

Case ID:M15-212L

Published: 12/26/2016

Inventors

Jianming Liang

Jae Shin

Nima Tajbakhsh

Contact

Jovan Heusser
jovan.heusser@skysonginnovations.com

Methods for Rapidly Interpreting Carotid Intima-Media Thickness Videos

Carotid Intima-Media Thickness (CIMT) measurement is a non-invasive, sensitive, and highly reproducible technique for cardiovascular risk stratification. Interpreting a CIMT video involves three operations: (1) select three end-diastolic ultrasound frames (EUFs) in each video; (2) localize a region of interest (ROI) approximately 1 cm distal from the carotid bulb in the selected EUF; (3) measure the CIMT within the localized ROI. Currently, ROIs and EUFs must be manually selected which is both tedious and time consuming, with variable accuracy and speed depending on the user's experience and level of expertise. A more user-friendly and time efficient CIMT measurement solution, preferably automated, is needed.

Researchers at Arizona State University have developed a novel software system for rapidly interpreting and measuring CIMT. This system automatically selects EUFs, determines ROIs and performs the CIMT measurement in ultrasound videos, significantly cutting down on the time required for determining CIMT. The system automates the entire CIMT interpretation process.

This software system reduces user-dependency by automating and standardizing the CIMT measurement process. The results are significantly more accurate than the industry standard but with a system that is much more user friendly and considerably faster.

Potential Applications

- Interpreting carotid intima-media thickness videos for cardiovascular risk stratification

Benefits and Advantages

- This method achieves a sensitivity of 95% in frame selection
- CIMT border sensitivity > 97.6%
- The selected frame may be manually modified by a simple mouse click if automatic detection is not optimal
- The edge line may be easily improved if the automatic detection is not

optimal

For more information about the inventor(s) and their research, please see [Dr. Liang's departmental webpage](#)