Build Your Own Image Segmentation Pipeline in Python

Basic Information

Workshop date	Monday, December 9, 2024
Workshop duration	9am - 5pm
Workshop format	Hands-on, in-person
Workshop location	Harvard Medical School
Skill level	Intermediate
Pre-requisite	**Python:** Basic
	Image processing: Basic
	Deep learning: None
Eligibility	HMS researchers, HMS affiliates, and external researchers
Registration link	https://tinyurl.com/IACsegmentation
Registration deadline	**Friday, November 15, 2024**
Registration cost	$200 *(checkout our website for more details)*
Contact email	iac@hms.harvard.edu
Workshop website	https://iac.hms.harvard.edu/teaching/2024-12-09_Unet/

Workshop Objective

This workshop aims to provide participants with a comprehensive understanding of image segmentation techniques for microscopic image, covering both classical and advanced methods. Attendees will gain foundational knowledge in deep learning for image analysis, focusing on building and training a UNet model. Additionally, the workshop will cover essential evaluation metrics for comparing and reporting the quality of segmentation.

Tentative Syllabus

- **Introduction to Image Segmentation:** Fundamentals of image segmentation, history and recent advancements.

- **Creating Ground Truth:** Exploration of various tools for creating ground truth masks essential for model training, including hands-on exercises.

- **Introduction to Deep Learning:** Introduction to the basics of deep learning, focusing on convolutional neural networks (CNNs) and the foundational components of UNet.

- **Building and Training a U-Net:** Building and training a UNet model, gaining insights into its architecture and practical applications in segmentation tasks.

- **Evaluation Metrics for Image Segmentation:** A comprehensive overview of various evaluation metrics for segmentation, with guidance on selecting the appropriate metric based on project requirements.