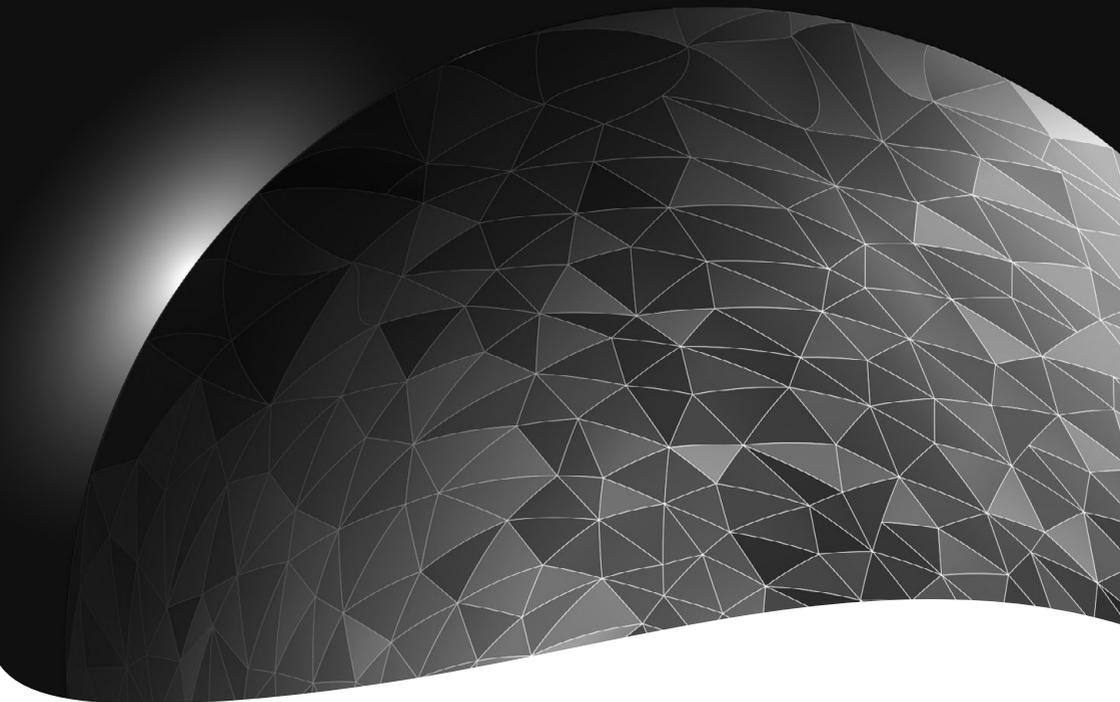




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# Acknowledgements

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Federation University Australia acknowledges the Traditional Custodians of the lands and waters where our campuses, centres and field stations are located and we pay our respects to Elders past and present, and extend our respect to all Aboriginal and Torres Strait Islander and First Nations Peoples.

The Conference Committee would like to acknowledge and thank staff and HDR candidates who assisted with the organising of this event and contributed to the success of the conference.

**Conference Committee:**

Professor Wendy Wright

Dr Robert Watson

Mrs Paula Di Maria

A special thanks to Elise Whetter (Celtink Creative) who produced the conference artwork and booklet.

Celebrating  
our research  
together

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## Professor Duncan Bentley

VICE-CHANCELLOR AND PRESIDENT



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Welcome to this year's Annual Higher Degrees by Research (HDR) Conference. This is a special day in the Federation University calendar, which offers our HDR candidates a valuable opportunity to showcase the outstanding quality and diversity of their research.

Federation University's research aims to transform lives and enhance communities. We are committed to building innovative and applied research that will help to strengthen, sustain and enrich communities in regional Australia and beyond. This involves connecting with our local communities, government and industry partners to provide real world research opportunities and engagement for our HDR candidates and innovation capability for our partners.

The HDR Conference helps to enhance and grow the research culture of our university. This event acknowledges the value of our HDR programs and students and their contributions to our research outputs and reputation.

The conference provides a platform for our HDR candidates to present the impact of their research. For many, this may be one of the first opportunities to stand in front of an audience of peers and scholars to present their research. This valuable learning experience can assist candidates to prepare for later external conferences and speaking opportunities.

Today we celebrate the research contributions and achievements of our HDR candidates. I hope that you all have a great day and take full advantage of this exciting opportunity.



## Professor Chris Hutchison

DEPUTY VICE-CHANCELLOR  
(RESEARCH AND INNOVATION)

---

It is a pleasure to welcome you to the 2022 Higher Degree by Research Conference “Celebrating our Research Together”. While I will not be able to join this event in person my senior colleagues will be there and will share with you some of our ambitions for research students and their critical role in regional Victoria.

You will probably be aware that we have emerged from the covid 19 pandemic with a new operational structure and a new direction for research in the University. Our research staff have been reorganised into a small number of multi-disciplinary research centres and our graduate research school has been enhanced to provide more effective support for post-graduate students. This structure will take a few months to bed in but we now have a clear pathway to establish cohort identities amongst our graduates research students.

The new structure has a background purpose, to “transform lives and transform communities”, through the deployment of world leading research in our priority areas. Our HDR student cohort is at the heart of this purpose. Over the past year, the University has won many government funded research scholarships that will allow a new approach to project design and supervision. Each project has been co-design by a project team of University and Industry partners. The students recruited to the projects will form a cohort located in one of our regional innovation centres, who will have the opportunity to learn how regional industries are run and can be expanded through new business models, technology and understanding society’s needs. Our aim is to provide pathways to employment for every graduating student.

Setting aside these new developments in the University, the Higher Degree Research Conference will provide some of our HDR students with their first opportunities to present and reflect upon the results of their research and to engage with others to gain constructive criticism and advice on their central hypothesis and the methods adopted to test and extend these hypotheses. It will also provide a first opportunity, to understand the breadth of research being carried out across the University and how it enhances local communities.

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Appreciating research in different discipline clusters is now critical for emerging researchers as the entire Universities transitions to multi-disciplinary approaches to Higher Education. The Higher Degree by Research Conference will expose students to different ideas, methods and technologies and therefore different ways of thinking about and solving the problems they are working on. It is important to be open, particularly to new digital technologies, and to engage with potential new collaborators. Even within an organisation it can often be challenging to network effectively but this conference should provide plenty of opportunity to do just that.

Finally, as we welcome in a new government, I would like to emphasise the importance that the University places on sustainable development goals. Recently, the University has entered the THE world impact ranking system. This system ranks a university according to its commitment to United Nations Sustainable Development Goals (SDG). I am pleased to say that Federation has been very highly ranked for the second successive year, placing it amongst the top 100 hundred Universities in the world for its commitment to gender equity (SDG 5), reduced inequalities (SDG 10) and sustainable cities and communities (SDG 11). The sustainable development of our country and our planet is something that every member of our university community can engage with and for which everyone is a stakeholder. I would encourage all of you have a voice in this important initiative.

Lastly, I'd like to thank everyone who will help make this year's Research Conference a success. This includes the organising committee, and the staff of the Graduate Research School who make this event possible – and especially Paula Di Maria for her coordination – and of course, all participants.

I hope you will enjoy and remember the day.



## Professor Wendy Wright

DEAN, GRADUATE STUDIES

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On behalf of the Graduate Research School, I offer a very warm welcome to all conference participants. I am so pleased to be able to meet with you all in person at our HDR Conference in order to **'celebrate our research together'**.

As HDR candidates, you are each contributing to the University and to our communities in various important ways, helping to fulfil the University's key purpose: *to transform lives and enhance communities*. The knowledge that you are creating has the capacity to make a difference to people and communities locally, regionally and globally – while you undertake your own transformational journey as a HDR candidate.

Our annual HDR conference is an important event in the University calendar and after cancelling the conference in 2020 due to Covid-19, and going online in 2021, it is lovely to be meeting with candidates and supervisors in a face to face setting once again. The conference provides an opportunity for you to develop networks, share the experience of the HDR journey, practise and refine communication skills and receive constructive feedback in a supportive environment. It is also a showcase and a celebration of the research activity being undertaken across the University by our HDR candidates. As such it is a rare opportunity to engage with peers both inside and outside of your discipline areas. Please do take the opportunity to make new friends and explore how others are navigating their HDR journeys.

I have attended several HDR conferences at Federation University and I am always amazed by the breadth of the research activity undertaken by our HDR candidates, and the impact that this work has on our communities. I am sure this will be no different at our 2022 conference as we come together at our first in-person conference since 2019.

Welcome, and enjoy the conference experience!

## Associate Professor Andrew Barton

ASSOCIATE DEAN,  
RESEARCH TRAINING PARTNERSHIPS



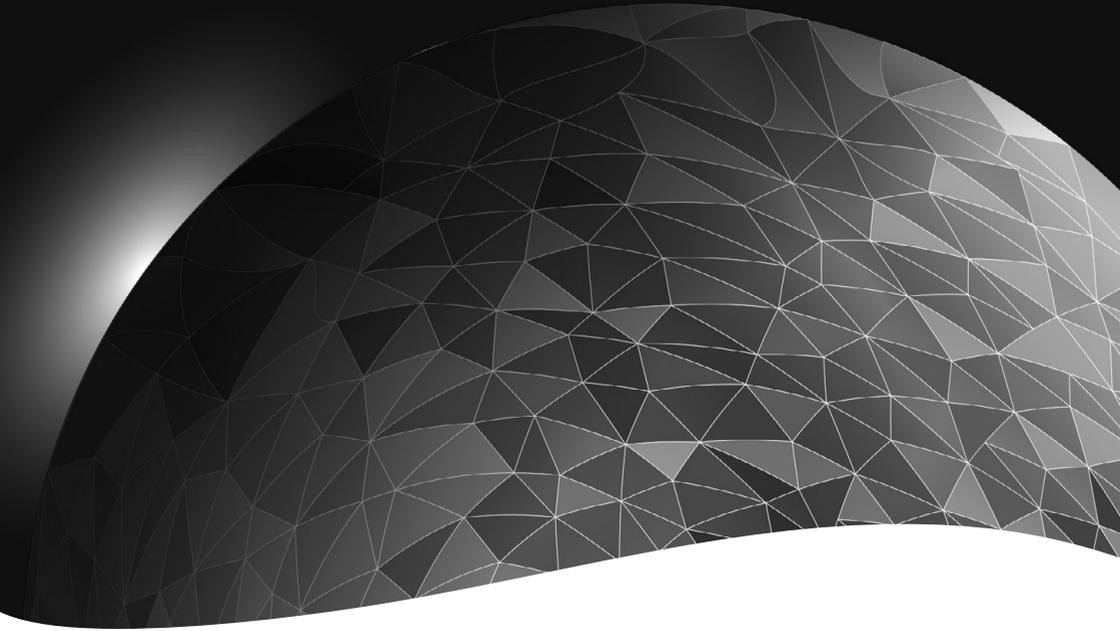
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It is my very great pleasure to welcome all HDR candidates and participants to the 2022 HDR conference. This is a highly anticipated opportunity for the University's HDR community to come together and share our research successes. It is particularly exciting to gather in a face-to-face environment after being distance for so long due to COVID-19. The impacts of COVID have been felt differently through our diverse HDR cohort, and I would like to acknowledge the ongoing efforts of our part-time students, those with carer and home schooling responsibilities, those who have had their field and laboratory work disrupted and those with other obstacles to their progress.

