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Case ID:M18-078L
Published: 11/7/2018

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Wearable Sensor for Respiratory Rate Monitoring

Respiratory rate is an important vital sign used to monitor a person's status and health progression. It is better than pulse measurements and blood pressure at discriminating between stable patients and at risk patients. Current contact-based technologies to measure respiratory rate are bulky and uncomfortable to wear, impacting their usefulness for long-term and continuous monitoring. They are also difficult to integrate with other technologies, making them impractical to use.

Researchers at Arizona state university have developed a wearable sensor for respiratory rate monitoring. This sensor is less intrusive than current state-of-the-art technologies, and is able to clearly detect different modes of breathing. With some additional miniaturization, it is anticipated that this sensor could be integrated with other sensors to produce a robust wearable health monitoring platform. A working prototype has been developed and subjected to physiological tests, and was able to detect different modes of breathing, including, no breathing, normal breathing and fast breathing.

This respiratory rate monitor is small, comfortable and sensitive. And, with the possibility of further miniaturization, it could be part of a comprehensive wearable health monitoring platform.

Potential Applications

- Respiratory rate sensor
  - Health care diagnosis
  - Healthcare monitoring
  - Military – soldier health/performance monitoring
  - Law enforcement – officer health/performance monitoring
  - Sports - athlete health/performance monitoring
  - Infant monitoring
- Animal and livestock cultivation

Benefits and Advantages

- Reduced form factor – less intrusive than current devices
- Comfortable to wear for continuous monitoring
- Easily integrated with other technologies to produce a robust wearable health monitoring device
- Effective – achieves similar or better reliability and accuracy of readings compared to the state of the art
- Can clearly detect different modes of breathing

For more information about the inventor(s) and their research, please see Dr. La Belle's laboratory webpage