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ASIA EDITION

Scientists in Hong Kong develop AI-driven tool to accelerate cancer diagnosis

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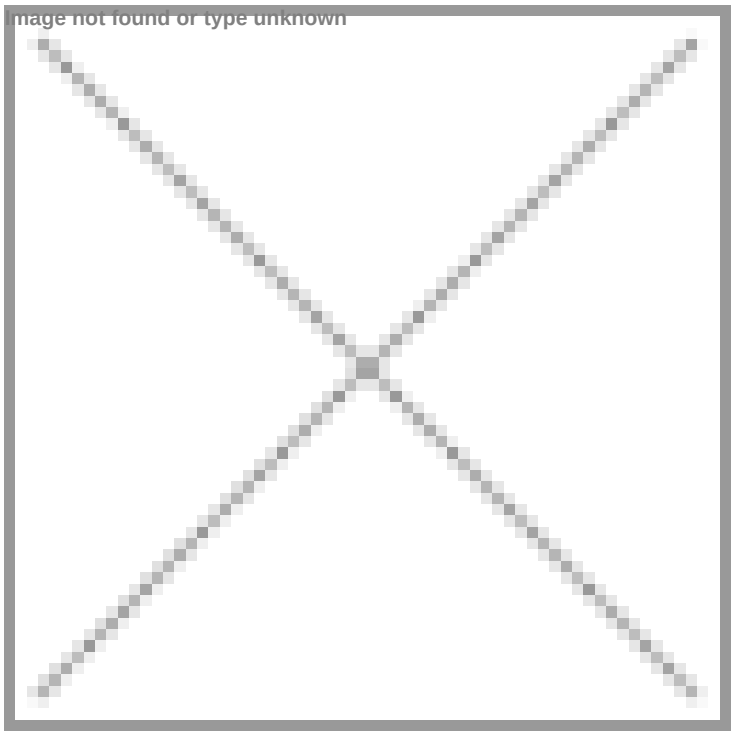
CytoMAD allows simultaneous label-free image contrast translation to reveal additional cellular information



A research team led by Professor Kevin Tsia, programme director of the Biomedical Engineering Programme under the Faculty of Engineering of the University of Hong Kong (HKU), has developed an artificial intelligence (AI)-driven imaging tool that enables speedy and precise diagnosis of cancer patients, greatly enhancing the effectiveness of their medical treatment.

In joint collaborations with HKU's Li Ka Shing Faculty of Medicine (HKUMed) and Queen Mary Hospital, the team headed by Professor Tsia, has successfully demonstrated the effective use of their latest generative AI method, the Cyto-Morphology Adversarial Distillation (CytoMAD), on lung cancer patients as well as drug tests.

Combined with their proprietary microfluidic technology, CytoMAD allows fast and cost-effective 'label-free' imaging of human cells to help clinicians assess the patients' tumour at the precision of individual cells, and also determine whether the patients have the risk of metastasis.

CytoMAD uses AI to automatically correct cell imaging inconsistencies, enhance cell images, and extract previously undetectable information from cell images. Such all-round capability in CytoMAD ensures accurate and reliable downstream data analysis and diagnosis. CytoMAD's capabilities have the potential to revolutionise cell imaging for meaningful analysis of cell properties and related health and disease information.

Looking ahead, a prime goal is to train the model to enable medical practitioners to predict cancer or other diseases for

potential patients. “Making predictions based on vast amount of data is the most powerful aspect of AI application in biomedicine,” said Professor Tsia.

Professor Tsia’s team has applied for research funding to conduct clinical trials among lung cancer patients over a three-year period. “We plan to accumulate adequate data and track patients’ progress using our imaging and AI technology.”