Sharing and presenting research with colleagues is an important element of research training, with the experience and skills developed being things that will stay with you for the whole of your research and professional careers and beyond. The University is invested in the training and success of our HDRs, and we are eager to provide this opportunity for you. I encourage all HDR candidate to engage fully with the program and to support your peers. I hope you are inspired by what you see and hear, and take renewed excitement to be working on your research and within the wider research sector.

I am particularly looking forward to seeing the broad cross-section of research being undertaken, and the extensive industry and community connections many you have. Federation is very fortunate to have many deep and productive research partnerships and is a further dimension I would like for us to celebrate as we come together for this conference.

Good luck to all presenters!



# **ORAL** PRESENTATIONS

Celebrating our research together

# Telomere length and cardiovascular risk in long-term renal transplant recipients



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## **Olutope Arinola Akinnibosun**

Supervisors: Professor Fadi Charchar, Dr Silvia Lee and Dr Yutang Wang

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**Doctor of Philosophy**

There is elevated risk of developing cardiovascular disease (CVD) in advance stage chronic kidney disease (CKD), with about 50% of deaths in this cohort associated with CVD. Renal transplantation is the renal replacement therapy of choice in end-stage renal disease mainly due to reduced CVD burden. However, CVD-related morbidity remains a prominent problem for renal transplant recipients (RTR) and is the leading cause of death in RTR with a functioning graft. Telomere length (TL) is a biomarker for predicting CVD risk. RTR show increased telomere attrition compared to dialysis patients within 12-months of transplantation despite reversal of the uremic milieu. This study consisting of 80 long term renal transplant recipients (LT-RTR) and 80 age matched healthy adults, examined the association between TL and CVD risk in long term RTR.

In LT-RTR, Leukocyte telomere length (LTL) did not correlate with any of the vascular biomarkers, although an inverse correlation was found between LTL and Mean cIMT. Mean cIMT was inversely correlated with LTL in healthy adults. These findings show that in LT-RTR, shorter TL is associated with vascular thickness but not with plasma vascular biomarkers. Our study suggests that the reversal in uremic milieu after RTR may forestall long term cardiovascular risk.

Olutope Arinola Akinnibosun is supported by a Federation University Research Tuition Scholarship and Destination Australia Scholarship through Federation University Australia.



## Investigation of lncRNAs in 'legacy effect' in losartan treated spontaneously hypertensive rats

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### Mark Aleu

Supervisors: Professor Fadi Charchar, Dr Yutang Wang and Dr Scott Nankervis

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### Doctor of Philosophy

**Background:** Long noncoding RNAs (lncRNAs) regulate gene expression post-transcriptionally and could act as biomarkers and indicators of prognosis in hypertension. Studies suggest that blocking the renin-angiotensin system in spontaneously hypertensive rats (SHRs) leads to long-term reduction in blood pressure, termed the 'legacy effect'. The specific mechanism by which blood pressure is maintained post-treatment is not yet understood.

**Objective:** To investigate the involvement of lncRNAs in the legacy effect after treatment of SHRs with losartan, an angiotensin receptor blocker (ARB).

**Design and methods:** Male SHRs were treated daily with losartan (7.5mg/kg/d by osmotic minipump) and vehicle (control) at 10-14 weeks of age. Kidneys were harvested at 14 (n= 5 control and 6 treated) and 20-weeks-old (n=8 both groups). We used total RNA sequencing to investigate differentially expressed lncRNAs and predicted their functional impact using *in silico* analyses. Differentially expressed lncRNAs were using real-time quantitative PCR and statistical significance was set as  $P < 0.05$ .

**Results:** We identified lncRNAs AABR07021465.2 and AABR07014855.1 were significantly differentially expressed after losartan treatment compared to controls at 20 weeks old ( $P < 0.05$ ). *In silico* analyses displayed that these lncRNAs had a significant correlation with systolic bp in SHRs ( $P < 0.05$ )

**Conclusions:** Our results indicate that short-term inhibition of the renin-angiotensin system (RAS) in young SHRs results in long-term effects on bp and gene expression in the kidney.

This project is being funded by the Higher Degree Research (HDR) at Federation University (Mount Helen) and a grant from the National Health and Medical Research Council (NHMRC). Mark Lueth Aleu is funded by the Vice Chancellor and President Stipend Scholarship.

# Roles of precision conservation, digital and resilient agriculture practices in sustainable agricultural performance

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## **Basharat Ali**

Supervisors: Associate Professor Peter Dahlhaus, Associate Professor Helen Thompson and Dr Nathan Robinson

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### **Doctor of Philosophy**

Feeding the growing global population while improving the Earth's economic, environmental, and social values is a challenge recognised in both the United Nations Sustainable Development Goals and the United Nations Framework Convention on Climate Change. Sustaining global agricultural performance requires regular revision of current farming models, attitudes, and practices. A thorough review of the international literature confirms precision conservation agriculture (PCA), digital agriculture (DA), and resilient agriculture (RA) practices as being of value in meeting future challenges. Each of these adaptations carry significantly positive relationships with sustaining agricultural performance. While it is clear from the literature that adopting PCA, DA, and RA would substantially improve the sustainability of agricultural performance, the uptake of these adaptations generally lags. More in-depth social science research is required to understand the value propositions that would encourage uptake of these adaptations and the barriers that prevent them.

Basharat Ali is supported by CeRDI-Precision Agriculture, Food Agility CRC, and Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## Australian Nursing student's perceptions of being a nurse: An explanatory mixed method design

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### **Louise Allen**

Supervisors: Professor Simon Cooper and Associate Professor Karen Missen

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**Doctor of Philosophy**

When newly qualified nurses enter the work force, they often find their social, emotional, intellectual and physical perceptions of nursing to be different from workplace expectations. This can create stress and discontentment contributing to a phenomenon known as transition shock. If not managed, transition shock can lead to burnout and high attrition rates. These concerns motivated a research project exploring Australian nursing student's perceptions of being a nurse and the factors influencing perceptions during their undergraduate education program.

This presentation aims to present the findings from the quantitative and qualitative phases of an explanatory mixed method research study, underpinned by the transformation learning theory framework. Findings indicate a variety of factors responsible for influencing perceptions. On enrolment, perceptions are idealistic, influenced by personal values, media and health experiences. These perceptions are based on altruism and are key for many enrolling into the program. As students' progress in the program and are exposed to significant experiences, idealistic perceptions are questioned and transformed to become more realistic. This process is reliant on the type and quality of experiences. Exposure to theoretical content, role models, patient care and immersion into the workplace are most influential on nursing student's perceptions.

Louise Allen is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# Understanding the role of in-memory database technology in business process management lifecycle

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## Haroon Bhutta

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**Doctor of Philosophy**

In-memory database technologies enable and process large volume of data transactions with complex algorithms articulation instantaneously or in real-time. Mostly, these technologies are used for data analysis and can impact in business process management lifecycle where, little is known about how in-memory database technologies trigger on business process reengineering. Understanding the role of in-memory database technologies can help organisations to anticipate how business processes might be transformed in lifecycle, so that tedious business process reengineering work can be planned, and expensive vendors' customisations can be optimised. This research is exploratory and empirical in nature hence, uses qualitative methods with interpretive approach to answer the research question; does in-memory database technology trigger on organisation's business process reengineering during planning, forecasting, and decision-making functions? The research findings of a thematic analysis about data collected during interviews with different organisations' employees who have simultaneous extensive knowledge of the use of in-memory database technologies and different activities involvement in businesses process management lifecycle. Preliminary findings reveal business process reengineering was triggered by in-memory database technologies' vendors with improved planning, forecasting, and decision-making activities but also with risk because, organisations lose control on the business processes reengineering initiatives due to vendors' involvement during processes' customisation.

Haroon Bhutta is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## Sexts, trolling, and online H8: Unifying cyber abuse under a relational framework

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### **Molly Branson**

Supervisors: Dr Evita March, Dr Danielle Wagstaff and Professor Iqbal Gondal

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**Doctor of Philosophy**

Advances in technology such as social media, instant messaging, and smartphones have facilitated the occurrence of online antisocial behaviour. Cyber Abuse, defined as any abusive behaviour enacted through technological means, is a prevalent and ongoing concern in our increasingly digital world. To date, research exploring Cyber Abuse has been plagued by definitional, theoretical, and operational inconsistencies. These inconsistencies threaten the validity of ongoing Cyber Abuse research, particularly when profiling victims and perpetrators. Further, researchers have commonly explored Cyber Abuse behaviours as separate and distinct, subsequently ignoring the shared variance and relatedness that exists amongst the behaviours and constructs. To address these limitations, the aim of the current study was to provide a novel and holistic conceptual framework of Cyber Abuse. Instead of focusing on specific behaviours, we adopt an interpersonal approach and operationalise these forms of abuse based on the relationship between the victim and perpetrator. We propose three categorical contexts for conceptualising cyber abuse: (1) Intimate-partner Cyber Abuse, (2) peer/acquaintance Cyber Abuse, and (3) non-relational Cyber Abuse. This novel conceptual framework of Cyber Abuse addresses several limitations within the research literature and wider practical context, and has legal, practical, and research implications for prevention and intervention.

