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강연제목: Computational Pathology: Deep Learning-Based Whole Slide Image Segmentation to Assist Pathologists

Abstract: Pathology is essential for diagnosing cancer and assessing its progression. Assessment of hematoxylin and eosin (H&E)-stained tissue samples relies on manual examination of glass slides via microscope which is a subjective and tedious task. Recent advances in deep learning enable objective and automatic quantification of giga-pixel-sized histhopathology whole slide images. In this talk, I will present how deep learning-based tissue segmentation of whole slide images can enhance pathologists' workflow in an efficient, objective, and reproducible way. Specifically, I designed Deep Multi-Magnification Network looking at a set of patches from multiple magnifications to achieve accurate multi-class tissue segmentation. In various clinical applications, Deep Multi-Magnification Network demonstrated its potential to aid pathologists in cancer diagnosis and prognosis. In conclusion, tissue segmentation models can offer a promising tool for efficient, objective, and reproducible assistance in pathology.

Brief Biosketch : Dr. David Joon Ho is Assistant Professor in Department of Public Health & AI at Graduate School of Cancer Science and Policy, National Cancer Center, Republic of Korea. He is tremendously passionate about developing artificial intelligence (AI) models to assist pathologists and ultimately improve patient care. His research interests include digital and computational pathology, computer vision, medical image analysis, and machine learning/deep learning. More specifically, he develops AI models objectively quantifying histopathology whole slide images to assess treatment response and to predict survival outcome with interpretability. Before joining National Cancer Center, Dr. Ho was Machine Learning Scientist and later promoted to Instructor at Memorial Sloan Kettering Cancer Center where he led multiple AI projects closely collaborating with pathologists. He received his PhD degree from Purdue University and his MS and BS degrees from the University of Illinois at Urbana-Champaign, all in Electrical and Computer Engineering.