Charles Darwin University

2023 Higher Degree by Research Conference

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CDU Vice-Chancellor and President Professor Scott Bowman

Welcome to the 2023 Charles Darwin University (CDU) Higher Degree by Research Conference, which is another opportunity for our higher degree by research student community to shine. In this two-day conference, our research students will show why they will be the future changemakers and influencers in their fields.

Importantly, this conference will enable our research cohorts to come together to share their stories. CDU is proud to bring together in a virtual sense and a physical presence of more than 50 research students from across our Faculties and Research Institutes.

The theme, **"Deep engagement, lasting impact: Making a difference through research"**, is core to our values as a connected university. We believe we can only succeed through our connections with all our partners and people of the Northern Territory, Australia and beyond.

These connections help us realise the mutual benefits of learning, undertaking research and working together to allow our communities to grow and prosper.

The academic papers that will be presented at this conference, include the significance of material handling for deep engagement and learning, how informal immigrant caregivers are represented in Australian data, and how to strengthen Australian farmers' climate change readiness, just to name a few.

This year's panel discussion will be on Artificial Intelligence and its role in, and threat to, research and higher education. This panel will be an exciting discussion on a burning issue for universities where no one, particularly academics, is sitting on the fence.

I want to thank everyone who has made this conference possible and those students putting themselves in front of a room full of peers. It's not always easy.

With that, I hope you enjoy the conference.

Professor Scott Bowman AO,
Vice Chancellor and President

Deputy Vice-Chancellor Research & Innovation

I am pleased to introduce this year's CDU Higher Degree by Research (HDR) Conference. After the success of last year's conference, we decided to run it again this year with only a few changes.

This year we have decided to group our research into areas that address one or more of the United Nations' Sustainable Development Goals. It is no accident that CDU's research fits in with these goals as our researchers are studying for solutions to issues identified in the sustainable development goals.

It's also why our university is in the Top 200 universities around the work for research impact, which benchmarks our research against the Sustainable Development Goals.

We are the University of the Northern Territory and closer to many of our neighbours to the north than we are to our major cities to the South. It's a region undergoing a transformation that requires responsible growth.

Quality and responsible research that has real-world applications is needed to address Sustainable Development in our region.

We have also provided presentation training opportunities in the lead-up to this year's event so that all our HDR student presenters learn valuable skills that they can use to advance their research and academic careers.

Investing in our HDR students helps us improve the research quality of CDU.

Students from across CDU Faculties, Menzies School of Health Research, and Research Institutes and Centres will come together and present their work across two days.

Let us support and encourage everyone by working together to deliver research that has a real impact.

Professor Steve Rogers
Pro-Vice-Chancellor Research and Innovation

CDU Dean of Graduate Studies Professor Tara Brabazon

The ability to read, write, think and create new knowledge is a privilege that we must never take for granted.

As the Dean of Graduate Studies at CDU, I know the great gift of supporting, caring for and developing the next generation of researchers, clinicians, professionals and practitioners.

Research is not singular. It does not stop. It must be disseminated, shared, peer reviewed and enhanced through commentary and critique.

Perhaps the greatest challenge of this century has been the creation of silos and bubbles, isolating people and places and ideas. However, for knowledge to develop, it must be disseminated. Widely, courageously and expansively.

Disseminating research takes courage. We are vulnerable when we share our deep thinking and hard work.

But this HDR conference offers an opportunity to share knowledge with confidence, clarity and boldness. When we share ideas, we intensify their importance.

CDU is a special university. We care. We support. We transform. We live in a special place and through this living, we learn. When we continue to learn, we transform and transcend ignorance, fear and confusion.

Congratulations to all students presenting at the conference, it is so wonderful to see you taking this opportunity and sharing your work with others.

May we walk together in and through knowledge.

Professor Tara Brabazon
Dean of Graduate Studies

CDU Research Centres and Institutes

Menzies School of Health Research

Menzies School of Health Research is one of Australia's leading medical research institutes dedicated to improving the health and wellbeing of Aboriginal and Torres Strait Islander peoples. They are also a leader in global and tropical health research into life-threatening diseases. Visit their website: **www.menzies.edu.au**

The Molly Wardaguga Research Centre

The Molly Wardaguga Research Centre was established in April 2019 and is dedicated to the late Molly Wardaguga, the founding member of the Malabam (now Malal'a) Health Board in Maningrida, Arnhem Land. Molly's vision to support women's cultural and birthing aspirations in remote locations. Visit their website: **www.cdu.edu.au/mwrc**

The North Australia Centre for Autonomous Systems (NACAS)

The North Australia Centre for Autonomous Systems (NACAS) conducts integrated industry-focused research into the application of Autonomous Systems across industries, businesses, and other sectors in northern Australia and the Asia Pacific regions. It aims to assist the Northern Territory Government, local industries, and businesses to facilitate and support workforce transformation in north Australia while attracting national and international investment into research innovation. Visit their website: **https://nacas.net**

The NT Academic Centre for Cyber Security and Innovation (ACCI)

The NT Academic Centre for Cyber Security and Innovation (ACCI) is a multi-disciplinary research centre works to bridge the social-technical divide between academia, industry, and government, and provide research and training on technical and non-technical aspects to assist in improving cybersecurity and fight against cybercrime.

NORTHERN INSTITUTE
People. Policy. Place.

The Northern Institute

The Northern Institute is a hub for research expertise, leadership and impact for stakeholders. Northern Institute's researchers are recognised nationally and internationally as leaders in their fields. Our research teams work through partnership with context experts locally and content experts internationally to bring together a deep understanding of people, policy and place. Visit their website: **www.cdu.edu.au/northern-institute**

RIEL
Research Institute for the Environment and Livelihoods

RIEL

The Research Institute for the Environment and Livelihoods (RIEL) is nationally and globally recognised as a leader in tropical savanna research in north Australia. RIEL's research strengths in the region include biodiversity conservation, savanna and arid adaptation and environments, water and catchments, and communities and livelihoods. RIEL works with our partners in northern Australia and the region to ensure sustainable management of resources and these unique ecosystems. Visit thier website: **www.cdu.edu.au/riel**

ENERGY AND RESOURCES INSTITUTE

Energy and Resources Institute

The Energy and Resources Institute (ERI) provides high-quality research and consultancy for all aspects of energy and resources, including engineering, scientific, economic, environmental, social, community, legal, policy and digital considerations. Their vision is to be a global leader in enabling the energy and resources industry to develop and adopt carbon abatement, net-zero and sustainable solutions. Visit their website: **www.cdu.edu.au/eri**

The Australasian Centre for Resilience Implementation for Sustainable Communities

The risk of natural, health and human-made disasters is ever present and increasing in likelihood. Pandemics, geopolitical instability and climate change are creating challenges that exceed the resources of formal support agencies to meet everyone's needs. How we prepare for potential adversities, and how we respond to them when they occur, will define both the impact of the event and the speed of recovery. The Australasian Centre for Resilience Implementation for Sustainable Communities (RISC) seeks to enable community psychosocial resilience through empowerment: the development of control, coherence and connectedness in individuals and communities. RISC is a multi-disciplinary research and consultancy collective engaging Charles Darwin University academics and clinicians with industry, government and community to attenuate the human impact of the next disaster event.
Visit their website: **www.cdu.edu.au/risc-centre**

Sustainable Development Goals

Our HDR presentation session themes are based on groupings of the UN Sustainable Development Goals (UNSDGs) https://sdgs.un.org/goals. The 17 UNSDGs are:

www.un.org/sustainabledevelopment/

The content of this publication has not been approved by the United Nations and does not reflect the views of the United Nations or its officials or Member States.