Molly Branson is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# Explorers and Sceptics: Nurse academics' attitudes to technologies in teaching



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## Mark Browning

Supervisors: Professor Simon Cooper and Professor Lisa McKenna

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**Doctor of Philosophy**

The Educating the Nurse of the Future Report (Schwartz, 2019) notes that institutions that educate nurses must prepare students to be informed, critical users of technology. Nurse academics are tasked with using technology in an applied discipline that values critical thinking and interpersonal skills. Attitude to technology is a driver for technology adoption, effecting the adoption and use of technologies in teaching. Academics are essentially gatekeepers to technology integration in education. The aim of this study was to explore nurse academics' attitudes to technology and the influence attitude had on their use of technologies in teaching. An explanatory mixed methodology was used to address the research question, with the research split into two phases. Phase one involved a survey using a validated tool which measures individuals' attitudes to technology, the Technology Readiness Index 2 (TRI 2). Phase two involved semi-structured interviews with nursing academics identified from phase one. Two groups emerged from the findings, Explorers and Sceptics. Each group had complex and compelling reasons for their attitudes and engagement with technology. Consideration of these groups and their requirements will assist academics in adopting technology in their teaching.

Mark Browning is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## Pathways through the desert: multiple landscape experiences in the Lake Eyre Basin

---

### **Heatheranne Bullen**

Supervisors: Dr Verity Archer, Associate Professor Fred Cahir, Dr Dan Tout  
and Dr Anne Beggs-Sunter

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#### **Doctor of Philosophy**

A journey through the Lake Eyre Basin in Central Australia between 1919 and 1922 highlights the effect of divergent landscape experiences on people and country over an extended time and uncovers connections, conflicts, and entanglements. The journey in chronological time intersects significances in alternate timeframes. Firstly, ethnographic interpretation of photographs, documents, maps and evidence penned one-hundred years ago by Reverend Coledge Harland, a camel patrol padre for the Australian Inland Mission (AIM), forms a spatial scaffold and fills a knowledge gap. Following this, analysis of remnants and scars in the landscape, comparative photography, and crystallisation of a variety of primary and secondary data creates a complex social, cultural and environmental history narrative of travel across 'shared' story-line pathways in the Lake Eyre Basin. Finally, this presentation outlines the study highlighting specific areas.

Heather Anne Bullen is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# The adoption of blockchain: Decision proces from actors' perspective using institutional theory



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## **Shipra Chhina**

Supervisors: Dr Mehmood Chadhar, Dr Selena Firmin and Dr Arthur Tatnall

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**Doctor of Philosophy**

Given the rapid move of organisations towards blockchain adoption, this research focuses on the niche area associated with the blockchain adoption decision process. The literature is scarce around an explorative view of the blockchain adoption process and a need to identify the interplay of human and non-human elements at several points that influence actions. These actions ultimately lead to a decision regarding adopting a blockchain application in an organisation. This study investigates the blockchain adoption decision process from an explorative view and determines yet uncovered aspects to be considered before and while adopting blockchain. For this purpose, the study employed Institutional Theory and Innovation Translation approach informed by Actor-Network Theory to understand the interactions among actors and several influences/pressures behind their actions. The study results are crucial for blockchain literature as it fills gaps of empirically investigated, explorative and dynamic insight into the process and assists potential adopters in realising the important elements of the decision process for successful adoption. The proposed framework introduces a seven-stage adoption decision process model for blockchain, the actors involved, and the institutional pressures behind the process stages.



## Fit for purpose: identifying the appropriate model for predicting Australian grain yield

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### **Robert Clark**

Supervisors: Associate Professor Peter Dahlhaus, Dr Nathan Robinson and Dr Elizabeth Morse-McNabb

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### **Doctor of Philosophy**

The availability of accurate and timely predictions of crop yield within the growing season would be of enormous benefit to the grains industry in Australia. Foreknowledge of seasonal crop yield would allow state governments and industry providers to optimise the management of infrastructure and transport systems. Marketing organisations could negotiate contracts with more certainty, service providers to manage their workforce and plant more efficiently and farmers to make crop management decisions and set up forward contracts with more confidence.

Australian crop yields are low by international standards, limited by increasingly erratic rainfall and ancient soils. However, the physical and digital infrastructure available in Australia and the skill and experience of the farming community have combined to produce a strong industry that meets domestic needs and is a significant exporter on the world stage. Crop models are limited by the available input data and shaped by the environmental conditions they operate in. A literature review was conducted globally to identify crop yield prediction models published since 2015 to identify the type of models and input data best suited to making in season predictions of wheat, barley and canola yield at a range of scales under Australian conditions.

Robert Clark is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia, a Stipend Scholarship through the Grains Research and Development Corporation and a Top-up Scholarship from the Food Agility Cooperative Research Centre.

# Emergency nurse practice and attitudes towards providing public health messages during disaster



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## Nicole Coombs

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**Doctor of Philosophy**

Patient education is an important part of the role of Australian nurses and aims to inform and empower patients, their families, and communities. A unique opportunity for the provision of preventative education occurs through public health messaging in disaster, when preventative health information by emergency nurses provides knowledge, with the intension of reducing potential risk to health. A recent literature review indicates very little evidence exists regarding preventative health messaging by emergency nurses.

A biphasic sequential mixed methods study is currently being conducted to examine the practice and attitudes of Australian emergency nurses providing public health messaging during disaster. Using an online survey and individual interviews, the nurses have shared their experiences, identifying the barriers and enablers that contributed to their current practice. The quantitative phase is now complete, and the interim findings will be reported. Early analysis indicates that public health messaging practice is being influenced by nurses' attitudes and self-efficacy, the organisational support and the capability, motivation, and opportunity for public health messaging in this setting.

Nicole Coombs is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## Investigating the Clemente transformative learning approach in empowering students experiencing coercive control

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### Lesley Cooper

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**Doctor of Philosophy**

Anecdotally, many students in the Clemente program have a history of family violence, including coercive control. Coercive controllers instil negative inner narratives in their victims to micromanage their everyday activities, including attending educational programs. This presentation provides an overview of the project investigating "The potential of the Clemente transformative learning approach to empower students who experience coercive control". The research uses a social constructionist epistemology that underpins critical feminist theory and transformative learning theory, viewed through the lens of coercive control and the Clemente philosophy. The study employs qualitative and quantitative data collection methods through semi-structured interviews and three questionnaires encouraging the narratives of students lived experiences of coercive control within a transformational education context. Students who experience coercive control are a vulnerable group to interview, requiring measures to ensure the safety of participants. Recruitment has commenced for Clemente students, and alumni aged over 18 years and enrolled in the NSW, Queensland, and Victorian programs. This research contributes to the emerging fields of transformative learning and coercive control, encouraging new discourse and a greater understanding of the role of the Clemente transformative learning program in the lives of students experiencing coercive control.

Lesley Cooper is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# Unfinished Business!

## The myth that the settler government has lawful transnational jurisprudence sovereign authority

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### **Samuel Crane**

Supervisors: Associate Professor Dr Fred Cahir and Dr Dan Tout

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#### **Master of Arts**

My paper has shown that prior to colonisation, the First Nations people had possession of lawful transnational jurisprudence sovereign authority and not the settler governments. My research posits that the acquisition of Australia was based on an unlawful determination of *terra nullius*, as a result, of the British Empire losing America after the American civil war. Thus, establishing another international trading base and not a penal colony.

After further examination, this paper will illustrate legal facts that refute *terra nullius*.

The *Act of Settlement* 1700 removed the royal monarchs sovereign reign to rule over subjects/citizens in the United Kingdom nor Australia. S. 8 in the Preamble states Australia is as *quasi* self-governing colony. Since the signing of the Treaty of Versailles 1919, the current political system, judiciaries, and the Australian Constitution has had no lawful basis as Australia became an independent nation from the United Kingdom. That since colonisation the First Nations peoples of Australia maintained their lawful transnational jurisprudence sovereign authority despite those lawful determinations having been usurped by colonial governments. Finally, this paper provides an overview for Australia becoming an independent sovereign nation-state with the First Nations peoples of Australia.

Samuel crane is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## Patients' falls risk awareness in regional Victorian hospitals: A mixed methods study

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### **Elissa Dabkowski**

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### **Doctor of Philosophy**

Falls in hospital constitutes one of the greatest sources of patient harm, given the physical, psychological, emotional, social and financial consequences that can occur. Many falls by patients are unwitnessed and occur in the hospital bedroom with limited help-seeking behaviour. Evidence suggests a disparity exists between inpatients' falls risk perception compared to that of a health professional. Identifying and understanding the influencing factors behind these disparities may help to inform future fall prevention strategies and management.

This presentation describes the convergent mixed-methods approach used to conduct this important research. With data collection underway at three regional Victorian hospitals, quantitative data collection consists of a 15-item survey (Self-Awareness of Falls Risk Measure) for both inpatients and clinicians, and a clinical audit. Consenting inpatients also have the option of participating in an individualised interview at the hospital bedside. Eligible participants must be aged 40 years and older, able to communicate in English and must return a Standardised Mini-Mental State Examination (SMMSE) score of 18 or greater. One of the strengths of this project is the inclusion of patients with mild to moderate cognitive impairment, as they are often excluded from falls research yet have an increased risk for falling in hospital.

Elissa Dabkowski is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia. She is the recipient of a co-funded industry scholarship between Latrobe Regional Hospital and Federation University Australia.

# Using simulations to increase ICT graduates work-readiness: Instructors, employers and students' perceptions



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## **Nadia Faisal**

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**Doctor of Philosophy**

The employability agenda has been one of the most significant developments in higher education over the last decade. In IT education, an appropriate teaching design can yield enhanced learning outcomes and higher skill levels which ultimately support students' job-readiness. A pragmatic paradigm was adapted in this ongoing PhD research project to investigate the effects of an experiential teaching technique "Simulation Games" on ICT graduates' work-readiness. This longitudinal study used multi-stage multi-method data collection over the period of two years. Starting from Industry experts, the researchers conducted in-depth interviews to first ascertain what work-ready attributes are desirable in an ICT graduate. An ICT work-readiness framework was developed which was later used to conduct in-depth interviews from simulation games instructors from different Victorian universities and institutes. The same framework was used to develop pre and post game surveys. These surveys are being conducted with students enrolled in different courses using ERPsim game. The findings from these interviews and surveys will be mapped with SFIA (Skill Framework of Information age) to determine whether these games are making significant contribution towards ICT graduates work-readiness.

