIX (HEALTH EMPOWERMENT THRU ADVANCED LEARNING AND INTELLIGENT EXCHANGE)

Launched in May 2024, Healix is a cloud-based platform that all public healthcare professionals can use to accelerate the development of their AI projects.

It consolidates data from across healthcare systems in Singapore, which are de-identified and encrypted. A range of tools and frameworks – such as prebuilt algorithms and libraries and custom development options – are available for use to develop AI models.

For example, NUHS will be using Healix to analyse de-identified medical data and train an AI model to predict the near-term risk of diabetes, hypertension and hyperlipidaemia.

6 ASPIRE (AI-ENABLED SHORT PERFORMANCE PHYSICAL BATTERY EVALUATION)

By getting patients to do a series of physical tests on camera, this AI-powered tool allows clinicians to screen for the prevalence and severity of frailty and sarcopenia. Sarcopenia is the loss of muscle mass and strength associated with older adults.

To assess for such conditions, patients are usually asked to do the Short Physical Performance Battery evaluation, which would involve actions such as walking a set distance, sitting down and standing up five consecutive times, and balancing while standing.

Aspire digitalises and semi-automates this test, which aims to make screening faster, less reliant on manpower and more accessible.

"At this point, Aspire is still a research project and is undergoing clinical trials at Tan Tock Seng Hospital (TTSH) and NHG polyclinics, and is used by clinicians within the healthcare facilities," said Associate Professor Karen Chua, who is also a senior consultant at TTSH's rehabilitation centre.

"Future iterations could see this being scaled to community hospitals and partners, as well as caregivers to conduct the test remotely."

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