Session	Theme Name and the UN Sustainable Development Goals included
1 Thursday **11am – 12:30pm**	**Better Governance and Global Relations** **Includes:** **Goal 1** - End poverty in all its forms everywhere **Goal 2** - End hunger, achieve food security and improved nutrition and promote sustainable agriculture **Goal 16** - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels **Goal 17** - Strengthen the means of implementation and revitalize the global partnership for sustainable development

2 Thursday **11am – 12:30pm**	**Wellbeing, Work and the Environment** **Includes:** **Goal 13** - Take urgent action to combat climate change and its impacts **Goal 14** - Conserve and sustainably use the oceans, seas and marine resources for sustainable development **Goal 15** - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
3 Thursday **1:30pm – 3:30pm**	**Quality Education and Responsible Industry** **Includes:** **Goal 9** - Build Resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation. **Goal 11** - Make cities and human settlements inclusive safe, resilient, and sustainable. **Goal 4** - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
4 Thursday **1:30pm – 3:30pm**	**Environmental Protection** **Includes:** **Goal 13** - Take urgent action to combat climate change and its impacts. **Goal 14** - Conserve and sustainably use the oceans, seas, and marine resources for sustainable development. **Goal 15** - Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
5 Friday **10:30am – 12:30pm**	**Social Harmony and Equality** **Includes:** **Goal 5** - Achieve gender equality and empower all women and girls. **Goal 10** - Reduce inequality within and among countries. **Goal 16** - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels. **Goal 4** - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
6 Friday **10:30am – 12:30pm**	**Sustainable and Healthy Behaviours** **Includes:** **Goal 3** - Ensure healthy lives and promote well-being for all at all ages **Goal 7** - Ensure access to affordable, reliable, sustainable, and modern energy for all. **Goal 8** - Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all. **Goal 12** - Ensure sustainable consumption and production patterns.

Acknowledgement of Country and recognition of Australian First Nations traditional owners and cultures

Charles Darwin University acknowledges and respects the many Australian First Nations traditional custodians of the lands upon which our campuses and centres are located.

We acknowledge and pay our respect to the Larrakia who are the traditional custodians of the lands upon which our Darwin Casuarina, Waterfront and Palmerston campuses are located.

We acknowledge and pay our respect to the Arrernte who are the traditional custodians of the lands upon which our Alice Springs campus is located.

We acknowledge and pay our respect to the Jawoyn, Wardaman and Dagomon who are the traditional custodians of the lands upon which our Katherine campuses are located.

We acknowledge and pay our respect to the Gadigal who are the traditional custodians of the lands upon which our Sydney campus is located.

We acknowledge and pay our respect to the Turrbal and Yuggera who are the traditional custodians of the lands upon which our Brisbane centre is located.

We acknowledge and pay our respect to the Woiworung who are the traditional custodians of the lands upon which our Melbourne centre is located.

We acknowledge and pay our respect to the Kaurna who are the traditional custodians of the lands upon which our Adelaide centre is located.

We acknowledge and pay our respect to the Whadjuk who are the traditional custodians of the lands upon which our Perth centre is located.

We acknowledge and pay our respect to the Kundjey'mi who are the traditional custodians of the lands upon which our Jabiru centre is located.

We acknowledge and pay our respect to the Warumungu who are the traditional custodians of the lands upon which our Tennant Creek centre is located.

We also acknowledge and pay our respect to the Kungarakan (Batchelor and Adelaide River), the Yolngu (northeast Arnhem Land) and the Tiwi (Tiwi Islands).

We acknowledge Australian First Nations peoples' long tradition of sustaining their communities and environments over thousands of years. They are the first educators and first innovators.

They are the holders of knowledge that makes an important contribution to the improvement of our local, national and global communities.

We extend our respect to Elders - past, present and emerging - and to all First Nations people.

Contents

Networking Event – 21 June 2023

Time	Details	Suggested Venue
3:15 – 4:00pm **4:00 – 5:00pm**	Conference Networking event to welcome delegates Arrive – Drinks, nibbles. **Panel session – Making the most of your HDR course** **Chairing:** Heidi Smith-Vaugan **Panel members:** Vikki Kerrigan – Adjunct Associate Professor (FOH) Abel Dadi – Outstanding Future Researcher (MSHR) Dr Christabelle Darcy – Northern Territory Government Jianhua Zhang – Lecturer, International Business & Logistics Johanna Funk – Lecturer, Cultural Knowledges	Mal Nairn Foyer and Theatre

Day 1, Thursday, 22 June 2023

Time	Details	Venue
9:00 – 9:15am	Smoking ceremony – Nadine Birrimilungga Lee	Outside Mal Nairn
9:15 – 9:30am	Welcome to country – Bilawara Lee	Mal Nairn
9:30 – 9:40am	VC Welcome	Mal Nairn
9:40 – 9:50am	DVC – Research & Innovation Address	Mal Nairn
9:50 – 10:30am	**KEYNOTE:** **Associate Professor Cameron Webb** PhD BSc (Hons) Principal Hospital Scientist & Research Education Academic Director (READ) Title: Use of social media	Mal Nairn
10:30 – 10:40am	Q&A	Mal Nairn
10:40 – 11:00am	Morning tea and meet and greet keynote	Mal Nairn Foyer
11:00am – 12:30pm	Concurrent HDR Presentations **Session 1 – Better Governance and Global Relations** **Session 2 – Wellbeing, Work, and the environment**	Mal Nairn and Blue 5
12:30 – 1:30pm	Lunch	Mal Nairn Foyer
1:30 – 3:30pm	Concurrent HDR Presentations **Session 3 – Quality Education and Responsible Industry** **Session 4 – Environmental Protection**	Mal Nairn and Blue 5
3:30 – 4:00pm	Afternoon tea	Mal Nairn
4:15 – 5:15pm	**Panel Discussion: Artificial Intelligence** **Moderator:** Dylan Irvine **Panel members** Jon Mason – Associate Professor in education Stefan Popenici – Academic Lead, Quality Initiatives Niusha Shafi Abady – Associate Professor, IT Sami Azam – Senior Lecturer, IT	Mal Nairn

Keynote Session 1: Thursday 22 June
Associate Professor Cameron Webb

Title: Use of Social Media

Cameron Webb is a Clinical Associate Professor with the University of Sydney and Principal Hospital Scientist with the Department of Medical Entomology at NSW Health Pathology, Westmead Hospital. In his position with the University of Sydney, Cameron regularly provides lectures in a range of undergraduate and post-graduate courses and has supervised a number of research students including collaborative projects with the University of Western Sydney, the Australian Catholic University, University of Wollongong and the University of South Australia. He is currently the Research Education Academic Director for Westmead Health Precinct, Faculty of Medicine and Health, University of Sydney.