Nadia Faisal is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## Ensemble modelling for robust reconstruction of gene regulatory networks

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### **Hasini Nakulugamuwa Gamage**

Supervisors: Associate Professor Madhu Chetty, Dr Adrian Shatte and Dr Jennifer Hallinan

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#### **Doctor of Philosophy**

Gene Regulatory Networks (GRNs) play a significant role as computational devices of living cells and their study can provide information about the interactions between genes and their associated products. Robust reconstruction of these GRNs from gene expression data is a long-standing challenge in Systems Biology. Several GRN inference models have been developed for systematically assessing these genetic regulatory interactions producing gene expression data. However, these methods have their own limitations when used individually and obtaining “robustness” of reconstructing GRNs is challenging when deciding which model is most suitable in a given problem context. Therefore, the recent trend is the use of ensemble approaches in which multiple methods are combined to produce more stable and accurate modelling approaches. In this research, we have proposed a novel ensemble modelling approach which performs well in terms of accuracy and efficiency while overcoming the limitations of individual State-of-the-Art methods by aggregating the strengths of the diverse GRN modelling approaches including Boolean model, Regression model and Fuzzy Mathematical model. Proposed ensemble model will be applied on publicly available gene expression datasets to evaluate model performance against the other State-of-the-Art methods using various performance metrics.

Hasini Nakulugamuwa Gamage is supported by tuition fee waiver scholarship from Federation University Australia and a Destination Australia stipend scholarship from the Australian Government Department of Education, Skills and Employment.

# Registered Nurses' pain management for aged care residents with dementia

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## Paul Gardner

Supervisors: Associate Professor Danny Hills, Professor Virginia Plummer and Dr Julia Gilbert

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### Doctor of Philosophy

**Background:** People with dementia living in residential aged care facilities (RACFs) continue to receive less pain management than other residents. Registered Nurses (RNs) are responsible for complex management of people residing in RACFs.

**Methods:** An integrative literature review was undertaken examining RNs' knowledge, attitudes and practices of pain management for people with dementia in RACFs.

**Results:** The major themes identified in this literature review include gaps in knowledge and skills, uncertainty of assessment and delays in treatment.

**Conclusion:** RNs require ongoing development and support in pain management for residents with dementia. Broader issues in residential aged care may contribute to the problem and require examination. In this PhD research, using a constructivist grounded theory approach, rich data will be gathered on the perceptions and practices of RNs working in RACFs in the management of pain for residents with dementia. A theory will be constructed on how and why RNs perceive and practice pain management for residents with dementia. Potential implications for policy and practice will also be discussed.

Paul Gardner is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## Evaluate the effectiveness of chronic disease management plan on self-management of diabetes

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### **Maryam Ghasemiardekani**

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#### **Doctor of Philosophy**

Chronic Disease Management (CDM) plans must appropriately target patients' needs, but patients with chronic conditions are often poorly served by current health delivery and arrangement that fail to coordinate care across different service providers. Therefore, the collective single case study aims to investigate the existing data (demographic, clinical data, and all documents related to the CDM plan) that may help health professionals better understand the effectiveness of the CDM plan on patient self-management. Phase 1: Fifteen patients with a confirmed diagnosis of diabetes type 1 and 2 with consideration of inclusion criteria were recruited at general practice settings. Clinical data and all documents relevant to the delivery of CDM plans and educational instructions for each patient were collected before the CDM plan and forth months after the CDM plan for the quantitative section. Semi structured interviews were conducted for the qualitative section. Phase 2: Semi structured interviews were conducted with eight healthcare professionals. This case study could indirectly showcase how each participant's unique experience helps build and enrich the future development of the CDM plan. It may create a platform where an advanced CDM plan is in a position that may directly affect patients' self-management.

Maryam Ghasemiardekani is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# How transformers transformed natural language processing

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## **Jaskaran Kaur Gill**

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**Doctor of Philosophy**

A significant effort and time is spent by researchers to collect and transform abundant volume of natural language text into structured form for analytical purposes. Natural language processing (NLP) is a set of deep learning techniques/models that aim to automate and improve processing text-based data. Before Transformers were introduced, handling long-range dependencies was a major drawback for most NLP models. Understanding a piece of text required symbolic capabilities such as accessing semantic, episodic and lexical characteristics. An NLP Transformer is capable of solving sequence-to-sequence tasks activating a cascade of semantic and episodic relationship creating background information similar to how humans do. The novel architecture of Transformers was catalyst for emerging various state-of-the art transformer models including BERT and GPT causing the significant increase of research interest in NLP. The aim of this presentation will be to introduce multidisciplinary researchers with concepts of NLP and Transformers. This talk will explain the novel architecture of Transformers that transformed the field of NLP.

Jaskaran Kaur Gill is supported by the tuition fee waiver scholarship from Federation University and the stipend scholarship from Health Innovative and Transformation Centre (HITC), Federation University Australia.



## Deep learning model to empower student engagement in online synchronous learning environment

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### **Cinthia Joy Godly**

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**Doctor of Philosophy**

Online synchronous learning has increased rapidly after the onset of the pandemic. The shift in course delivery from face-to-face to online synchronous has made the higher education sector look for more innovative ways to deliver the content online. In addition, students are getting accustomed to studying online, and studies have found that online synchronous learning impacts student engagement in various ways. For instance, the National Survey of Student Engagement data shows that students who engage in quantitative reasoning during face-to-face learning are less likely to engage in collaborative learning, student-faculty interactions, and discussions during online learning. Moreover, research shows that students feel more isolated from teachers due to their dependency on the devices to attend online classes. Consequently, this has been attributed to the decline in interactions with peers and teachers.

Our research aims to enhance online engagement by using a novel deep learning model to predict learner engagement behaviour in a synchronous teaching environment. The model with a smart trigger will induce the disengaged students to engage with the teachers during online interactions. Smart triggers will be based on identified parameters, focusing on disengaged students to give automatic personalised feedback to students to engage them in real-time.

Cinthia Joy Godly is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.

# Academic-Industry divide: Analysis of the Australasian video games design and development sector



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## Jordan Greenwood

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**Doctor of Philosophy**

Contemporary game design and development have been impaired by poor communication. The lack of collaborative communication has caused a clear divide between game developers and their academic counterparts. In the literature, this divide has been dubbed the *Academic-Industry divide* and it relates to problems of communication, collaboration, and knowledge transference between the two communities of practice. Alongside the divide, the misalignment of motivations and goals between industry and academia is hindering the growth and sustainability of the Australasian games sector.

To answer the primary research question, “How can the divide between video game academics and developers be characterised then potentially reduced for Australasia?”, a mixed-methods research design will be employed with complementary stages: (i) A systemic review which is aimed at exploring the current literature’s definition and exploring suggested solutions of bridging the divide within the video gaming and information technology sectors. An initial review of the literature has indicated that a divide has existed between academia and industry in the fields of video game development for years, but it has not been given a clear definition and very little has been documented in regards to bridging the divide. (ii) Data gathering via a questionnaire and semi-structured interviews. Preliminary findings from the questionnaire have shown that the divide exists within the video gaming industry and that both sides are aware of its existence to some degree.

Jordan Greenwood is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## Immune responses to strongyle worms in equines with pituitary *pars intermedia* dysfunction

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### Adelaina Horner

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### Doctor of Philosophy

Pituitary *pars intermedia* dysfunction (PPID) is the most common endocrine disease of older horses and results in hormone dysregulation, particularly increased levels of ACTH. Immunosuppression associated with PPID may cause increased susceptibility to strongyle worm infections and reasons for this are understudied. Consequently, this research investigated immune response to natural strongyle infections by measuring white blood cell (WBC) counts in PPID horses ( $n=12$ ) and age matched controls ( $n=29$ ) over three seasons. PPID status was monitored by measuring ACTH hormone levels, worm infection estimated using faecal egg counts (FECs) and WBCs quantified using flow cytometry. Results showed that PPID horses had higher strongyle infections at most timepoints. Specifically, in Autumn, when ACTH levels increase dramatically in PPID horses, WBC numbers were significantly different in PPID horses (lymphocytes:  $31.6\pm 10\%$  vs  $21.6\pm 9\%$ ,  $P=0.01$ , granulocytes:  $51.8\pm 13\%$  vs  $63\pm 15\%$   $P=0.03$ , monocytes  $6.8\pm 2.0\%$  vs  $5.1\pm 2.7\%$ ,  $P=0.037$ ). Furthermore, in Spring, when worm activity increased, FEC and CD4+ lymphocytes were positively correlated ( $r_s=0.65$ ,  $P=0.001$ ) and FEC and CD8+ lymphocytes were negatively correlated ( $r_s=-0.59$ ,  $P=0.005$ ) in the control group, but not PPID horses. High CD4+ lymphocyte and low CD8+ lymphocyte are typical immune responses to worms. This may suggest functional defects in lymphocyte responses to worms in PPID horses and warrants further investigation.

Adelaina Horner is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# The lived experience of ED nurses during the first year of COVID-19



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## Megan R. Jackson

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**Doctor of Philosophy**

**Introduction:** The first year of the COVID-19 pandemic in Australia caused unprecedented strain on health care services and emergency department (ED) nurses on the frontline of our primary health care system. This abstract outlines findings from qualitative data collection undertaken in September 2020. These findings form part of a larger PhD longitudinal study exploring the lived experience of ED nurses during the COVID-19 pandemic.

**Methods:** An interpretive hermeneutic phenomenological framework has been employed for this study. Qualitative data was collected in September-November 2020 through semi-structured interviews with 10 Victorian ED nurses. Data was analysed using thematic analysis, with findings described in four major themes and 17 minor themes.

**Findings:** Four major themes extracted from the data included Mixed messages, Changes to practice, Living through a pandemic, and 2021, here we come. These themes outlined the many changes to procedure and protocol within emergency departments, the emotional experiences of ED nurses, and their projections for the future of COVID-19.

**Conclusion:** The physical and psychological safety of our ED nurses is paramount to protect the current workforce. Undertaking this research gives us an opportunity to see the COVID-19 pandemic through the eyes of the front line and develop safety and wellbeing protocols for these workers.

Megan Jackson is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## Narrative enquiry as an alternative method for measuring the impact of volunteering

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### Rosemary Joiner

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**Doctor of Philosophy**

I respond to the question 'What can creative practice research allow that other research methods do not when measuring and exploring the impact of community volunteering?'

I have worked in the volunteering and community engagement sector for over 15 years and I hold a Master of Arts in Writing. My study began with a focus on existing trends in research measuring the impact of volunteering. My literature review illuminated the research focus on measuring volunteering impact using largely economic parameters. This presented an opportunity to consider an innovative research model in this field. As part of my creative practice research I have written a novel in order to measure and explore the longitudinal impact of volunteering. This method draws on the universal human activity of storytelling to make sense of the world and gain a shared insight and understanding.

In what ways can a practice-based creative research approach be used to complement and progress traditional research methods to gain greater research insights when answering complex research questions?

