

Summer Research Academies

INT 93 LS – M23

Website Course Information – PROOF

Course Title

Diagnostic AI – Transforming Healthcare Using Image Processing and Learning from Biomedical Images

Course Disciplines

Computer Vision, Biomedical Engineering, Computational Biology, Computer Science, Electrical Engineering

Course Description

Physicians often utilize images for disease diagnosis, from microscopic images of blood samples to whole brain MRI scans. However, early and accurate diagnosis, quantification, and disease monitoring need more than just qualitative assessment. Artificial Intelligence (AI) in medical imaging makes this possible. In this interdisciplinary course, students will learn the mathematical tools and concepts of feature extractions, image registration, segmentation, and classification to analyze images ranging from molecular/cellular imaging to tissue/organ imaging. This course will introduce software tools, imaging modalities, and publicly available image data sources. Students will learn image processing, enhancement, visualization, and advanced deep-learning methods for biomedical applications. Through collaborative research, students will apply AI diagnostic tools to real-world problems such as brain tumor study, cell counting in cancer, and much more.

126 words