Session 1 : Better Governance and Global Relations

11:00 – 11:07am		Nur Isiyana Wianti – Faculty of Science and Technology	Vulnerability, resilience, and adaptation of Sama-Bajo women fisher livelihood disruptions in Indonesia
11:07 – 11:14am		Alexander Hatzikalimnios – Faculty of Arts and Society	How Covid myth-busted the right to work in Australia
11:14 – 11:29am		Mohammad Rajib Hasan – Faculty of Arts and Society	Multidimensional Wellbeing in Bangladesh
11:29 – 11:36am		Jonathan Howard – Faculty of Arts and Society	Translanguaging forward – the importance of safe spaces for humanitarian entrants

11:36 – 11:43am		James Robert – Faculty of Arts and Society	Investigating the heritage value of a non-European cultural route: Exploring an elder's perspectives of the living history of Yolŋu-Macassan contact.
11:43 – 11:58am		Braden Dunn – Central Queensland University	The Tern Programme: Preliminary Outcomes of a New Model of Care for Young People with Complex Posttraumatic Stress Symptoms
11:58am – 12:05pm		Lily Tsai – Faculty of Health	How are immigrant informal caregivers represented in Australian data? Document analysis
12:05 – 12:20pm		Isabelle Lys – Faculty of Arts and Society	What can Australian Enterprise Bargaining Agreements and Graduate Certificate in Higher Education courses tell us?

Title: Vulnerability, resilience, and adaptation of Sama-Bajo women fisher livelihood disruptions in Indonesia

Presenter

Nur Isiyana Wianti – Doctor of Philosophy, Pitch Presentation (Online)

Abstract

The *Sama* Bajo women of eastern Indonesia depend on marine natural resources for their livelihoods. However, even though the *Sama* Bajo are recognized both as populous and as major actors in fisheries and aquaculture, their semi-sedentary lifestyle and historical references to them as a nomadic people(s) give them the distinct character of a minority within Indonesia's plural canvas of diverse ethnoreligious and linguistic groups. *Sama* Bajo fisher communities are also especially vulnerable to disturbances from climate change, natural resource shocks, destructive fishing practices, land-dwellers' negative perceptions, and impacts from the recent COVID pandemic. Although there is also a growing body of work considering gender relations, intersecting dimensions of advantage and disadvantage among *Sama* Bajo communities are absent from the mainstream literature. In the context of global environmental change and marine livelihoods, this lacuna must be addressed with consideration of how access to fisheries resources, livelihood disruptions, gender equality, and fishery policies interact. In this presentation, I present my study into the gendered impacts of wide-ranging livelihood disturbances on small-scale *Sama* Bajo fishing communities, in eastern Indonesia. This includes a preliminary review of the literature and proposed research methodology to be applied to two case studies from different fishery and resource management contexts in Southeast Sulawesi. The study will provide a framework for scrutinizing the constellation of livelihood shocks and adaptation efforts in both open access and marine reserve contexts. This research seeks to contribute knowledge for recommendations to address gendered livelihood shock adaptation and support women's resilience in small-island Indonesia.

Title: How Covid myth-busted the right to work in Australia

Presenter

Alexander Hatzikalimnios – Master by Research, Pitch Presentation (Online)

Abstract

The emergence of the covid pandemic began knocking on Australia's doors in early 2020, with the Australian Government deciding to shut down borders, restrict movement, close down businesses and lockdown its citizens in their homes for substantial periods of time in the name of public health. A by-product of the covid pandemic was the rapid production of a vaccine that was offered as the solution for Australians who were sitting in their second lock-down in mid-late 2021. The Australian Government stated that choosing to get vaccinated against covid should remain voluntary and free, with the Prime Minister at the time (Scott Morrison) emphasising that employers need consider whether they were to adopt such policies in the workplace. As there is no enshrined right to work in Australia, this research will work to formulate a response to this gap in Australia's legislature. This will be achieved by analysing common law and legislation surrounding work rights during the covid pandemic in an attempt to formulate what the right to work could look like in Australia. The research will address methods that could help ensure that Australian citizens have their rights to work maintained and protected when future emergencies arise. This research will attempt to define the right to work in Australia and provide commentary on how this right was impacted during the covid pandemic with the intention to determine how it could be protected in future emergencies.

Title: Multidimensional Wellbeing in Bangladesh

Presenter

Mohammad Rajib Hasan – Doctor of Phlosophy, Full Presentation (In Person)

Abstract

Understanding wellbeing is fundamental to any effort to improve it; however, the measure of wellbeing, entirely based on either objective or subjective indicators, is subject to criticism. Using the latest (2018) World Values Survey (WVS) data and following Alkire and Foster (2011) method of multidimensional poverty, including subjective and objective indicators of wellbeing, this study examined the incidence, intensity, inequality, and determinants of wellbeing in Bangladesh by constructing the Multidimensional Wellbeing Index (MDWI). The MDWI was calculated using seven domains and twenty-five relevant indicators representing multiple dimensions of wellbeing and assigning weights using the Principal Component Analysis (PCA). While the index, MDWI, ranges from 0 to 1, the higher the index, the higher the level of wellbeing. Bangladeshi people, on average, are experiencing a moderate level of wellbeing (with an MDWI of 0.565), where the health domain and its related indicators were the largest contributors to wellbeing. Results of this study revealed notable differences in wellbeing by gender, age, income group, and education level of the households' heads and by sub-national location of the households. Significant differences in inequality in wellbeing were also observed by sub-national location and income, while income and other socioeconomic and demographic factors were strongly associated with wellbeing in Bangladesh. Overall, the results provide valuable policy insights into an important area of human development-wellbeing-which is also critical for achieving sustainable development goals for Bangladesh, in particular, and other developing countries, in general.

Title: Translanguaging forward – the importance of safe spaces for humanitarian entrants

Presenter

Jonathan Howard – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

The challenges and complications learners face when learning a new language are varied and multiple. Accessing translanguaging is a pedagogic and ideological approach that allows users to learn by drawing on all their linguistic and semiotic resources. With language closely related to identity and culture, developing a sameness of language across language barriers creates a bond of acceptance and provides a basis for togetherness, identity, separateness, solidarity, brotherhood and kinship (Fishman, 1999). This thesis aims to study the application of translanguaging pedagogy, principles and concepts and provide preventative solutions to the inevitable increase in global migration by advocating policy, guidelines and strategies for institutions, governments and educators who work with humanitarian entrants.

Through action-based research the study aims to utilise a range of methodologies that focus on the experiences, spaces and relationships of learners to determine how translingual and transcultural practice can assist humanitarian entrants in developing their well-being and belongness. Pertinent to this study is the identification of linguistic connected factors that can be facilitated through translanguaging and transcultural pedagogy that will help establish the pre-conditions and common underlying proficiency for humanitarian entrants to learn a second language in a safe environment. The Australia government, NGO's and educators must commit to applying new and innovative approaches in assisting humanitarian entrants overcome issues such as culture shock, adaptation and the re-socialisation process after relocation, or risk further entrenching the social, economic and cultural barriers that are creating a divide in Australian society. This study will attempt to develop a theory-based effort at the societal level to modify the linguistic environment to increase the aggregate welfare of humanitarian entrants.

Title: Investigating the heritage value of a non-European cultural route: Exploring an elder's perspectives of the living history of Yolŋu-Macassan contact

Presenter

James Pilbrow Robert – Master by Research, Pitch Presentaion (Online)

Abstract

This Masters' Thesis in Geography is concerned with understanding how and to what extents the concept of the 'cultural route' in World Heritage practice can accommodate Australian indigenous conceptions of being, knowing and cultural value. The motivation for this work comes from the assertion by heritage practitioners Blair and Hall (2013) that the historic trade route linking Makassar, South Sulawesi, with Northern Australia, meets this criterion, which is centred upon recognising routes and itineraries of sustained cultural exchange. This research will contrast the Eurocentric notion of the 'cultural route' with Aboriginal perspectives by engaging with how Yolŋu people in Northeast Arnhem Land see their connections to Makassar.