Rosemary Joiner is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.

# Data-efficient and reliable deep learning for fake video detection

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## **Achhardeep Kaur**

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**Doctor of Philosophy**

Deep learning (DL), which is a higher and genuine depth of what a machine can achieve has been a blessing for humans in the past several years. Although the DL has primarily been used for productive purposes, such as entertainment and education. On the other hand, malicious individuals are misusing it to spread false information, such as, fake images, videos, and audios. Deepfake is a new word for videos that have been manipulated to appear to be high-quality and realistic.

Our research works will enable the detection of deepfake videos more effectively and efficiently in real-time scenarios. The quantity of labelled data available is restricted and new video manipulation techniques are emerging every day, each detection technique should be able to cope with these constraints, regardless of its implementation.

Our research focuses on applying advanced algorithms and sophisticated deep neural network (DNN) architectures while also boosting learning capacity using various emerging learning methodologies. Main aim is to investigate how different semi-supervised learning methods respond when dealing with a small number of labelled observations. The goal will be to optimise algorithms to function with a minimal number of labelled observations while still producing high mean accuracy of classification results.



## A reliable image quality assessment metric: Evaluation using camera impacts

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### **Roopdeep Kaur**

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#### **Doctor of Philosophy**

Image analysis is being applied in many applications including industrial automation with the Industrial Internet of Things and machine vision. The images captured by cameras, especially from the outdoor environment, are impacted by various parameters such as lens blur, dirty lens, and lens distortion (barrel distortion).

There exist many approaches that assess the impact of camera parameters on the quality of the images. However, most of these techniques do not use important quality assessment metrics such as Oriented FAST and Rotated BRIEF, and Structural Content. None of these techniques objectively evaluate the impact of barrel distortion on the image quality using quality assessment metrics such as Mean Square Error, Peak signal-to-noise ratio, Structural Content, Oriented FAST and Rotated BRIEF, and Structural Similarity Index. Besides lens dirtiness and blurring, we also examine the impact of barrel distortion using various types of datasets. Analysis shows none of the existing metrics produces quality values consistent with intuitively defined impact levels for lens blur, dirtiness, and barrel distortion. To address the loopholes of existing metrics and make the quality assessment metric more reliable, we propose a new image quality assessment metric that fuses the quality values obtained from different metrics using a decision fusion technique known as the Dempster-Shafer theory. Our proposed metric produces quality values that are more consistent and conform with the perceptually defined camera parameter impact levels.

Note: This paper has recently been accepted in an international conference entitled "International Conference on Pattern Recognition (ICPR) 2022" under the workshop "IMTA – 8th International Workshop "Image Mining, Theory and Applications." Roopdeep Kaur is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.

# Measuring hearing and vision in dual sensory loss research: A systematic review

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## **Shane Lake**

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**Doctor of Philosophy**

The potential for developing a combined vision and hearing loss increases with age. This combined loss is described as Dual Sensory Loss (DSL). As DSL research in older adults has increased, inconsistency in the measurement of DSL and the reporting of DSL prevalence has been highlighted. Consistent research is reliant on accurate methods of assessment and therefore a systematic review was undertaken to evaluate, compare, and review the measures used to assess hearing and vision when researching DSL in older adults. The COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) methodology guided the review. A systematic search and extensive review left 65 articles for methodological appraisal using the Joanna Briggs Institute (JBI) checklist for prevalence studies. Individual measures, both self-report and clinical, were examined using the COSMIN Risk of Bias checklist. Differences in criteria for establishing DSL existed. Results indicated clinical measures offer an objective performance-based assessment of the level of impairment, however, their use in research can be dependent on study resources and availability. Although self-report measures are subjective and vary widely from single item to multi-item measures, they potentially offer a valid method of assessing how an individual functions with DSL.

Shane Lake is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia and an Australian Government Destination Australia Scholarship.



## Cybersecurity challenges during RW in pandemic: An enabler for changing organisational resilience strategies

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### Samreen Mahmood

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#### Doctor of Philosophy

In the COVID-19 pandemic, organisations are continuously urged to shift employees to undertake Remote Working (RW). RW has resulted in a tremendous increase in cybersecurity challenges. Extensive literature has encouraged organisations to reassess their organisational cyber-resilience systems to minimise the impact of cybersecurity challenges while practicing RW. Although recent studies have highlighted the massive increase in cybersecurity challenges during RW, there is a lack of empirical investigation identifying cybersecurity challenges considering a particular sector and exploring changes in organisational cybersecurity resilience strategies during RW. This lack of uptake provides a timely opportunity for this research study to empirically identify cybersecurity challenges and changes in organisational resilience strategies during RW in the COVID-19 pandemic. To identify cybersecurity challenges and extensively investigate changes in organisational resilience strategies in two critical sectors in Australia, the proposed conceptual framework builds upon two theories: (1) Organisational Learning Theory that draws attention to changes in organisational resilience strategies based on three learning levels and (2) Socio-Technical Systems Theory that focuses on classifying cybersecurity challenges and revealing changes in organisational resilience strategies. The interpretive case studies methodology will be used to identify cybersecurity challenges and extensively explore changes in organisational resilience strategies during RW. The current research study is novel in its nature and has various theoretical and practical contributions to the existing body of knowledge.

Samreen Mahmood is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.

# Workplace incivility: The educational intervention for pre-registration nursing students



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## **Bindu Mammen**

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**Doctor of Philosophy**

The concept of workplace incivility refers to deviant workplace behavior that is rude and displays open disrespect to others. Preparing preregistration nursing students to handle workplace incivility is indispensable, which will result in better patient outcomes and more civil, collegial nurses in healthcare. Study objectives are to investigate the effect of a structured education and training intervention on pre-registration nursing students' knowledge about workplace incivility and their perceived self-efficacy (PSE) in managing workplace incivility effectively.

This educational intervention aims to address workplace incivility by using cognitive rehearsal, a behavioral technique, where a negative behaviour is processed based on a pre-rehearsed response. A pre-test, didactic instruction, video recording of uncivil behaviors, and cognitive rehearsal followed by a post-test are part of this intervention. The uncivil behaviours are explained further with a 10-minute role played video portraying all uncivil behaviours. In addition, the intervention concludes with scripted responses for each instance of workplace incivility. As an example of non-verbal innuendo, the nurse may respond, *"I can tell from your expression, there is something you want to tell me"*. By teaching the new nurses uncivil encounter responses, we can empower them and ensure successful integration and retention in nursing.

Bindu Mammen is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## The human Y chromosome, circRNAs and coronary artery disease –a new perspective in men’s health?

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### **Molly-Rose Amelia McInerney**

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#### **Doctor of Philosophy**

Circular RNAs (circRNAs) are a novel long non-coding form of RNA. While they do not encode for protein, they do have the ability to regulate gene expression. circRNAs are found on all human chromosomes, including the human Y-chromosome (Y-linked circRNAs). These Y-linked circRNAs interact with miRNA targets that may play a role in the progression, suppression, or development of coronary artery disease in men.

Bioinformatic analysis of the Y chromosome identified 11 circRNA candidates for subsequent lab-based studies. These candidates were derived from mRNA transcripts within the male-specific region (MSY) that have been found to already play a role in male disease. Gene expression analysis of 20 tissues via qPCR showed ubiquitous expression of all 11 candidates in male tissues and no expression in female control tissues (ovary and uterus). Y-linked circUSP9Y and circTTY15 were highly expressed in human heart and were found to have significant sequence conservation across primate species.

Candidate Y-linked circUSP9Y and circTTY15 were further characterized by their respective miRNA binding targets which revealed TTTY15 to have 264 predicted miRNA targets with 44 of those already found to potentially play a role in CAD, suggesting that this Y-chromosome gene may play a role in human disease.

Molly-rose McInerney is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# Therapeutic Landscapes and palliative care in the hospital: An overview

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## **Elizabeth Miller**

Supervisors: Associate Professor Joanne Porter and Dr Michael Barbagallo

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### **Doctor of Philosophy**

Therapeutic Landscapes is a theoretical framework which claims there is an interplay between the physical, natural, social and symbolic environments that can create a healing environment. Patients with palliative care needs prefer to be cared for in an environment underpinned by a palliative approach but often receive care and bad news in the acute hospital environment which can be cold, clinical and busy. Therefore, the aim of the research is to examine the hospital environment where palliative care is provided through the lens of Therapeutic Landscapes.

A qualitative case study research methodology allows the phenomenon of receiving bad news within the acute environment to be examined holistically through multiple data sets. Data was collected between November 2021 and March 2022 through 16 semi-structured interviews with patients and family members examining their experience with the hospital environment and receiving bad news. Six nurses were interviewed between March to May 2022 enabling their experience of providing palliative care to triangulate against the first data set. An audit of 220 palliative inpatient's medical notes was undertaken in May 2022, providing further understanding in relation to bad news delivery. Covid-19 has negatively impacted the four 'environments', yet telehealth has been positive for some families.

Elizabeth Miller is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## Seed germination tolerances of a threatened arid zone samphire, *Tecticornia lylei*

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### Kristin Monie

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#### Doctor of Philosophy

Samphire species from salt lakes in arid zones face particular challenges during reproduction. Seeds must withstand extremes of salinity, temperature, and minimal or intermittent rainfall until conditions are suitable for germination. Understanding seed germination behaviour is critical for managing threatened species such as *Tecticornia lylei*, where seedling recruitment is lacking. This study explored seed germination tolerances to temperature, light, burial depth, salinity and osmotic stress, as well as the ability to recover from stress.

We found that optimal germination occurred at lower temperatures, reduced salinity and moisture stress, and with seeds buried just below the soil surface. Seeds also germinated under higher temperatures (35/25 °C), high salinity (1200 mM NaCl) and dry conditions (-1.5 MPa), and emerged from depths up to 1.5 cm. While germination reduced under higher stress treatments, further seeds germinated after exposure to fresh water. This is a useful strategy in arid zones, as while some seeds will germinate under high stress conditions, the majority will germinate only when rainfall is adequate to reduce salinity, increase soil moisture and maximise chances of seedling survival. However, this presents concerns about future population structure and sustainability with increased temperatures, salinity and extended droughts likely with climate change.

