

Machine learning to efficiently label ECGs and enhance their utility for detecting left ventricular dysfunction



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12:00 – 13:00 PM
BMI Classroom 4004
Woodruff Memorial Research Building

or

Join us on Zoom link:
<https://zoom.us/j/99417070088>
Meeting ID: 99417070088



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Abstract: Machine learning (ML) for healthcare holds many promises such as expediting repetitive tasks thus far sustained by human expertise and facilitating the discovery of novel biomarkers. In this talk, I will explore these two paradigms in the context of electrocardiography. First, I will present our human-in-the-loop framework that allows us to measure QT intervals, during drug safety trials, at low labeling cost. The framework consists of 3 key components: (1) deep learning (DL) based QT measurement with uncertainty quantification (2) expert review of a few DL-based measurements, mostly those with high model uncertainty and (3) recalibration of the unreviewed measurements based on the expert-validated data. Second, I will present our AFICIONADO project, which aims to leverage the accessibility of the ECG test to pre-screen high-risk patients for left ventricular dysfunction (LVD), which is traditionally detected with echocardiography. Such a pre- screening strategy would allow to only refer, for echo, patients displaying an abnormal profile of LVD-related echo parameters as estimated with a ML model built on paired ECG- echo data.

Bio: Mously Dior Diaw is a 3rd year PhD student at the Diagnosis and Interventional Adaptive Imaging laboratory (Inserm, University of Lorraine) and a research engineer at Banook Group in France. Her research focuses on leveraging signal processing and machine learning techniques to extract ECG biomarkers relevant to the assessment of cardiac drug safety and cardiac contractility. Mously completed her master's degree in biomedical engineering at the Grenoble Institute of Technology, during which she spent her final year at Imperial College London. She also holds a master's degree in applied mathematics for data science from the University of Lorraine.