Docket #: S20-050

Assessing Cardiac Function from Ultrasound Videos Using Deep Learning Algorithms

Stanford researchers have developed an algorithm using deep learning architectures to predict cardiac function (ejection fraction) and trace the endocardium of the left ventricle from ultrasound echocardiogram videos. Current methods rely on human interpretation of ultrasound videos, leading to assessment variability. This algorithm assesses cardiac function faster, more accurately, and reliably than humans.

Stage of Research

- Proof of concept

Applications

- **Algorithmic assessment of cardiac function (ejection fraction) across multiple heart beats from ultrasound videos**

Advantages

- **Automated and efficient**
- Performance
- Segments left ventricle with Dice Similarity Coefficient of 0.92
- Predicts ejection fraction with mean absolute error of 4.1%
- Reliably classifies heart failure with reduced ejection fraction with AUC of 0.97

Publications

- D. Ouyang et al Video-based AI for beat-to-beat assessment of cardiac function *Nature* March 25, 2020.

Patents

- Published Application: 20210304410
- Issued: 11,704,803 (USA)

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