Kristin Monie is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# Preparing future teachers to teach sexuality education: A comparative study of Australia and India



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## Anjali Rana

Supervisors: Professor Jenene Burke, Dr Rachel Daniel, Dr Cheryl Glowrey and Associate Professor Margaret Plunkett

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**Doctor of Philosophy**

Comprehensive sexuality education is a curriculum-based process of learning about social, emotional, physical as well as cognitive aspects of sexuality. Studies have shown increased positive outcomes associated with comprehensive sexuality education, such as increased knowledge about sexual health services, positive attitudes towards sexuality, respectful communication and improved self-efficacy to manage risky situations. There is however resistance to sexuality education programs due to misconceptions, or social, cultural, and political resistance. Studies have also shown that personal experiences have an influence on pedagogy, preparedness, commitment, and preparedness to teach sexuality education components. The study aims to conceptualise sexuality education in teacher preparation programs via policies and practice in university spaces.

This presentation explores how sexuality education is incorporated into initial teacher education programs in Australia and India. Addressing the themes of health, wellbeing, relationships, and rights, the researcher is examining presence, acceptance, and incorporation of sexuality education components in tertiary education. Teacher educators are active agents of social change and have a significant role to play in teaching sexuality education amid local policies, and regional and national discourses.

Anjali Rana supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## Smoking behaviour and smoking cessation: The general practitioners' perspective in Australia

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### Masudus Salehin

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#### Doctor of Philosophy

General practitioners (GP) have a critical role in promoting smoking cessation, however they also smoke. This study aimed to explore the prevalence and predictors of smoking and smoking cessation attitudes among the GPs in Australia.

A cross sectional online survey was conducted among GPs working across Australia; 178 GPs participated, 92% were migrants. Nearly 1 in 10 GP was a current smoker. Preferred form of smoking was cigarette (65%) followed by e-cigarette (26%). GPs stated smoking was their personal choice. Ever (OR 3.32) or current (OR 4.59) smoking were associated with migration status. Majority (90%) of the current smokers attempted to quit smoking, 16% remained abstinent for >6 months. Prescription medication (32%) or e-cigarettes (26%) were the preferred methods to quit. MTSS scale showed current smokers had belief but no intention to quit. Self-efficacy was significantly different between current and ex-smokers. One in three GPs were not familiar with 5As (Ask, Advice, Assess, Assist, Arrange follow-up) guideline for smoking cessation counselling for patients in GP settings; 12% were dissatisfied with its implementation. Four out of five GPs did not receive any training on smoking cessation counselling. Strategies to implement GP specific smoking cessation programmes and smoking cessation-counselling training are warranted.

Masudus Salehin is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# Health information visualization diagrams

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## Vishakha Sharma

Supervisors: Associate Professor Andrew Stranieri, Professor Frada Burstein and Dr Selena (Sally) Firmin

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### Doctor of Philosophy

The overall aim of this study is to design health information diagrams that can be used by patients and health care professionals. Four different visualizations designed for four different health care settings have previously been advanced and evaluated using a Gestalt framework. These are a Treatment Diagram, Diagnosis Diagram, Patient's Pathway Diagram and Strength of Evidence Diagram. The diagrams were presented to a group of participants from varied backgrounds. A thematic analysis was performed on the data obtained from the interviews. Key findings from the analysis were: the context and the purpose were identified as key elements to inform the design of the diagrams in the next stage; diagrams need to be re-designed keeping in mind the audience; the same set of diagrams cannot be used for both health care professionals as well as patients; and diagrams that are designed for a specific purpose are more likely to be accepted by the users. As a result of the Gestalt analysis followed by qualitative analysis of interview data, it was found that Treatment Diagram and Diagnosis Diagram will require significant redesign whereas Patient's Pathway Diagram and Strength of Evidence Diagram do not require any substantial changes. The feedback/ result obtained from the first phase has been used to redesign the Treatment Diagram which was identified as one of the diagrams that required significant changes. The Treatment Diagram has been elaborated on and extended into a Treatment Dashboard which has been designed for patients to facilitate patient education and patient empowerment.

Vishakha Sharma is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## Understanding stakeholders' privacy in blockchain based healthcare: Issues and strategies in Australia

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### **Supreet Singh**

Supervisors: Dr Selena (Sally) Firmin and Dr Mehmood Chadhar

#### **Doctor of Philosophy**

Privacy is not a new concept. Technology has revolutionised the way we store, manage, and share information, benefiting organisations and stakeholders. However, this increases information privacy concerns for example, in healthcare. Privacy problems have multiple consequences on stakeholders, such as damaging dignity, creating distrust in the healthcare system, and generating adverse psychological sequela.

Blockchain is an innovative technology which differs in terms of sharing and storing information and ownership of the data to original user. Although studies explored the privacy issues of blockchain-based healthcare information systems, there is still lack of qualitative research identifying privacy issues from the perspective of various stakeholders in healthcare. There is also a gap in the literature related to rules and standards regarding blockchain-based healthcare information and the strategies needed to address privacy issues aligned with privacy laws in Australia.

An interpretive qualitative approach will be used to evaluate perceptions of privacy issues of the different stakeholders in blockchain-based healthcare information systems and to determine strategies aligned with the Australian Privacy Principles to deal with the privacy issues. This Australian based study is anticipated to provide blueprints focusing on privacy issues and recommend compliance schemes with the Australian Privacy Principles.

Supreet Singh is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.

# I had a conversation with teachers with impairments!

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## **Gerry Skene**

Supervisors: Professor Jenene Burke and Dr Marg Camilleri

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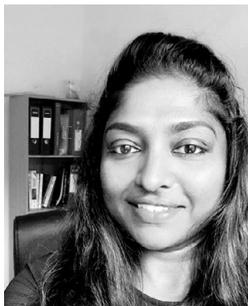
**Doctor of Philosophy**

This presentation will outline my PhD, *Teaching with difference: Barriers and enablers for teachers with impairments in their professional roles*, submitted for examination in February 2022. The research, which makes salient the enablers and barriers faced by teachers with impairments, employs a narrative inquiry to investigate the lived experience of 10 teachers who identify as having an impairment. Amidst the current groundswell of inclusive practices within learning institutions, little is known about the barriers and enablers experienced by teachers with impairments in Australian education systems.

This presentation will offer new knowledge about those barriers and enablers faced by teachers with impairments. Informed by the social model of disability, the data gathered for my PhD. was analysed using Clandinin and Connelly's (2000) Three-Dimensional Space Approach. Having a conversation with teachers with impairments has elicited rich data and illuminated the current and broader global understanding of the experience of disability.

My study embodies the notion of teachers with impairments as culturally relevant educators (Pritchard, 2010). In this presentation, I proudly present my study which is the first Australian study of teachers with impairments. I hope it will open windows for further research in this important social sphere.

Gerry Skene is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## Evaluation of peer-led education on stigma towards mental illness and recovery attitudes using the CIPP evaluation model

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### **Anju Sreeram**

Supervisors: Professor Wendy Cross and Dr Louise Townsin

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### **Doctor of Philosophy**

Anti-stigma and recovery-oriented interventions are effective strategies to combat stigma toward mental illness and to enhance recovery-oriented practices in all areas of mental health. Among these, contact-based interventions have been the most effective strategies. Hence, this study aimed to evaluate the effectiveness of peer-led education on stigma towards mental illness and recovery attitudes among mental health nurses in acute inpatient units. We used Stufflebeam's Context, Input, Product and Process [CIPP] model to determine the effectiveness of the intervention. Context evaluation explored the gap associated with stigma towards mental illness, recovery attitudes and interventions' effectiveness. Input evaluation identified the feasibility, funding and other resources required to implement the study. Process evaluation revealed the development and application of peer-led education in acute inpatient settings. Product evaluation determined that peer-led education had a statistically significant effect on the attitudes on stigma towards mental illness and recovery immediately after interventions and could sustain that effect three months later. In-depth interviews regarding the effect of the intervention brought forward three main themes: variable reflections, systems issues and interpersonal relationships with associated subthemes.

Anju Sreeram is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.

# The nature, influence, and impacts of 'netilantism' in Australia

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## Melina Stewart-North

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### Doctor of Philosophy

The act of citizens seeking justice in the online space – internet vigilantism ('netilantism') – is an emerging focus within digital criminology. Given the scarcity of literature in this area, the purpose of this study was to explore the nature, influences, and impacts of netilantism in Australia. Data were collected across three phases employing a mixed-methods design: Phase 1 'Nature' – social media desktop analysis of netilantism in Australia, scoping the area and guiding subsequent phases; Phase 2 'Influences' – netilante perspectives examined through a survey, followed by semi-structured interviews; Phase 3 'Impacts' – victim experiences of netilantism explored through a survey, followed by semi-structured interviews.

Collection of both quantitative and qualitative data aimed to provide a comprehensive understanding of netilantism specific to the Australian context. This work has contributed important knowledge to the field regarding the nature – what influences and motivates individuals to engage in netilantism – and impacts of netilantism on victims or targets. Findings thus far have indicated that netilantism is pervasive on social media platforms, and that the public are ill-equipped to identify or respond to this online behaviour. The research will inform recommendations regarding responses to netilantism, including policing tactics and victim support.

Melina Stewart-North is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## In-paddock variability of plant available water

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### **Peter Weir**

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### **Doctor of Philosophy**

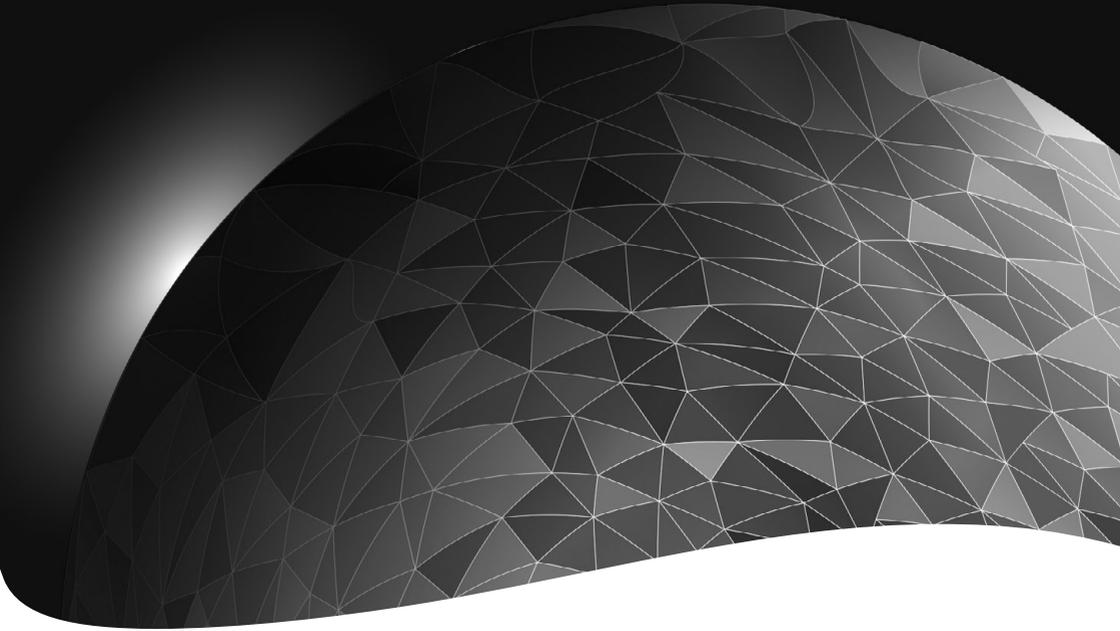
In dryland agriculture the amount of water available to grow a crop is determined primarily by the in-season rainfall and the amount of water stored in the soil profile prior to seeding the crop. The change in water content within a volume of soil is determined by the simple soil water balance equation.