This research comprises an ethnographic case study on a prominent Yolŋu elder and knowledge holder's understandings of the living history of his connections to Makassar. Field observation and interview data has been collected on visits to East Arnhem and South Sulawesi with this elder in January and February 2023. The data collection phase of the research has unearthed a range of information related to Yolŋu kinship ties between East Arnhem and Makassar and the preservation of Yolŋu knowledge. The analysis will follow the Grounded Theory Method.

This research intends to challenge the Eurocentric narratives that tend to dominate heritage discourse relating to Australian Aboriginal perspectives on cultural value by examining the heritage of journeys from a Yolŋu leader's perspective. It will also contribute to the growing wave of renewed academic interest in Australia's historic connections to Asia.

Title: The Tern Programme: Preliminary Outcomes of a New Model of Care for Young People with Complex Posttraumatic Stress Symptoms

Presenter

Braden Dunn (CQU) – Full Presentation (Online)

Abstract

Young people who experience complex trauma are vulnerable to significant impairments in their biological, psychological, and social health outcomes. Specifically, complex trauma survivors can develop severe and complex mental health presentations that cannot be treated by existing Australian mental health funding models. A clinical feasibility trial was designed to evaluate the suitability and outcomes associated with a novel model of care, the Tern Programme, explicitly designed for treating young people with complex posttraumatic stress symptoms.

Fifty-two young people from headspace centres in Townsville and Mackay aged 12-25 received a semi-structured psychosocial intervention for up to 24 months. Data was collected on these participants approximately every three months to track their progress on a selection of clinical, functional, and quality of life measures. This presentation will share preliminary data on participant demographics and primary outcomes.

Australian youth with complex posttraumatic stress are currently without access to publicly-funded, specialist treatment programs. The headspace initiative is well-placed to adopt this new model of care to increase access nationwide for youth that would otherwise go untreated. We intend this project to be the first step for achieving greater recognition and implementation of publicly funded trauma services.

Title: How are immigrant informal caregivers represented in Australian data? Document analysis

Presenter

Lily Tsai – Doctor of Philosophy, Pitch Presentation (Online)

Abstract

A global health concern is the number of individuals living with chronic diseases. Caring for family members living with a chronic disease are usually fulfilled by other family members (informal caregivers). Caregiving impacts the life and wellbeing of caregivers. A subgroup of informal caregivers is those caregivers with immigrant backgrounds. As a part of the overall case study research, this document analysis aimed to identify and describe variables noted in the Australian documents as influencing the caregiving experience of immigrant informal caregivers.

Bowen's four-step method of document analysis guided this analysis. This document analysis implemented content analysis and thematic analysis where applicable. The document analysis identified 24 potential variables that may influence the caregiving experience of immigrant informal caregivers—however, the relevancy of these potential variables to informal carers of immigrant backgrounds needed to be explored. Hence, informal caregiving data in Australia has insufficient specific details on immigrant informal caregivers. Further research is needed to explore immigrant informal caregiving experiences in Australia. Further investigation is required to determine whether caregiving experiences are similar or different between those immigrant caregivers and those born and raised in Australia. The findings of this research will inform healthcare professionals about how to support immigrant informal carers.

Title: What can Australian Enterprise Bargaining Agreements and Graduate Certificate in Higher Education courses tell us?

Presenter

Isabelle Lys – Doctor of Philosophy, Full Presentation (Online)

Abstract

Globally and in Australia, there is increased pressure towards formalisation of university teaching, with expectation that completion of the Graduate Certificate in Higher Education (GCHE) by academic staff will lead to better teaching and learning practices (Kandlbinder and Peseta 2009) such as leadership in education, competence in scholarship of teaching and learning and use of technology in teaching. Some GCHE graduates are interrogated by their host universities regarding the efficacy and delivery of the course for audit purposes or to improve future local GCHE offerings (Ginns, Kitay et al. 2008, Ginns, Kitay et al. 2010). There has been no Australian study investigating the role GCHE plays in supporting transition from biomedical/health science scientist to teaching focused academics across different Australian universities. This PhD study aims to investigate what is covered in GCHE across different universities, university governance and how teaching focused academics experience the GCHE at two case study Australian Universities via qualitative methods such as systematic analysis and Critical Discourse Analysis of available online documents and policy, such as Enterprise Bargaining Agreements (EBAs), the course content of GCHE, and interview transcripts from graduates of GCHE using Leximancer software. Preliminary results from systematic analysis of public online texts and documents (I.e. EBAs and GCHE course content) from Australian universities will be presented. Future analysis of such public policies and documents (i.e. EBAs and course content of GCHEs) can provide an insight into impact of government and institutional governance across Australian universities in providing sustainable professional development for teaching focused staff.

Session 2 : Wellbeing, Work and the Environment

11:00 – 11:15am		Stephanie Marsh – Faculty of Health	How do parents decide on giving their kids antibiotics? Recent findings and implications
11:15 – 11:30am		Razib Ahmed – Faculty of Science and Technology	Optimising RPAS-based Thermal Infrared Camera Calibration using Ground Reference Panels under Changing Atmospheric Conditions.
11:30 – 11:45am		Gehan Abdelghany – Faculty of Science and Technology	Yield responses of native Oryza species to plant density and nitrogen rate in Northern Australia
11:45 – 11:52am		Pritika – Faculty of Science and Technology	Risk Assessment for Heterogeneous IoMT devices
11:52 – 11:59am		Ruth Canty – Menzies School of Health Research	Northern Territory stakeholder views on tobacco control endgame strategies
11:59am – 12:14pm		David McKenzie – Faculty of Health	Socio-ecological influences: Strengthening Australian farmers climate change readiness
12:14 – 12:29pm		Haiying Wang – Faculty of Health	Validation of an instrument measuring quality of life of Chinese cancer survivors

Title: How do parents decide on giving their kids antibiotics? Recent findings and implications

Presenter

Stephanie Marsh – Doctor of Philosophy, Full Presentaion (Online)

Abstract

Antibiotics are critical medicines in the treatment and prevention of bacterial infection. However, the overuse and misuse of antibiotic medicines facilitates the development and spread of antibiotic resistant bacteria, which has significant implications for public health. One part of the response to this problem has involved examining the ways in which antibiotics are accessed and used by consumers. As children are amongst the highest recipients of antibiotic medicines, this research focused on the parent/child sub-group to understand what drives parental decisions when deciding on the use of antibiotics for their children. Using a qualitative approach, this study explored the opinions and practices of parents living in remote areas of the Australian Northern Territory regarding the use of antibiotics with their children. Findings from this research highlight that parental decisions towards their children's use of antibiotics were influenced by their attitudes and beliefs, the social norms of the population and behavioural control over both access to antibiotics and informed antibiotic advice. In particular, the research identified that mothers living in rural and remote areas experiencing reduced access to health services may make decisions about antibiotic use out of fear and based on the advice of their personal network when they perceive their child is vulnerable to a health threat. The results of this study inform an understanding of psycho-social factors underlying antibiotic use and provide guidance for future research in the prediction and management of antibiotic use behaviours in rural contexts.

