



Ultra-Efficient Continuous Monitoring of Sensors

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing reconfigurable, event-driven hardware that continuously monitors data streams and invokes a primary processor only when triggered.

OVERVIEW

Tracking emissions, sensing earthquakes and monitoring patient brain waves are just a few of the applications that rely on changing, real-world information. In typical systems, sensors pass on raw data streams that then are analyzed by a low-power general purpose processor or central processing unit (CPU). These processors look for preset trigger signatures that identify whether an event has occurred or not.

Analyzing raw data streams takes lots of energy. To save battery life, processors are designed for bursts of activity followed by sleep or idle modes. But this approach drains power when usage needs to be ongoing – such as checking electroencephalograph (EEG) activity. Special microcontrollers designed for continuous sensing still waste energy and compute resources. New tools need to maximize efficiency.

THE INVENTION

UW-Madison researchers have developed reconfigurable event-driven hardware that enables low-power continuous monitoring by offloading tasks from the primary processor.

The hardware interfaces with sensors and invokes the processor only when a trigger signature is detected. It can be implemented as a separate integrated chip or as a low-power compute resource within the primary processor.

THE WARF ADVANTAGE

Since its founding in 1925 as the patenting and licensing organization for the University of Wisconsin-Madison, WARF has been working with business and industry to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.



APPLICATIONS

- Continuous sensing hardware/software package
- Healthcare, safety, environmental and military monitoring
- Usage in mobile consumer devices

KEY BENEFITS

- 1,000-fold energy reduction
- Primary processor spends almost no power in sampling sensors.
- Hardware can monitor any number of sensors and any kind of spatial/temporal trigger signatures.
- Easy to train and reconfigure during runtime
- Prolongs battery life

ADDITIONAL INFORMATION

Related Technologies

[WARF reference number P06419US describes a method to promote deep sleep using EEG signal monitoring and slow brain wave stimulation.](#)

Tech Fields

Analytical Instrumentation - Sensors

Information Technology - Hardware

CONTACT INFORMATION

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846.

