

Multi-Modal Deep Learning for the Thickness Prediction of Blood Clot

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Abstract— Carotid artery is an important vessel that supplies energy to the brain through the blood flow. However, if the blood flow in the carotid artery is blocked by blood clot, it can cause fatal damage to the brain. Therefore, it is essential to measure and predict the thickness of the blood clots. In this paper, we propose a method to measure the thickness of blood clot in blood vessels from self-produced ultrasound data. From the blood clot back scatter signal, one-dimensional data such as Bandwidth and Center Frequency information is obtained, and 2D image data is derived from the bandwidth by applying amplitude-frequency conversion. In order to improve the thickness performance, we develop a deep learning model based on multi-modality that extracts a feature vector from the two types of data and infers the thickness of a blood clot. Through the proposed method, we show a meaningful result that achieved 96% accuracy for the thickness.

Keyword— Multiclass Classification, Blood Clot, Thickness Prediction, Multi-Modal Deep Learning,



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