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Researchers create app to detect Covid-19 through cough sound

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KUALA LUMPUR: A group of researchers has developed a new artificial intelligence (AI) programme to detect a Covid-19 infection through the sound of a person's cough.

The programme, which is at testing stage of recording and storing cough data samples, is expected to be available in June next year.

The method is reported to have a 90 per cent accuracy and would also detect asymptomatic cases.

Its use does not incur financial costs to users who would only have to record the audio of their coughs on mobile devices, before submitting the clip to the programme's website for analysis.

The results can be obtained within five to 10 minutes.

The programme is developed by researchers from the Health Ministry's Institute for Clinical Research (ICR) and AI experts from Swinburne University of Technology Sarawak.

Lead researcher William Law Kian Boon said studies had shown that asymptomatic cases still experienced changes in cough sounds as Covid-19 was an upper respiratory tract infection.

Other ICR researchers involved in the project are its director, Dr Kalaiarasu Peariasamy, Law, Dr Mohd Aizuddin Abdul Rahman, Dr Mohan Dass Pathmanathan, Dr Kuan Pei Xuan, Dr Wong Xin Xi, Lauren Ooi Li Ting and Professor Patrick Then, director for the Centre for Digital Futures Swinburne Sarawak.

"These changes (cough sounds) are difficult to detect through hearing tools or traditional methods, but they can be distinguished by a machine-learning algorithm.

"To detect asymptomatic cases, we record cough sounds from Covid-19 patients and healthy persons then train the algorithm to make a comparison."

Law said data variation could improve the performance of algorithms in Covid-19 screening even though every person had a different sounding cough and other factors could also affect the technique.

"Every person has a different cough sound. Gender, age, and type of illness are also part of the factors. "As such, the algorithm needs to be trained with sufficient variations, representing the diversity of sound samples.

"Cases studied can be divided into various groups, such as Covid-19 cases, healthy person without Covid-19, asthmatic individual without Covid-19, Covid-19 survivors and others."

He said the beta version of the programme could process recordings and store audio samples.

The team is recruiting volunteers for audio samples. They are targeting to collect 2,400 samples at the Covid-19 Assessment Centre in Kuala Lumpur soon.

Law said to detect Covid-19 using the application, one has to answer a questionnaire on their health status, history, and if they were taking medications.

Also on the list of questions are gender, age and whether they had ever been infected with Covid-19, in addition to their vaccination status.

"The system will then request the user to record a cough audio sample. He or she will need to cough three to five times continuously under 10 seconds to allow the programme to begin its analysis.

"Users need to be in a relatively comfortable and quiet place to ensure the sound recorded is of high quality, as a noisy environment will influence the sound quality."

Users will receive their results within five to 10 minutes via text message.

"If a person tests positive for Covid-19, he or she must comply with standard operating procedures and take an RT-PCR test whether at government or private health facilities for further action.

"This application can be a pre-screening method, we target that it can be accessible by the public in June next year."