Title: "Optimizing RPAS-based Thermal Infrared Camera Calibration using Ground Reference Panels under Changing Atmospheric Conditions".

Presenter

Razib Ahmed – Doctor of Philosophy , Full Presentation (In Person)

Abstract

This study proposes a new calibration method for remotely piloted aircraft systems (RPAS) thermography to achieve accurate and reliable surface temperature (ST) measurements under varying atmospheric conditions. Current ground reference panels (GRPs) based calibration methods are complex and fail to provide accurate ST measurements under changing atmospheric conditions. The proposed method uses two sets of GRPs, one group was placed closely on the field to measure GRPs temperature at the beginning and end of each RPAS flight, and the other set was randomly distributed on the field to create a thermal orthomosaic. The surface temperature was collected in the morning, midday, and afternoon from 30, 60, and 90 m above ground level. We found ±2 °C accuracy using GRPs at different times of the day and heights under stable atmospheric conditions that are better than the manufacturer-stated accuracy. However, when atmospheric conditions change during RPAS flights, the accuracy varies more than ±10 °C due to a non-linear relationship between thermal orthomosaics and ground readings. To improve calibration accuracy, we used ground reference temperature readings taken at the beginning and end of each RPAS flight and solar radiation data. By integrating solar radiation information and GRPs readings, we reduced the overall error from ±10 °C to 0.5 °C. The proposed method can be applied to optimize RPAS-based thermography in tropical regions with rapidly changing environmental conditions, which has significant implications for various applications, including urban planning, agriculture, forestry, and environmental monitoring.

Title: Yield responses of native Oryza species to plant density and nitrogen rate in Northern Australia

Presenter

Gehan Abdelghany – Doctor of Philosophy, Full Presentaion (In Person)

Abstract

Australian native Oryza species produce nutritious grains for which there is a potential market as a local gourmet product in restaurants, and as a novelty product for tourists. However, the presence of appropriate agricultural management practices for cultivating native Oryza species has not yet been developed. Hence, a two-season greenhouse experiment was conducted during the dry season 2022, and the rainy season 2023. Two Australian native species, O. meridionalis, and O. rufipogon were used to investigate the effects of the nitrogen (N) rate and planting density on the above-ground biomass, grain yield, and yield components. In both seasons, a planting density × N treatment factorial design experiment was arranged in a split-plot design with three replicates. Four different spacing patterns were applied (20 cm X 20 cm; 15 cm X 15 cm; 20 cm X 10 cm; 10 cm X 10 cm) combined with two N fertilizer rates: a locally recommended rate of 150 kg ha-1, and an increased N rate of 250 kg ha-1. The results revealed that transplanting at 150 kg N ha-1 at a hill density of 10 cm × 10 cm proved better yield performance (i.e. produced higher grain yield over the rest of the treatments) in the dry season trial. That's because there are more tillers per unit area, a larger total above-ground biomass, and a larger leaf area index. Hence, adjusting the hill density could be an efficient method to reduce the amount of nitrogen fertilizer in growing native Oryza, without sacrificing rice productivity.

Title: Risk Assessment for Heterogeneous IoMT devices

Presenter

Pritika – Master by Research, Pitch Presentation (In Person)

Abstract

The adaptation of the Internet of Medical Things (IoMT) has provided efficient and timely services and has transformed the healthcare industry to a great extent. Monitoring patients remotely and managing hospital records and data have become effortless with the advent of IoMT. However, security and privacy have become a significant concern with the growing number of threats in the cyber world, primarily for personal and sensitive user data. In terms of IoMT devices, risks appearing from them cannot easily fit into an existing risk assessment framework, and while research has been done on this topic, little attention has been paid to the methodologies used for the risk assessment of heterogeneous IoMT devices. This paper elucidates IoT(Internet of Things), its applications with reference to in-demand sectors, and risks in terms of their types. By the same token, IoMT and its application area and architecture are explained. We have also discussed the common attacks on IoMT. Existing papers on IoT, IoMT, risk assessment, and frameworks are reviewed. Finally, the paper analyses the available risk assessment frameworks such as NIST, ISO 27001, TARA, and the IEEE213-2019 (P2413) standard and highlights the need for new approaches to address the heterogeneity of the risks. In our study, we have decided to follow the functions of the NIST and ISO 270001 frameworks. The complete framework is anticipated to deliver a risk-free approach for the risk assessment of heterogeneous IoMT devices benefiting its users.

Title: Northern Territory stakeholder views on tobacco control endgame strategies

Presenter

Ruth Canty – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

While smoking prevalence overall is relatively low in Australia, within some population groups smoking prevalence remains high and inequities in health outcomes are significant. Smoking prevalence in the Northern Territory is the highest in Australia, estimated to be 17.3% in 2019, compared to 11% for Australia overall. Tobacco endgame strategies aim to abolish commercial tobacco sales, denormalise tobacco use, and reduce smoking prevalence to close to zero. There is little Australian research on the relevance of tobacco endgame policies for people from populations with disproportionately high smoking prevalence, and few studies that have examined the perspectives of people who smoke about endgame measures. Research with people who smoke indicates that unintended consequences of tobacco control measures are feelings of being stigmatised, punished, and oppressed by wider society. Given the significantly higher smoking prevalence in groups subject to structural disadvantage and marginalisation, it is important to consider their views when designing and implementing effective and equitable tobacco control policy. This may require tailoring policies to address specific needs of different areas and population groups, and hence understanding the views of populations most impacted by tobacco is critical to developing an appropriate endgame strategy for Australia. This research proposes to collect qualitative data from Northern Territory stakeholders on tobacco endgame strategies. A particular priority will be the views of First Nations peoples and communities. The research aims to explore participants' views and identify barriers and enablers to implement novel tobacco control strategies.

Title: Socio-ecological influences: Strengthening Australian farmers climate change readiness

Presenter

David McKenzie – Doctor of Philosophy, Full Presentation (In Person)

Abstract

The increasing risks of climate change are challenging Australian farmers to strengthen adaptive behaviours and be better prepared. This study explores the efficacy of socio-ecological influences on the preparedness behaviours to adapt, and the socio-cognitive agency of Australian farmers. Interview data were collected from 22 farmers across Eastern Australia and grounded theory analysis used to construct two theoretical models. The model of socioecological intel found that localised farmer groups, as sources of farm intel, had the most influence on farmers' preparedness behaviours, collectively and individually. These groups valued shared learning, "learning-by-doing", and normalised the incubation and adoption of innovation. Farm advisory and scientific services were influential sources of innovation with individual farmers. Behaviours were found to adapt as 'game changing' preparedness responses to the trusted influences of groups and advisors, nonetheless more commonly, as adaptive reactions to disruptive climate events. The model of socio-cognitive agency found markers and precursors of prepare and adapt processes and farmer agency. Thinking and reflective-inquisitive capabilities, values directed motivation, and emotional regulation were key cognitive markers. The socio-cognitive precursors of values, training and education, self-determination, and community norms strongly influenced agency and preparedness behaviours. The prepare and adapt behaviour behaviours of farmers in this study reflect the social influences of groups, peers, and technical expertise, prior education, and willingness for self-development. These findings imply that farmer learning and research networks, and strategic learning programs are points of influence to leverage the development of prepare and adapt behaviours.

