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Motion-Stabilized Flow Imaging Device

Tech ID: 29830 / UC Case 2019-055-0

BRIEF DESCRIPTION

UC Irvine inventors developed a device comprising a handheld and portable motion-stabilized laser speckle imaging (LSI) device that can be used in clinical settings to measure and illustrate blood flow maps of a patient's tissue or organs.

SUGGESTED USES

- Provides assistance in assessing medical conditions such as peripheral vascular disease, diabetes, and burn wounds by measuring blood flow
- Conveniently moves and orientates to the desired location on the patient's body to quantify blood flow through a non-invasive optical technique
- Can be used in crowded clinical settings

FEATURES/BENEFITS

- Able to acquire and showcase blood flow data in real-time
- Lightweight, compact, and portable hand-held device
- Reduces shaking and vibrations while using the device in a hand-held manner
- Reduces unwanted motion artifact, image misalignment, and data acquisition time
- Capable of mounting on a mounting device, such as a tripod
- Convenient for using in crowded clinical settings where the generic bulky LSI device can be cumbersome and difficult to maneuver

TECHNOLOGY DESCRIPTION

LSI is a wide-field, noninvasive optical technique that allows researchers and clinicians to quantify blood flow in a variety of applications. However, the widespread use of LSI in clinical settings has been hindered by the bulky form of currently available models of the LSI, which some require to be mounted on a tripod. These bulky models can be cumbersome and difficult to orientate and maneuver in a crowded hospital setting. A potential solution would be a handheld LSI device. But a handheld LSI device will have difficulty generating meaningful and accurate data if there exists motion artifact and image misalignment caused by vibration and shaking of the user measuring the patient's blood flow rate.

The inventors at UC Irvine addressed such problems by inventing a device that acquires and showcases blood flow rate data in real time, accounts for motion artifact and image misalignment through a stabilizer, provides constant current and specific depth of field, and is lightweight and compact. The device may be hand-held or mounted and still provide valuable data about the blood flow rate of a patient's tissue or organ.

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OTHER INFORMATION

CATEGORIZED AS

- » **Imaging**
 - » Medical
- » **Medical**
 - » Devices
 - » Diagnostics
 - » Disease: Blood and Lymphatic System
 - » Imaging

Research done by the inventors also show that blood flow data and images of the hand-held invention disclosed here was more accurate and clearer than data and images produced by a generic hand-held LSI device.

RELATED CASES

2019-055-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	2020025718	08/13/2020	2019-055

STATE OF DEVELOPMENT

The inventors have developed a prototype and the device has been tested both in vitro and in vivo settings. They are currently in the experimental stage of testing the device's stability. Different configurations are being explored for potential application of the device.

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