Soil spatial variation is determined by its individual attributes, which vary with depth, and are the outcomes of the climate, the biota and the landscape processes interacting in time on the parent material. Soil moisture is a key state variable in the terrestrial system as it controls the exchange of water and energy between the land surface and the atmosphere. Australia's climate is highly variable over small distances and can result in large differences between individual weather stations and the paddock of interest.

The timely estimation of plant available water at sub-paddock resolution will be achieved through integration of a variety of available data sets, including remotely sensed imagery, in-situ field measurement, climate and landscape models, and modelling using data assimilation/data-model fusion.

This will assist farmers with improved on-farm management decision making by modelling reliable and fit-for-purpose estimations of the spatio-temporal variability and availability of soil moisture at the sub-paddock scale.

Peter Weir is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



# **POSTER** PRESENTATIONS

Celebrating our research together



## Trust boundaries in 6G communications

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### Rabeya Basri

Supervisors: Associate Professor Gour Karmakar, Dr S. H. Shah Newaz, Dr Muhammad Usman, Dr Linh Nguyen and Professor Joarder Kamruzzaman

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#### **Doctor of Philosophy**

Current ongoing research on 5G has revealed various primary deficiencies that have inspired the research compulsion to focus on future 6G applications, ranging from extended reality to augmented reality including holographic communication and haptics. However, security is the main concern for 6G, where trust can be an effective enabler to support 6G communications by defeating potential challenges. According to the ITU-T recommendation, trust can be defined as the relationship between two entities where each entity is sure that another one will behave precisely as it presumes. Trust boundary is a concept that generally sets boundaries for security levels while exchanging data between two different networks i.e., originator and destination networks. Within such boundaries, all components of each network equally trust each other and have no doubts about their integrity. Corporate firewalls assure the trust boundaries between the originator network and federated service domain as well as between federated service domain and destination networks, where data comes from an untrusted source as input. Trust boundary helps to decide where to search for vulnerabilities in the network to prevent security attacks. Thus, in this work, we will investigate how trust boundaries will be leveraged to present robust and resilient 6G security.

Rabeya Basri is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship and the HDR Henry Sutton Scholarship through Federation University Australia.

# The adoption of blockchain: Decision proces from actors' perspective using institutional theory



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## **Shipra Chhina**

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**Doctor of Philosophy**

Given the rapid move of organisations towards blockchain adoption, this research focuses on the niche area associated with the blockchain adoption decision process. The literature is scarce around an explorative view of the blockchain adoption process and a need to identify the interplay of human and non-human elements at several points that influence actions. These actions ultimately lead to a decision regarding adopting a blockchain application in an organisation. This study investigates the blockchain adoption decision process from an explorative view and determines yet uncovered aspects to be considered before and while adopting blockchain. For this purpose, the study employed Institutional Theory and Innovation Translation approach informed by Actor-Network Theory to understand the interactions among actors and several influences/pressures behind their actions. The study results are crucial for blockchain literature as it fills gaps of empirically investigated, explorative and dynamic insight into the process and assists potential adopters in realising the important elements of the decision process for successful adoption. The proposed framework introduces a seven-stage adoption decision process model for blockchain, the actors involved, and the institutional pressures behind the process stages.



## Writing a fictional representation of historic Poland set during the Second World War

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### Andrew Clinnick

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#### **Doctor of Philosophy**

I have produced a historical novel titled *Congress Kingdom*, supported by an exegesis, which explores the Polish experience of WWII. Both novel and the exegesis will challenge the common misconception in Western popular culture—as expressed in such works as *The German New Order in Poland* (1943), and *God's Playground* (1981)—that, during WWII, Poland was a predominantly white-Catholic nation, bullied by the Nazis. Instead, I demonstrate that, rather than being homogenous or a caricature of a passive victim, Poland was a diverse and multi-cultural nation, where eclectic sectors of society resisted Nazi-German rule, despite the complexities wrought by Poland's own history of antisemitism and the threat posed by those Poles who collaborated with the Nazis. The exegesis will also examine the outsider experience and the contribution to Poland's wartime effort by women; as well as the relationship between oral history, myth and the historical records. Finally, the exegesis explores the methods I have used to create a historical fiction about Nazi-occupied Poland.

Andrew Clinnick is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.

# Prevalence and risk factors for noncommunicable diseases among Australian migrants: Scoping review



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## Pritimoy Das

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**Doctor of Philosophy**

Noncommunicable diseases (NCDs) account for 90% of all morbidities in Australia. The aim of this study was to collect data on the prevalence and risk-factors of major NCDs among Australian migrants.

We reviewed peer-reviewed research published between 2000-2021 for cancer, diabetes, cardiovascular diseases, mental health problems, and NCD risk factors amongst Australian migrants. MEDLINE, Web of Science, Scopus and CINAHL online databases were searched and screened according to the Arksey and O'Malley's methodological framework and PRISMA-ScR guidelines.

Out of 15,041 papers retrieved, 53 finally included in this review. Nearly half were about anxiety/depression (n=24, 45%), more prevalent among migrants than host. The highest prevalence of diabetes was reported among migrants from Sri Lanka (28.0%), Philippine (20.2%), Lebanon (20.0%), India (19.5%) and Oceania (16.8%). Cardiovascular diseases were more prevalent among Asian with an increasing trend (26.8% to 36.5% over six years), European (16.0%) and Middle-East (14.7%). All migrants reported lower cancer incidence than Australian-born (308.5 per 100,000) except New Zealand (322).

Compared to Australian-born, age at migration, duration of residence, visa, age, sex, pre-migration zone, family history of diabetes, eating white bread, insufficient fruit/vegetable intake, smoking, alcohol consumption, BMI, hypertension, and physical inactivity were significantly associated with NCDs among migrants.

Pritimoy Das is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## Ignored, driven past, and rudely addressed; disabled passengers' encounters with bus drivers

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### **Bonnie Das Neves**

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#### **Doctor of Philosophy**

Accessibility barriers are often exclusively considered in terms of the built environment. The physical accessibility of a space is irrelevant however, if a person is not also made to feel (and be) respected and included. Bus driver attitudes, behaviour, and communication methods directly impact bus accessibility for disabled passengers. This study investigated disabled passengers' reported experience of bus driver attitudes, behaviours, and communication methods, and the impact of these encounters on community access. A mixed methods cross-sectional survey and focus groups with disabled adults and support persons were conducted. Transport accessibility advocates, all with lived experience of disability, were engaged as an Advisory Working group, to oversee study accessibility. Participants reported that some bus drivers demonstrated ableist attitudes, and discriminatory behaviour and communication methods. Many passengers had reduced or stopped catching buses altogether due to these negative encounters, restricting their community mobility, which further impacted their quality of life. Participants' recommendations for drivers, operators, and transport authorities were thematically integrated into one statement:

*'treat me like the person I am, who is valid; with a right to time, access and safety; listen to me, and prove you care'.*

Bonnie is supported by an Australian Government Research Training Program (RTP) Stipend and School of Health Fee-Offset Scholarship through Federation University Australia.

# The transfer of pharmaceutical pollution from aquatic to terrestrial environments



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## **Samantha Harriage**

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**Doctor of Philosophy**

Pharmaceuticals are emerging environmental contaminants that have been observed in rivers, lakes, estuaries, and marine environments, and within biota at concentrations that alter behaviours of these non-target organisms. Less is known, however, of how these pharmaceuticals might transfer across trophic levels into terrestrial ecosystems. This study asks three broad questions: (i) Will select pharmaceuticals undergo trophic dilution or trophic magnification as they move through biota? (ii) Do vascular flora species play an important role in the transfer of pharmaceuticals from aquatic to terrestrial environments? and (iii) is there a potential avenue of utilising vascular flora species as a remediation tool in regard to pharmaceutical pollution? This research will combine ecological field techniques with the use of a chemical extraction techniques (such as SPE, Solvent, QuEChERS), and High-Performance Liquid Chromatography tandem Mass Spectrometry (HPLC-MS/MS) to quantify pharmaceutical concentrations within surface water and biota. Acknowledging and quantifying the transfer of pharmaceuticals across trophic levels, with context to an Australian ecosystem, will allow previous ecotoxicological research to be applied to in-situ environments and influence remedial strategies for pharmaceutical pollution.

Samantha Harriage is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## Prevalence and risk factors of gestational diabetes mellitus among migrant women

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### **Marufa Hasin**

Supervisors: Associate Professor Aziz Rahman and Dr Rhian Cramer

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### **Doctor of Philosophy**

Gestational diabetes mellitus (GDM) has increased by about three folds (5%-15%) in last 15 years. Southern and Central Asian (28%) migrant women had a double incidence of GDM compared to Australian-born women (13%). This scoping review aimed to identify the incidence, prevalence, and risk factors of GDM amongst the migrant and non-migrant population in Australia.

The methodological framework of Arksey and O'Malley from Joanna Briggs Institute (JBI) was followed. MEDLINE, CINAHL, PubMed, JBI, Emcare, Scopus, Cochrane Library and ProQuest databases were used. English articles were included.

Of the 2774 articles, 14 relevant articles were selected. This review reported that migrant women (13.7%) had a higher prevalence than Australian-born Caucasian women (6.8%). Additionally, age, ethnicity, country of birth, family history of diabetes, previous history of GDM, BMI, parity, seasonality and expected date of conception lowest socioeconomic quintile, and psychological distress were identified as risk factors of GDM. However, post-migration challenges, e.g., lifestyle changes, cultural barriers, physical activity, length of living in Australia, income, occupation, and educational level may influence health behaviour, were insufficiently explored.

