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# Chinese AI system detects COVID-19 infection in chest CT images

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**CUHK researchers develop an automated system for rapid and accurate detection of COVID-19 infections with a Privacy-Preserving Multinational Validation Study**

A multidisciplinary research team from The Chinese University of Hong Kong (CUHK) has developed an artificial intelligence (AI) system for the automated, rapid and accurate detection of COVID-19 infections in chest computed tomography (CT) images.

Using new federated learning techniques, the AI system is trained on multicentre data in Hong Kong without the need to centralize data in one place, thus protecting patient privacy.

“The established AI system is validated on multiple, unseen, independent external cohorts from mainland China and Europe, showing the potential and feasibility to build large-scale medical datasets with privacy protection, so as to rapidly develop reliable AI models,” said Professor Qi DOU from the Department of Computer Science and Engineering.

A recent research article describing the outcomes from the study has been published in the*npj Digital Medicine*, part of the Nature Partner Journals series.

Radiological imaging can play a complementary role together with clinical diagnostic testing in COVID-19 diagnosis. The team has developed an accurate AI system for automated detection of COVID-19 lesions from CT images, which can provide immediately available results, alleviating the burden of clinicians in interpreting images.

The established AI model has been externally validated on multiple unseen cohorts from mainland China and Germany. This wide validation and applicability on cohorts with various imaging scanners and different demographics show outstanding robustness and generalisability of the established AI model in complex real-world situations. Besides high diagnostic accuracy, the AI system can also present a remarkable speed advantage to clinician interpretation. The AI system can accurately evaluate the same CT data in around 40 milliseconds (ms).

The system demonstrates privacy-preserving AI to protects patient privacy and to revolutionize smart hospitals in Hong Kong and worldwide.