Title: Validation of an instrument measuring quality of life of Chinese cancer survivors

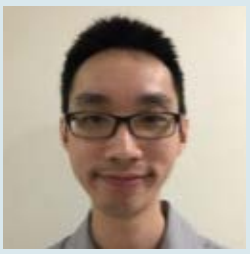
Presenter

Haiying Wang – Doctor of Philosophy, Full Presentation (Online)

Abstract

Cancer and its associated treatments can have a significant impact on the quality of life (QoL) of cancer survivors. To improve QoL, using an appropriate measurement tool is the initial step. However, there is a lack of a particular tool designed to measure the QoL of long-term cancer survivors in the Chinese population. This study validated a Chinese version of the Quality of Life Patient/Cancer Survivor Version (QOLCSV) in Chinese cancer survivors. The study followed a seven-step research practice guideline for cross-cultural research instrument validation, including translation, adaptation, and psychometric assessment. A total of 205 Chinese cancer survivors were recruited. Time spent to complete the Chinese version of the QOLCSV (QOLCSV-C) was about 10 minutes. The QOLCSV-C was found easy to use, appropriate in length, and reflective of their QoL. The strong correlation between QOLCSV-C and the Functional Assessment of Cancer Therapy-General (FACT-G) indicates satisfactory concurrent validity (Spearman's rho = 0.765, $p < 0.001$). The overall internal consistency of the QOLCSV-C is excellent (Cronbach's alpha = 0.888). Most of the items show moderate to strong item-total correlation. None of the total scores of the items in QOLCSV-C reveal the floor or ceiling effect. The discriminant performance was satisfied. In conclusion, the QOLCSV-C is a reliable and valid instrument for measuring the QoL in Chinese cancer survivors. Further studies exploring the factor structure, gender universality, and significant predictors of QoL in Chinese cancer survivors are warranted.

Session 3: Quality Education and Responsible Industry

1:30 – 1:37pm		Rabaka Sultana – Faculty of Science and Technology	Towards a general framework for integrating concrete work noise impact in BIM-life cycle assessment method.
1:37 – 1:52pm		Anne-Marie Cullinan – Faculty of Arts and Society	The Significance of Material Handling in Art and Education
1:52 – 1:59pm		Alison Lockley – Faculty of Arts and Society	Small Bites, Big Impact: Leveraging Open Microlearning as Self-directed Learning in Higher Education
1:59 – 2:14pm		Octavio Andres Castano Plaza – Faculty of Science and Technology	On the description of multilayer argon adsorption on graphite surface below the bulk triple point
2:14 – 2:29pm		Cedric Tan – Faculty of Science and Technology	The Construction and Significance of Chromium Nitride Pourbaix Diagrams in Regards to Corrosion Products
2:29 – 2:36pm		Kian Soon Hoon – Menzies School of Health Research	An update on minSNPs: working with Nanopore sequence data

2:36 – 2:51pm		Hansi Alwis Faculty of Science and Technology	Green Synthesis of Silver Nanoparticles using Terminalia Ferdinandine (Kakadu plum) Leaf and Fruit Extracts
2:51 – 2:58pm		Irrai Anbu Jayaraj – Faculty of Science and Technolgy	RFML-Based Fingerprinting and Signal Localization for Internet of Medical Things: A Design Science Approach
2:58 – 3:05pm		Farai Mbira – Faculty of Science and Technolgy	Security and Privacy Challenges with Shared Digital Identity and Devices in urban Northern Territory Aboriginal communities

Title: Towards a general framework for integrating concrete work noise impact in BIM-life cycle assessment method

Presenter

Rabaka Sultana – Doctor of Phlosophy, Pitch Presentation (Online)

Abstract

Concrete, the primary building material, creates noise throughout material procurement, fabrication, construction, and demolition. Noise affects humans and other animals in direct and indirect ways. For example, noise can cause hearing loss, hypertension, heart difficulties, and psychological issues like aggravation, sleep deprivation, reduced focus, mental well-being, limited cognitive development, and poor cognitive task performance.

Life cycle assessment (LCA) is a widely used technique to calculate the comprehensive environmental impacts of human activities. Although various impact indicators are assessed in the LCA method, the present life cycle assessment still excludes noise impacts due to limited research on noise assessment methods.

This paper presents a framework to quantify the environmental impacts of noise in the BIM-LCA of concrete. There are two health indicators for noise impact, such as annoyance and sleep disturbance. Later the corresponding health damages are evaluated by using disability-adjusted life year (DALY). As a case study, a Low-populated region (Darwin) and a high-populated region (Sydney) have been selected to compare the noise impact. The result indicates that 5029 and 119985 people will be highly annoyed due to concrete work in Darwin and NSW, respectively. In addition, 3178 and 76091 people will be highly sleep deprived in Darwin and NSW, respectively. After integrating noise impact, the DALY value increased 5 times more in NSW (0.11) than in Darwin (0.024). All those findings could help the policymaker to decide.

Title: The Significance of Material Handling in Art and Education

Presenter

Anne-Marie Cullinan – Master by Research, Full Presentation (In Person)

Abstract

Within today's digital "hands-free" society, people seem to have lost touch with physically creative activities as, when engaging with digital learning, only our senses of sight and sound and a limited sense of touch and bodily movement are used. There needs to be a greater understanding of the benefits of engagement through the sensory experience of material handling because without connecting to the information with all of our senses, we rarely achieve deep and rich engagement. This participatory action-led research seeks to develop personal and cultural connections through "hands-on" art. Using qualitative and practice-led research methods in her own contemporary fresco art painting Anne-Marie initiated workshops and interviews with adult participants in the Northern Territory who engaged in a rich learning space including mindfulness and material-handling. The research concludes that by entering into a "state of flow" as a planned condition, a participant is fully engaged in the practice. It is suggested that when this engagement happens the process of material handling can be described as significant; as a material task can be carefully planned and detailed, giving respect to cultural traditions of hands-on tactile learning and their benefits within a teaching curriculum or a community workshop activity.

Title: Small Bites, Big Impact: Leveraging Open Microlearning as Self-directed Learning in Higher Education

Presenter

Alison Lockley – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

Today's higher education (HE) sector is facing increasing pressure to provide a variety of flexible and affordable online learning opportunities that utilise the increasing affordances of Technology Enhanced Learning. These affordances include the expansion of openness in education that increase learners' access to information and targeted learning experiences. This study presents an investigation into the use of open microlearning, a form of microlearning that is based on the principles of open educational practices (OEP), for self-directed learning in higher education. Drawing on a comprehensive literature review and data collected from staff and students at Charles Darwin University, the study aims to identify the benefits and challenges faced by self-directed learners utilising open microlearning in HE. The research will be informed by Design-Based Research (DBR) methodology: a collaborative and iterative approach to research that involves cycles of designing, testing, and refining interventions in real-world educational settings. This methodology will allow for an inductive approach to develop a reference model and supporting resources for the effective integration of open microlearning as self-directed learning in higher education. The study seeks to contribute to the advancement of open microlearning in HE and provide practical recommendations for educators and institutions to enhance learning opportunities and outcomes for higher education students.

