Leveraging AI to Assist Cardiovascular Disease Diagnosis

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One of the most important metrics of cardiac health is ejection fraction. EF is the percentage of blood pumped out of the left ventricle each time the heart contracts and is most commonly analyzed using echocardiogram videos. Traditional interpretation of echocardiograms is expensive and time consuming. Automated prediction of ejection fraction would not only reduce expense and improve efficiency, but improve accuracy by reducing variability among doctors' interpretations. Variability is reported to be as high as 14%. In order to solve this problem, I proposed a novel deep learning model to enhance cardiac imaging analysis. The model leverages the advantages of both CNNs and Transformer encoders. The mean absolute error achieved by the model was 6.75. When embedded directly into an echocardiogram ultrasound machine, this tool will provide accurate, real-time results to assist cardiologists in making proper diagnoses. This will ultimately expedite life-saving procedures and eliminate unnecessary interventions, resulting in a higher quality of life for patients.

Awards Won: