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Handheld Blood-Flow Imaging Device

Tech ID: 28707 / UC Case 2017-595-0

BRIEF DESCRIPTION

The invention is a medical handheld device that carries out skin visual inspection simultaneously with blood flow measurements through integrating a Laser Speckle Imaging (LSI) system within a handheld compact dermoscope. Combining both features in one compact, cheap and easy to use device will generate accurate and elaborative functional data that will improve the accuracy and detection of diseases such as cancer.

FULL DESCRIPTION

Background:

- » Dermatoscopy is the examination of skin lesions with a dermatoscope
- » Critical for the diagnostic of some diseases like melanoma
- » Diagnostic accuracy may be significantly improved through measurement of functional information in addition to conventional structural analysis of lesions
- » Blood flow is a critical aspect of functional information about skin lesions

Problem:

- » Dermatoscopy only might not be sufficient enough for accurate diagnostic of lesions
- » Blood flow measurement may significantly aid in accurate diagnostics
- » Commercially available solutions to provide maps of blood flow are both bulky and expensive
- » Such devices are impractical for routine use in clinics
- » Other solutions involve invasive measurements, which can be more complicated

Solution:

- » The invention combines dermatoscopy and blood flow measurement in one single device
- » It integrates a compact Laser Speckle Imaging (LSI) system into a dermatoscope
- » LSI is a non-invasive solution for dynamic imaging of blood flow
- » It focuses on interpreting the speckle pattern phenomenon that occurs when electromagnetic light waves interfere with one another to produce optically visible effects
- » Analysis of these speckle patterns results in quantitative wide-field imaging data pertaining to blood flow velocity mapping.
- » Two illumination sources are used (one for the LSI system, and a white LED for the visual inspection)
- » Both blood flow imaging and visual inspection are performed simultaneously
- » In spite of it's handheld nature, it's real time blood flow measuring capabilities are equivalent to those of a laboratory-grade device.
- » The technology can aid in significantly improving diagnostic accuracy

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OTHER INFORMATION

CATEGORIZED AS

- » **Imaging**
 - » Medical
- » **Medical**
 - » Devices
 - » Diagnostics
 - » Disease: Cancer
 - » Disease: Dermatology
 - » Imaging
- » **Sensors & Instrumentation**
 - » Medical

RELATED CASES

2017-595-0

SUGGESTED USES

- Blood flow measurement
- Skin Dermatoscopy
- Cancer screening

ADVANTAGES

§ Adds additional and valuable functionality to a commonly used device (dermatoscope)

§ Simultaneous blood flow imaging and visual inspection

§ Provides a portable, accurate solution for blood flow measurement

§ Small in size and easy to operate

§ Less expensive than commercially available technologies used to measure blood flow

§ Has equivalent capabilities to the bulky expensive devices

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,382,525	07/12/2022	2017-595

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