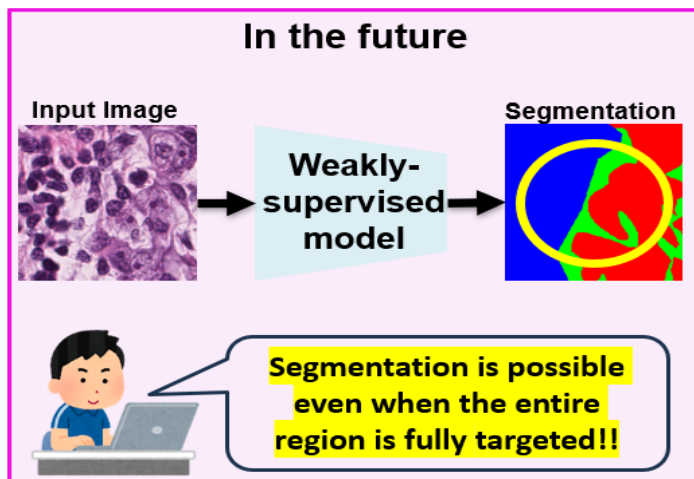
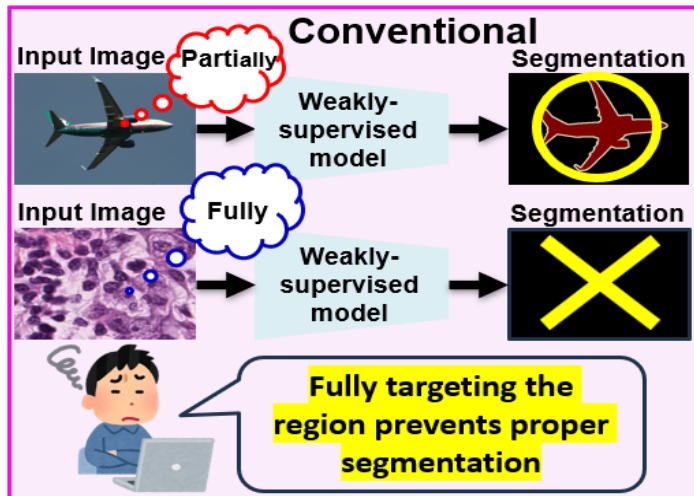




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Development of a Weakly Supervised Semantic Segmentation Model for Whole-Image Understanding

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Content:

Weakly supervised semantic segmentation aims to build low-cost and practical segmentation models within the framework of weakly supervised learning, which does not require detailed annotations. Instead of pixel-level labels, the model is trained with coarse information such as the presence or absence of cancer in an image, greatly reducing annotation costs. Although Class Activation Maps (CAMs) are widely used to obtain region information, they tend to highlight only the most discriminative areas, detecting only part of the image and failing to segment the entire scene including the background.

To overcome this limitation, this study proposes a new method that can accurately segment the entire image from limited supervision. The proposed approach is applicable to various domains such as histopathology, coastal waste analysis, land cover classification, and autonomous driving, contributing to both efficient annotation and precise image understanding.

Keywords: Weakly supervised learning, Segmentation

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