Noninvasive Method and Apparatus for Peripheral Assessment of Vascular Health

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OTHER INFORMATION

CATEGORIZED AS

- **Optics and Photonics**
  - All Optics and Photonics
- **Imaging**
  - Medical
- **Medical**
  - Devices
  - Disease: Cardiovascular and Circulatory System
  - Imaging
  - Screening

RELATED CASES

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BRIEF DESCRIPTION

UCI researchers introduce a medical device which noninvasively and accurately monitors vascular health metrics such as endothelial function, arterial stiffness, and blood pressure.

SUGGESTED USES

·Characterization of:

- Vasculature
- Endothelial function
- Perfusion

FEATURES/BENEFITS

·Noninvasive monitoring

·Utilizes small, inexpensive components within a portable unit

·Does not require uncomfortable cuff or pressure sensor

·Fast, dynamic measurements

·Makes use of SPG (speckleplethysmography) and PPG (photoplethysmography) to obtain vascular data

·Information-rich dynamics captured from both vasodilation and vasoconstriction of the vasculature

TECHNOLOGY DESCRIPTION

Vascular diseases include congestive heart failure, cardiac arrest, and coronary artery disease. These diseases are associated with changes in biomarkers such as endothelial function and arterial stiffness.The gold standard for determining endothelial function is invasive and requires administration of the drugs adenosine and acetylcholine. Noninvasive solutions exist; however, these are time-consuming, uncomfortable, or less reliable. As such, these key predictors of cardiovascular risk are not routinely tested due to limitations such as expense or unacceptable levels of accuracy.

UCI researchers introduce a technology to monitor vascular health using a small heating/cooling component placed on a human digit. The device makes use of speckleplethysmography and photoplethysmography to quickly and noninvasively characterize vasculature, endothelial function, and perfusion. Vascular health measurement from this device is inexpensive, more holistic, and more accurate than current approaches.

STATE OF DEVELOPMENT

The researchers have finished the concept stage and are collecting preliminary data.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,744,491	09/05/2023	2019-385

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