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HUKST designs SmartPath AI system to streamline cancer pathology workflow

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SmartPath intelligently analyses complex pathology images to support diagnosis and prognosis

The Hong Kong University of Science and Technology (HKUST) has launched SmartPath, a comprehensive artificial intelligence (AI) system designed to transform the entire pathology workflow for cancer care.

The system was developed by an HKUST research team led by Prof. CHEN Hao, Director of Collaboration Center for Medical and Engineering Innovation, and Assistant Professor of the Department of Computer Science and Engineering and Department of Chemical and Biological Engineering.

SmartPath provides integrated support for clinical diagnosis, subtyping, biomarker quantification, treatment response assessment, and prognostic follow-up across a wide spectrum of cancers, aiming to accelerate turnaround times and enhance the personalization of treatment plans.

Developed from one of the largest and most diverse pathology datasets, SmartPath was trained on more than half million whole slide images spanning 34 major tissue sites. This enables the system to assist healthcare professionals with over 100 distinct clinical tasks, including cancer classification, subtyping, treatment response evaluation, survival rate prediction, and the generation of detailed pathology reports.

A key breakthrough is SmartPath's ability to diagnose several of Hong Kong's most prevalent cancers, including lung, breast, colorectal, and gastric cancer, building upon a unified framework of pathology foundation model.

SmartPath is currently undergoing multi-center clinical validation in multiple top-tier hospitals in the Chinese Mainland and Hong Kong.

The benchmark and framework established by the HKUST team and collaborative partners set a new standard for the field, providing a robust and scalable foundation that is expected to accelerate future research in computational pathology for precision oncology and smart healthcare globally.

The HKUST research team is now expanding SmartPath's capabilities to address additional cancer types, with particular focus on rare and genetically complex malignancies.