Title: On the description of multilayer argon adsorption on graphite surface below the bulk triple point

Presenter

Octavio Andres Castano Plaza – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Monte Carlos Simulation was employed to investigate the adsorption of argon on graphite at temperatures below the triple point temperature, Ttr(bulk) =83.8K. Two surface models were used: a planar surface (S-model) with periodic boundary conditions parallel to the surface, and a finite surface 2D-Patch model to examine the effect of boundary conditions on the adsorption isotherm. While both models were compared against experimental data, the 2D patch model provided a more accurate representation of the experimental isotherm and condensation pressure during the first-order transition. In contrast, the S-model exhibited numerous sub-steps in the adsorbate layer, leading to a poor description of higher adsorbate layers. These findings support the interpretation of boundary growth and the mismatch between the lattice of the adsorbed phase and the box dimensions.

By combining the outcomes of simulation conducted at temperatures lower than the bulk triple point temperature with published literature findings at higher temperatures Ttr(bulk) , and incorporating experimental data, we have developed a generic model that characterizes the adsorption isotherm of basic gases on graphite. This model encloses a wide temperature range, from significantly below the bulk triple point temperature and extending up to the bulk critical temperature. It is worth noting that this comprehensive depiction of adsorption isotherms on graphite is not commonly acknowledged in the existing literature.

Title: The Construction and Significance of Chromium Nitride Pourbaix Diagrams in Regards to Corrosion Products

Presenter

Cedric Tan – Doctor of Phlosophy, Full Presentation (In Person)

Abstract

Chromium nitrides such as CrN and Cr2N are often used for corrosion and wear resistant applications. These can be analysed using Pourbaix diagrams to help gauge the thermodynamic stability of elements and compounds that could form when exposing chromium nitrides towards corrosive environments. Within this research, Pourbaix diagrams were constructed for CrN and Cr2N assuming thermodynamical data for species at 298 K (25oC), a concentration of 10-6 M for aqueous species, and a pressure of 1 bar. When compared to other Pourbaix diagrams in literature for chromium and chromium carbides, it was found that chromium nitrides had a larger region of immunity against corrosion. Small differences between products predicted from Pourbaix diagrams and actual products in situ are expected due to Pourbaix diagrams not fully being able to account for reaction kinetics and depositional defects. Generated Pourbaix diagrams also showed that it was possible for passive Cr2O3 chromium oxide films to form on the surface of chromium nitrides; however, despite Cr2O3 normally being protective, it is argued that its formation is more detrimental towards corrosion resistance due to degrading the otherwise stable chromium nitrides. As such, further experimental testing to validate the corrosion resistance of chromium oxides on chromium nitrides is desired in future. By creating Pourbaix diagrams for chromium nitrides such as CrN and Cr2N, the design and manufacture of better performing materials may be aided as the appropriate usage cases become more easily predicted.

Title: An update on minSNPs: Working with Nanopore sequence data

Presenter

Kian Soon Hoon – Menzies School of Health Research, Pitch Presentation(In Person)

Abstract

Nanopore sequencing technology has improved and is increasingly used in public health genomic surveillance. This is because it is portable and it has the ability to generate long-read sequence data in real-time. This, coupled with the large volume of publicly available sequencing data, allow for the development of optimised tools for genomic surveillance of microbial pathogens. We previously presented minSNPs, an R package to mine resolution-optimised SNP sets from genome-wide orthologous Single Nucleotide Polymorphism (SNP) matrix. Using minSNPs and a genomic pipeline, we mined 200 highly optimised 5-SNPs sets to genotype the clonal complexes of Staphylococcus aureus with publicly available geographically diverse short-read sequencing data from 4 different initiatives. We have extended this work by developing an SNP-based genotyping method that uses Nanopore sequence data. Besides diagnosing the clonal complex of the samples, we have also created a Kmer-based method to quickly test the presence/absence of antibiotic-resistant and virulence genes. The method has been tested by simulated long-read sequence data and by re-sequencing isolates of known clonal complexes. The preliminary result suggests that the method works well. minSNPs is an efficient and flexible tool for mining resolution-optimised sets of SNP markers. It has been successfully used to analyse a large SNP matrix derived from multiple S. aureus BioProjects, showing the potential to identify globally applicable microbial surveillance markers for biological entities for which there is extensive known genomic diversity. Extending minSNPs to make use of Nanopore sequencer provided a simple and quick way to make use of the surveillance markers.

Title: Green Synthesis of Silver Nanoparticles using Terminalia Ferdinandine (Kakadu plum) Leaf and Fruit Extracts

Presenter

Hansi Alwis – Doctor of Phlosophy, Full Presentation (In Person)

Abstract

Terminalia ferdinandiana is an Australian native plant endemic to the Northern Territory and plum has been used as a food source and traditional medicine from the early years by indigenous Australians. Recently, it is used to produce value-added products such as food and cosmetics due to its high Vitamin C and antioxidant. While fruits have high levels of vitamin C, leaves are rich in bioactive flavonoids, phenolic acids, and tannins. However, when they are consumed directly the efficacy of active components is low due to poor absorption and low bioavailability. Hence, incorporating the active constituents into suitable metallic nanoparticles can significantly enhance the targeted delivery and combination therapy of the active components. In this study, we investigate the possibility of increasing the efficacy of potential medicinal properties, including antioxidant and antimicrobial, in the Terminalia ferdinandiana leaves and fruit extracts by conjugation with Ag-NPs. The effect of various parameters such as the ratio of extracts to Ag+ solution, contact time and pH of the mixture, on the synthesis of Ag-NPs, was studied. The nature of synthesized Ag-NPs were analyzed by UV–vis spectroscopy, TEM and DLS analyzer. The results showed that the formation of uniform-sized Ag-NPs increases significantly in the basic medium (pH 8) and Ag-NPs with leaf extracts gave uniform-sized, well-stabilized Ag-NPs than fruit extracts. This project will enhance the biomedical value of Terminalia ferdinandiana and will introduce a medicinal product that will benefit the indigenous communities that harvest the fruits and have a direct economic impact on the indigenous livelihoods of the NT communities.

Title: RFML-Based Fingerprinting and Signal Localization for Internet of Medical Things: A Design Science Approach

Presenter

Irrai Anbu Jayaraj – Doctor of Phlosophy, Pitch Presentaion (Online)

Abstract

The area of research related to securing communication and data protection on the Internet of Medical Things (IoMT) spectrum is growing rapidly. However, preventing malicious actors from compromising spectrum network security is a critical challenge in IoMT spectrum security. To overcome this challenge, reliable radio frequency fingerprinting and radio localization techniques are necessary. In this study, we implemented the IoMT spectrum security framework, the DSRM-based attack detection model (DAD), to predict rogue transmitter accuracy and localization. The hybrid approach uses RF fingerprinting techniques that rely on IQ balance datasets derived from Hack-RF device datasets and RSSI simulation using a Java-based test bed. The study utilized Deep Convolutional Neural Networks (CNN) to develop predictive models for detecting rogue transmitters. The model was trained and achieved 96% accuracy. Received Signal Strength Indicator (RSSI) localization simulation experiments were conducted on a Java test bed to locate rogue transmitter nodes. The framework was implemented using the Design Science Research Methodology (DSRM). Further extension of this research and commercialization will benefit the security and healthcare aspects of IoMT.

