Ultra-low Voltage EDA Acquisition Circuits with an Adaptive Feedback System

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ABSTRACT

Researchers at the University of California, Davis have developed a system that significantly improves the accuracy and efficiency of stress detection through electrodermal activity monitoring.

FULL DESCRIPTION

Utilizing a novel adaptive gain mechanism and operating on a low voltage, the system captures electrodermal activity (EDA) signals, which are reliable stress indicators. It is designed to overcome the limitations of current wearable devices by offering high sensitivity and low power consumption, making it ideal for continuous stress monitoring.

APPLICATIONS

- Wearable devices for personal health monitoring.
- Stress management tools for workplace wellness programs.
- Research tools for psychological and physiological studies.
- Commercial product development focusing on health and wellness.

FEATURES/BENEFITS

- High accuracy with less error in signal acquisition.
- Low power consumption.
- Adaptive feedback control system that adjusts to ultra-low voltage levels.
- Compatible with a wide range of electrode materials.
- Improves signal-to-noise ratio (SNR) through effective filtering methods.
- Mitigates inaccurate stress detection due to subjective assessments like questionnaires.
- Reduces high power consumption and low sensitivity of current EDA acquisition systems.
- Overcomes limitations in wearable device technology due to instability and low SNR.
- Solves difficulty in adapting systems to ultra-low voltage environments.

PATENT STATUS

Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Adversarial Resilient Malware Detector Based on Randomization

CONTACT

Byron N. Roberts
bnroberts@ucdavis.edu
tel: 530-754-8689.



INVENTORS

- Fang, Ruijie
- Homayoun, Houman
- Zhang, Ruoyu

OTHER INFORMATION

KEYWORDS

adaptive feedback system, electrodermal activity, wearable technology, stress detection

CATEGORIZED AS

- **Medical**
  - Devices
  - Diagnostics
  - Other
  - Research Tools
  - Screening
  - Software

RELATED CASES

2022-632-0

University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel: 530.754.8649
techtransfer@ucdavis.edu
https://research.ucdavis.edu/technology-transfer/
Fax: 530.754.7620

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