

Friday 16<sup>th</sup> August, 4pm  
Wallace Wurth, LG02

## A/Prof Paul Breen

(The MARCS Institute for Brain, Behaviour and Development, Western Sydney University)

### *Sensing & Stimulating Humans with Connected Devices*



A/Prof Paul Breen leads Biomedical Engineering at The MARCS Institute for Brain, Behaviour and Development (MARCS), where the focus is on addressing real-world problems utilising a cross spectrum of technologies. Paul and the group work closely with academic colleagues (International Centre for Neuromorphic Systems and Translational Health Research Institute in particular) and industry partners to bring these solutions to commercial reality. Specific research interests include novel sensing methodologies for unobtrusive wellness and medical monitoring, electrical stimulation techniques for the enhancement of sensory perception and controlled incubation of biological tissue.

Paul joined Western Sydney University as a Senior Lecturer in 2013. Since then, he has been awarded 9 research grants, bringing his combined total research budget to date, to \$15.5 million. These funds were awarded by the US Department of Defence, NHMRC, NSW and National Australian Departments of Industry and the Australian Association of Gerontology. Key to these successes has been a focus on transdisciplinary research with real-world impact and collaboration with industry.

Alongside the peer-reviewed publications produced, the primary outcomes of this work have been the filing of multiple patents and one trademark, leading to the establishment of three Australian start-up companies. Medical Monitoring Solutions and HemoMedic commercialise specific purpose wearable technologies for patients with sleep disorders and cardiovascular disease. He is also a founder and director of PAYO Scientific which manufactures Braincubator, an incubation system for tissue samples.

**Synopsis:** Much of the ongoing work in biomedical engineering at MARCS involves building internet connected devices that either put signals into the human body, measure signals generated within the body or measure the physical results of those signals. This talk will explore a number of projects in these areas, as well as new challenges and opportunities. While these projects range from detecting sleep apnea to restoring balance, Paul will show how all of these projects share a variety of common issues including security, reliability, power consumption, data load and critical risk management.

All welcome. Drinks and nibbles from 3:30pm, seminar starts at 4pm.

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