Future research is required to overcome those challenges which may explain of this increased risk of GDM and its health impacts to migrant women and their offspring.

Marufa Hasin is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# How do learning cultures develop in non-traditional environments?

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## **Russell Mason**

Supervisors: Professor Philip Taylor and Dr Helen Weadon

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**Doctor of Philosophy**

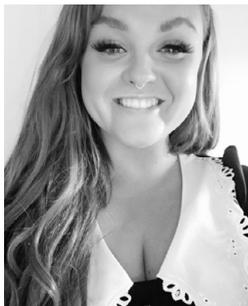
Much is known about how learning occurs in organisational settings. The process of knowledge exchange that leads to learning has been studied extensively in educational institutions and organisations where learning occurs in the context of established structures. These structures and processes are designed to maximise the benefits of the learning afforded to individuals. The structures, barriers, and characteristics of these systems have been extensively examined, and clearly-defined theoretical constructs have emerged. However, the bleeding edge of this body of knowledge is found where those institutions, organisations, and established structures for learning dissolve.

This study will investigate how learning cultures emerge in a fluid and dynamic ecosystem where individuals aren't grouped by joint ownership of an organisational identity, but only tangentially engaged to meet an immediate need. This study will follow the interactions of a group of entrepreneurs coming together to solve a problem established for the research activity.

The questions are: How do learning cultures develop in a non-traditional environment?; What are the characteristics of the emergent learning culture?; How do the elements of this nascent learning culture help individuals learn through the act of working?

This presentation will discuss the methodology proposed to develop theories grounded in the data.

Russell Mason is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.



## The human Y chromosome, circRNAs and coronary artery disease – a new perspective in men's health?

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### **Molly-Rose Amelia McInerney**

Supervisors: Professor Fadi J Charchar, Associate Professor Mark A Myers, Dr Michelle C Maier, Associate Professor Enzo Porrello and Associate Professor David Elliott

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#### **Doctor of Philosophy**

Circular RNAs (circRNAs) are a novel long non-coding form of RNA. While they do not encode for protein, they do have the ability to regulate gene expression. circRNAs are found on all human chromosomes, including the human Y-chromosome (Y-linked circRNAs). These Y-linked circRNAs interact with miRNA targets that may play a role in the progression, suppression, or development of coronary artery disease in men.

Bioinformatic analysis of the Y chromosome identified 11 circRNA candidates for subsequent lab-based studies. These candidates were derived from mRNA transcripts within the male-specific region (MSY) that have been found to already play a role in male disease. Gene expression analysis of 20 tissues via qPCR showed ubiquitous expression of all 11 candidates in male tissues and no expression in female control tissues (ovary and uterus). Y-linked circUSP9Y and circTTY15 were highly expressed in human heart and were found to have significant sequence conservation across primate species.

Candidate Y-linked circUSP9Y and circTTY15 were further characterized by their respective miRNA binding targets which revealed TTTY15 to have 264 predicted miRNA targets with 44 of those already found to potentially play a role in CAD, suggesting that this Y-chromosome gene may play a role in human disease.

Molly-Rose McInerney is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# Effect of forensically and ecologically significant drivers of variation on carrion decomposition



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## **Donna McIntyre**

Supervisors: Dr Philip Barton and Dr Benjamin Long

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**Doctor of Philosophy**

The decomposition of animal remains is a dynamic process that involves the interaction of several biological, ecological, chemical, and physical systems, hereafter referred to as “drivers of variation”. Despite a diversity of research demonstrating a relationship between singular drivers of variation and rates of decomposition, there is limited research investigating multiple interacting drivers of variation. We conducted an experiment to investigate the effect of forensically and ecologically significant drivers of variation on decomposition, namely the effect of insect exclusion and the novel introduction of an antiseptic (chlorhexidine) to disturb the microbiome. We found a delay to fly oviposition on remains exposed to insects but with a disturbed microbiome, and a delay in mass loss for remains not exposed to insects. Our study demonstrates the importance of the interactive effects of insect access and disturbance of a microbiome on decomposition processes.

Donna McIntyre is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## Addressing nutrient contamination in Cascade Water Supply Systems

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### Githmi Gayanee Pathberiya

Supervisors: Associate Professor Andrew Barton, Dr Harpreet Singh Kandra and Dr Kithsiri Bandara Dassanayake

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**Doctor of Philosophy**

Engineering Cascade Water Supply System (CWSS) is a hydrologically interconnected network of reservoirs and streams. CWSSs are prominent water resource management systems for harvesting, storage, and utilization of water for agriculture, domestic, and many other purposes in many countries including Sri Lanka, India, Thailand, and China. For instance, CWSS is an iconic feature of landscapes across the northern plains of Sri Lanka, and functions as a natural water purification system too. Poor management, negligence, lack of detailed understanding of functional aspects of the systems, and land-use intensification with excessive fertilizer use have led to deterioration of water quality, especially in the downstream storage systems. Excessive nutrient loads in these systems can potentially affect both human health and the environment. It has been observed that water quality in water storage tanks and stream networks of CWSS deteriorates more through dry spells with declining water levels because of high water demand and evapotranspiration. Therefore, having good water security is becoming more of a problem. It has been observed that the information on spatial and temporal dynamics of water quality parameters and effective solutions to address those nutrient levels are limited. This work aims to compare possible technological solutions to remove nutrients in CWSSs.

Githmi Gayanee Pathberiya is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia and a Federation University and Ag Analytics Co-Funded Scholarship.

# Using art to visualise the invisible

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## **Kim Percy**

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**Doctor of Philosophy**

Dyslexia is considered an invisible disability. Approximately 20% of the population have some form of a Specific Learning Difference such as Dyslexia though many people do not have a diagnosis and have struggled within the education system. Neurodiversity is an umbrella term that includes Dyslexia, Autism Spectrum Disorder and ADHD. The aim of this practice-led visual art research is to ask how neurodiverse thinking can affect visual creativity with particular focus dyslexia. I will give attention to the positive attributes associated with dyslexic thinking<sup>1</sup> such as, spatial awareness, visual reasoning, problem solving and pattern recognition. I seek to build awareness into the strengths of dyslexia through the creation of an art exhibition or installation utilising digital media such as video, photography, and sculptural elements.

I am interested in increasing awareness into the strengths of Dyslexia to encourage people to build self-worth regardless of struggles with literacy. By harnessing possible creative skills in visual arts, more people may be able to forge meaningful careers despite challenges at school. Through art, I have the potential to reach an audience who may otherwise be excluded from other modes of information and to connect directly with those who will benefit from my research.

Kim Percy is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.



## PC-Lake+: Modelling the success of aquatic plant harvesting in Lake Wendouree

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### Jake Wallace

Supervisors: Professor Singarayer Florentine, Dr Benjamin Long, Dr Tony Dugdale and Associate Professor Julie Mondon

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### Doctor of Philosophy

Lake ecosystems are essential providers of flora and fauna habitat and are sources of significant amenity value for surrounding communities. Lake Wendouree in regional Victoria, Australia provides these services in spades, with clear water that supports a diverse aquatic plant community, sanctuary for migratory birds and recreational space for walking, running, boating, and fishing. However, overgrowth of the submerged aquatic vegetation (SAV): Predominantly *Myriophyllum salsgineum*, *Vallisneria australis* and *Althenia cylindrocarpa*; obstructs some of these services and is managed through the application of mechanical harvesters. Unfortunately, the long-term impacts of harvesting in Lake Wendouree are not well documented or understood. Due to its significant amenity value, Lake Wendouree's upper and lower nutrient thresholds need to be determined; the likeliness of state shifts occurring need to be assessed; and the success of current SAV management strategies must be discussed.

The ecological model PCLake+ was used to observe the potential long-term implications of increasing and decreasing the intensity of mechanical harvesting on Lake Wendouree. Accounting for some assumed conditions of the model, ecosystem stability was shown to be heavily influenced by SAV and vegetation decline occurred rapidly when average monthly harvest intensity increased alongside increasing phosphorus loading.

Jake Wallace is supported by an Australian Government Research Training Program (RTP) Stipend and RTP Fee-Offset Scholarship through Federation University Australia.

# Vulnerable dark traits mediate the association between childhood adversity and suicidal ideation



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## Kate Wilson

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### Doctor of Philosophy

Suicidal ideation includes chronic thoughts and desires to end one's life, and is a significant risk factor for suicide attempts and completion. A leading predictor of suicidal ideation is exposure to Adverse Childhood Experiences (ACEs). Further, ACEs are consistently associated with The Vulnerable Dark Triad (VDT) – factor two psychopathy (FTP), Borderline Personality Disorder (BPD), and vulnerable narcissism (VN) all of which are also consistently associated with suicidal ideation. Although these traits share remarkable overlap in characteristics, in relation to predicting suicidal ideation, each trait contributes in distinct ways. In the current study, we investigated whether the relationship between ACEs and suicidal ideation was explained by the VDT.

One-thousand and sixty-seven individuals completed online versions of the Self-Report Psychopathy Scale III (SRP-III; Paulhus & Williams, 2002), the McLean Screening Instrument for Borderline Personality Disorder (Zanarini et al., 2003), the Hypersensitive Narcissism Scale (Zanarini et al., 2003), the 17-item ACEs Questionnaire (Mersky et al., 2017), and the Ask Suicide Screening Questionnaire (Horowitz et al., 2020).

In accordance with hypotheses, we found a strong positive relationship between ACEs and suicidal ideation. Further, we found that BPD and VN fully mediated the relationship between ACEs and suicidal ideation. These results are significant as we highlight the clinical importance of investigating and screening for childhood adversity when developing treatment plans and interventions.

Kate Wilson is supported by an Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.





**LEGEND**

- |   |   |   |                            |   |   |
|---|---|---|----------------------------|---|---|
|   | Buildings                               |  | Disability toilets (Level) |  | Place of Peace                              |
|   | Roads                                   |  | Lift                       |  | Muslim Prayer Room                          |
|   | Car Parking<br>(Restrictions may apply) |  | Bike Parking               |  | Flagpoles                                   |
|  | Disabled Car Park Spaces                |  | Bus Stop                   |  | Designated Assembly Point                   |
|   | Pathway                                 |  | Parents Room               |  | Smoke-free Campus                           |
|  | Entry Point                             |  | Health Centre              |  | For security assistance<br>call 5327 6333   |
|   |   |  | Food and drink             |  | For disability assistance<br>call 5327 9470 |