BEYOND ONE-SIZE-FITS-ALL: FOUNDATIONAL MODELS FOR ORGAN-CENTRIC MEDICAL IMAGING

Tues. 30 Sept. 2025 (13:00 ~ 14:00) JST

IN-PERSON/ONLINE SEMINAR

The rapid advancement of artificial intelligence has spurred a growing shift toward foundational models, including in applied fields like medical imaging. These models promise to streamline the development process by replacing multiple task-specific models with a single, versatile framework trained on large multimodal data. While this concept is compelling and early results are encouraging, our analysis reveals that current foundational models fall short in addressing the unique complexities of medical imaging.

In this talk, I propose a middle-ground solution: organ-specific foundational models tailored to domains such as lung and breast imaging. Drawing from our recent works, Mamo-CLIP and MedSyn, I will highlight both the potential and the limitations of this approach. By addressing key challenges, including data scarcity, annotation burden, and anatomical variability. I will discuss practical strategies for building effective domain-specific foundational models. The talk will conclude with a forward-looking perspective on opportunities to advance foundational model development in medical imaging.

Guest Speaker

Kayhan Batmanghelich
Assistant Professor,
Boston University, USA

BOSTON UNIVERSITY

Kayhan Batmanghelich, Ph.D. is an Assistant Professor in the Department of Electrical and Computer Engineering at Boston University. His research focuses on the intersection of artificial intelligence and healthcare, with an emphasis on medical imaging, explainable AI, and multimodal learning. He develops domain-specific foundational models that integrate radiological imaging, clinical data, and molecular information to support diagnosis, prognosis, and therapeutic decision-making. Dr. Batmanghelich has led multiple research projects supported by the NIH, NSF, and industry sponsors, and collaborates closely with clinicians to translate machine learning innovations into clinical workflows. He is a recipient of the Google Faculty Research Award and a Junior Faculty Fellow at the Hariri Institute for Computing.

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