



**WESTERN SYDNEY**  
UNIVERSITY

School of Computer, Data and Mathematical Sciences

## HDR Seminar 20

# Program

28 July 2022

12:00pm - 12:15pm	<b>Briefing:</b> Prof Yan Zhang <b>Topic:</b> Policy updates and announcements
12:15pm - 12:45pm	<b>Invited Speech</b> <b>Topic:</b> Publishing with the Journal of Australian Postgraduate Research (JAPR): Faster, simpler, cheaper <b>Speaker:</b> Dr Rachel Westcott
12:45pm - 1:00pm	<b>MICTRes Completion Presentation</b> <b>Topic:</b> Evaluating Mobile Health Applications as Digital Therapeutic Products <b>Speaker:</b> Nazrin Akter (MICTRes Candidature 18740758) <b>Supervisory Panel:</b> A/Prof Jeewani Ginige
1:00pm - 1:15pm	<b>MRes Completion Presentation</b> <b>Topic:</b> Analysis of Class B Beacon Attacks on Large-Scale LoRaWAN Networks <b>Speaker:</b> Trirmadura Jay Ariyawansa (MRes Candidature 19903112) <b>Supervisory Panel:</b> Prof Alana Maurushat, A/Prof Rodrigo N. Calheiros
1:15pm - 1:30pm	<b>Closing</b>

Venue: Online Zoom

Meeting ID: 859 9166 3307

Password: HDR

Next Event: 25<sup>th</sup> August 2022

## **Publishing with the Journal of Australian Postgraduate Research (JAPR): Faster, simpler, cheaper**

**Speaker: Dr Rachel Westcott**

### **Biography:**

Dr Rachel Westcott is a veterinarian, graduating from Murdoch University in Perth with first class honours in 1999. She graduated with her PhD from Western Sydney University's Translational Health Research Institute in the School of Medicine in 2018. Her thesis examined natural hazard preparedness as a public health priority, particularly with respect to bushfire. Rachel's PhD by papers and the stressors inherent in the academic publication process inspired her to create the Journal of Australian Postgraduate Research (JAPR). The aim of JAPR is solely to help HDR students and other postgrads at Australian universities publish their work rapidly and readily to help initiate a publication profile early in their careers and within their degree timelines.

Rachel lives with her architect partner in the Adelaide Hills, working part-time in her veterinary practice while developing JAPR, part of her company, Engine Room Solutions™ - Accelerating excellence. She is also the volunteer coordinator of South Australian Veterinary Emergency Management (SAVEM) Inc.

### **Abstract:**

Introducing JAPR, a new journal aimed solely at helping HDR and other postgraduate students publish their work quickly and inexpensively within the tight timeframes and budgets of their degree programs. JAPR uses a new, innovative model of peer review and submission to assist students to establish a publication profile early in their careers. Traditional academic publication pathways are becoming more onerous and more expensive: in contrast, JAPR provides HDRs and other postgrads with the opportunity to publish their work in a timely and affordable manner, and engages students, their supervisors and universities more directly and more powerfully in the publication process. An accelerated publication pathway also promotes the building of stronger links between academia, industry, other stakeholders and the community to find and drive solutions to many research questions and issues.

JAPR is online and open access. Papers may be from any discipline. Qualitative, quantitative or mixed methods papers are equally welcome. JAPR changes the way postgraduate research is published. Innovation in publication reform begins here.

## **Evaluating Mobile Health Applications as Digital Therapeutic Products**

**Speaker: Nazrin Akter (MICTRes Candidature 18740758)**

### **Abstract:**

The exponential growth of Mobile Health Application (mHealth app) development and implementation have created innovative channels to diagnose, treat, monitor, and engage with patients in various health care settings. However, a significant portion of mHealth apps is not developed on the foundations of scientific or clinical evidence. Regulatory agencies have implemented legislative frameworks and policies to certify mHealth apps however, there is a lack of standardisation and unification leading to a significant number of mHealth apps without entering any regulatory verification process. The objective of this study was to design, implement and trial an independent web based multidimensional scale called the 'mHealth App Evaluation Tool' to assess the efficacy of unregulated mHealth apps in addition to obtaining the perceived usefulness of the tool from multiple stakeholders.

# **Analysis of Class B Beacon Attacks on Large-Scale LoRaWAN Networks**

**Speaker:** Trirmadura Jay Ariyawansa (MRes Candidature 19903112)

## **Abstract:**

With an estimated global population of 10 billion, Internet of Things (IoT) devices are becoming more ubiquitous and crucial to society than ever. Many IoTs connect and work within critical infrastructures such as gas and water. These devices are responsible for collecting and transmitting large amounts of data to traditional IT systems for processing. The devices are connected to special networks called Low-power wide-area Networks (LPWANS) which are designed to connect IoT devices over a long range, with little power use. One promising LPWAN called LoRaWAN has gained wide acceptance in the IoT sector since its release in 2015. As the protocol evolved, many security vulnerabilities plaguing its release were patched. However, LoRaWAN v1.1 introduced a new vulnerability involving its beacon signal that is crucial to synchronising all its Class B devices. A malicious actor could launch numerous Beacon Spoofing attacks by exploiting this vulnerability, leading to a denial of services related to all Class B devices. Previous research studies have demonstrated these Beacon Spoofing attacks on one device. However, there is no extant research on the nature of the resilience of a large LoRaWAN network coming under a Beacon Spoofing attack. Therefore, the objective of the current thesis is to study the effects of Beacon Spoofing attacks on various LoRaWAN networks/end devices. The output of this research provided a valuable simulator using which IoT operators could test their network's survivability against Beacon Spoofing attacks. Finally, it revealed the importance of researching this vulnerability and patching it, as it could occur in other LPWANs using beacons, as well.