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Portable Neural Network Enabled Biofluid Spectroscopy

Tech ID: 32957 / UC Case 2022-544-0

ABSTRACT

Researchers at the University of California, Davis have developed a method of biofluid assessment capable of real-time monitoring as well as compatible with machine learning and neural network processing.

FULL DESCRIPTION

There is a wide range of methods for monitoring, diagnosing, and assessing diseases and conditions. One emerging non-invasive approach is biofluid-based analysis. There is a large array of methods that utilize biofluid assessment to diagnose and monitor conditions. Of these methods, few can provide multiplexed and accurate metabolic detection on biofluids, and the approaches capable of this use bulky and expensive technology. These methods are also limited in the data they collect by their inability to be integrated into wearable devices. Existing devices are not able to be used for real-time monitoring.

Researchers at the University of California Davis have developed a new method of biofluid assessment which combines an array of miniaturized spectral detectors that are compatible with machine learning and neural network processing. Although initially used for head and neck cancers, it can be expanded to classify, monitor, and provide diagnostic sensitivity for a broad range of metabolic conditions. This novel approach makes multiplexed metabolic detection possible. It utilizes biofluids that can be collected with non-invasive or minimally invasive methods to accurately and sensitively detect molecular signatures of circulating metabolites excreted in biofluids, enhancing accuracy through multiple biofluids which take advantage of the multi-source neural networks.

APPLICATIONS

- ▶ Classify, monitor, and improve diagnostic sensitivity of a broad range of diseases and/or metabolites

FEATURES/BENEFITS

- ▶ Portable, label-free, fast, and accurate biofluid analysis
- ▶ Can be used to diagnosis a wide array of conditions

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2023/224859	11/23/2023	2022-544

Additional Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Nonreciprocal Reflectarray Antennas based on time-modulation](#)
- ▶ [Nonreciprocal And Reconfigurable Phased-Array Antennas](#)

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OTHER INFORMATION

KEYWORDS

portable, neural network
enabled, biofluid
spectroscopy, analysis

CATEGORIZED AS

- ▶ **Medical**
 - ▶ Diagnostics
 - ▶ Disease: Cancer
 - ▶ Research Tools
 - ▶ Screening

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2022-544-0

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