Monash researchers, have discovered a way to prevent energy failure in wireless sensor networks

**Opportunity**
Using fuzzy-based situation-aware adaption frameworks, energy can be conserved through allowing the sensor nodes to adapt functionality to surrounding situations. This means that when deployed in remote or hard to reach areas such as forests, high mountains or ocean beds, power can be conserved.

Wireless sensor networks (WSN) have been identified as “one of the top ten technologies that will change the world” by MIT’s technological review. Energy efficient operation and conservation is a major challenge hindering sensor network adoption. Wireless sensor networks are utilized in a large number of application domains for continual monitoring of environmental and physiological parameters.

**Applications**
- Environmental or habitat monitoring
- Military systems
- Security and surveillance systems
- Emergency management
- Healthcare

**Technology**
The situation-aware approach applies the FSI (Fuzzy Situation Inference), developed by Dr Delir Haghighi, for situation modelling and reasoning. Monash intends to employ FSI on distributed sensor network to adapt sensor’s sensing, sending, and sleeping operations depending on situation context.

By using FSI, the sensor would have the ability to compute an optimal sleeping time. For example, when the situation demands lesser frequency of data the sensor can spend longer time sleeping and vice-versa when situations demands more frequent data.

**Key researchers**
Dr Pari Delir Haghighi studies situation modeling and reasoning approaches and how to use the inference results for adapting applications and power-related parameters on power-constrained devices.

Dr Prem Prakash Jayaraman investigates wireless sensor network and use of context-aware cost-efficient approaches to conserve energy on sensor networks.

**Key publications**


**Figure 1:** An Overview of Situation-Aware Adaptation for Energy Management in WSNs.

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**Contact us**
The Faculty of Information Technology, Monash University is currently seeking research partners to further develop and commercialise this technology.

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