Title: Security and Privacy Challenges with Shared Digital Identity and Devices in urban Northern Territory Aboriginal communities

Presenter

Farai Mbira – Doctor of Phlosophy, Pitch Presentation (Online)

Abstract

This research study explored the security and privacy challenges experienced by the Australia's Northern Territory Aboriginal urban communities in living their culture that believes in sharing, including their digital identities and devices. The study adopted the routine activity theory (RAT) to understand and explain the victimisation risks associated with the sharing of digital identities and devices. RAT states that motivated offenders will act upon opportunities when they encounter suitable targets that lack capable guardianship. The research adopted an Indigenous research methodology involving Indigenous peoples applying their own worldview, perspectives, and understandings. Interviews were conducted with Indigenous community participants in the Darwin area of the Northern Territory of Australia. The interview sessions collected data about their views on sharing devices and digital identities and captured their cultural perspectives and understanding of cyber security risks. Preliminary findings have confirmed that sharing of devices and digital identities was occurring in the Darwin Indigenous communities. The preliminary findings support the routine activity theory that victimisation of the communities will occur because offenders will take advantage of risk occurring due to the sharing of digital identities and devices. increases the opportunities for motivated offenders as it exposes them for targeting by cybercriminals. Based on these findings, a shared security design model that embraces the Indigenous culture and participation is recommended.

Session 4: Environmental Protection

1:30 – 1:45pm		Khang Nguyen – Faculty of Science and Technology	A Hierarchical Control Strategy for Efficiency Improvement and Economical Operation in Isolated Microgrid Systems
1:45 – 2:00 m		Caleb Ojo – Faculty of Science and Technology	Recycling Bromine and Antimony from Acrylonitrile Butadiene Styrene (Waste Plastics containing Brominated Flame Retardants)
2:00 – 2:15pm		Kade Skelton – Faculty of Science and Technology	The Effect of Environmental Conditions on Evaporative Water Loss Rates of Native Dtellas
2:15 – 2:30pm		Chun Wang – Faculty of Science and Technology	Impact of cultivation duration sludge inoculum on the production of methane-rich biogas through anaerobic digestion
2:30 – 2:37pm		Maria Ali – Faculty of Science and Technology	PFAS removal from water using hydrotalcite and hydrotalcite nanoparticles
2:37 – 2:44pm		Angel Alberto Aguilar Morones – Faculty of Science and Technology	Theoretical and experimental study of the persistent brominated compounds of the pyrolysis of e-waste plastics
2:44 – 2:59pm		Kiran Sreedhar Ram – Faculty of Science and Technology	Operating Temperature of Non-Fullerene Acceptor Based Bulk Heterojunction Organic Solar Cells

Title: A Hierarchical Control Strategy for Efficiency Improvement and Economical Operation in Isolated Microgrid Systems

Presenter

Khang Nguyen – Doctor of Philosophy, Full Presentation (Online)

Abstract

Renewable energy sources (RESs) have received much great attention in the last two decades due to their declined cost and eco-friendly characteristics. However, with a massive integration of RESs, the modern power systems should not only operate economically but also ensure their efficiency during the normal operation. In this research, a novel hierarchical control strategy is introduced to improve the efficiency of the islanded microgrid and reduce its the total generation cost at the same time. A state-space model of the entire MG system is developed to analyse the stability of the system. The effectiveness of the proposed controller is validated through different simulation scenarios using MATLAB/SIMULINK software environment. Because every participating RES connects to each other through a distributed communication network, the need of having a central controller is neglected, which improves the scalability of the entire microgrid system. Therefore, this research will contribute to enhance the penetration of renewable energy sources in the Northern Territory power grid. Moreover, by adopting grid-forming inverters, the RESs have ability to maintain both frequency and voltage magnitude. This might support the main grid in an emergency event such as a power outage.

Title: Recycling Bromine and Antimony from Acrylonitrile Butadiene Styrene (Waste Plastics containing Brominated Flame Retardants)

Presenter

Caleb Ojo – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Electronic waste plastics often contain brominated flame retardants (BFR) with antimony trioxide used as a synergist. The presence of Br and Sb hinders the recycling of BFR-laden plastics. If Br and Sb are recovered, they can be repurposed to make valuable new products. As a result, the present study investigates the mechanism of the BFR debromination under controlled conditions, in the presence of Sb_2O_3 and $Ca(OH)_2$, to develop a viable process for recycling these plastics.

The experimental equipment comprised a thermogravimetric apparatus for determining the debromination kinetics of decabromodiphenyl ethane with and without Sb_2O_3 and $Ca(OH)_2$. The TGA-DSC also produced the solid residue used for quantitative experiments and characterisation. We characterised the char by powder x-ray diffraction, x-ray photoelectron spectroscopy, transmission electron microscope, electron probe microanalysis and vibrational spectroscopy.

The Kinetics of the pyrolysis of DBDPE is characterised by activation energies of approximately 150 kJ mol-1. Sb_2O_3 increases the activation energy, reflecting the formation of strong Sb-O-Br bonds. XRD results indicate the presence of antimony oxybromides at 500 °C. The presence of antimony induces the formation of anthracene indicating the removal of Br by an Sb-mediated coupling reaction. The application of calcium hydroxide readily decomposes the BFR forming $CaBr_2{\cdot}6H_2O$ and mixed salts with antimony. Calcium hydroxide removes 88 % of Br from the BFR, indicating complete removal could occur with an increased quantity of the additive. The results indicate the versatility of calcium hydroxide in fixing Br and Sb and propose a method for emission control during waste treatment.

Title: The Effect of Environmental Conditions on Evaporative Water Loss Rates of Native Dtellas

Presenter

Kade Skelton – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Physiological plasticity reflects a species' ability to persist despite environmental fluctuationsa factor which can determine the likelihood of survival. This is especially important to consider in a changing climate. Native dtellas (reptiles of the Gehyra genus) are widespread across Australia and inhabit a variety of environments and range sizes. Physiological traits are compared between species and these qualities are investigated in relation to the environment to provide insight into how species might be restricted in their distribution or respond to climatic changes. 18 species of dtella were sampled from sites across Western Australia and the Northern Territory under varying seasonal conditions. An open-flow system was used to measure rates of evaporative water loss (EWL) of the dtellas immediately after collection. Results were then compared across species, season, aridity, and distribution patterns to test for any association between EWL rates and these factors.

EWL rates of dtellas sampled from locations of varying aridity showed no significant difference despite contrasting climates. Seasonal conditions strongly influence the rate of EWL, with all species experiencing a 25-75% reduction in EWL rates in the Dry season. Results indicate that dtellas' can readily physiologically adapt to local environmental changes, negating the need to specialise for broader climatic conditions. These findings provide new knowledge about recently described Gehyra species and advance current understandings of reptile ecophysiology. Results can benefit approaches to environmental management and species conservation by offering insight to the relation between the physiology of dtellas', their environment, and anticipated climatic changes.

Title: Impact of cultivation duration sludge inoculum on the production of methane-rich biogas through anaerobic digestion

Presenter

Chun Wang – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Anaerobic digestion (AD) is a widespread microbial process that can be used to convert organic matter into renewable biofuel. AD process is intricate and depends on feedstock characteristics, the microbial communities introduced to the process as inoculum, and environmental conditions such as temperature, pH, buffers, and other chemicals used as supplemental nutrients. Inoculum has been widely used to improve the production of biomethane when added to waste, but little research has focused on the effect of cultivation duration of the inoculum itself. Since the AD process occurs in four main stages with different microbes responsible for each stage, the dynamics of the microbe populations have a large influence on each stage in the process of AD. Three different inocula were cultivated at durations of 7-day, 14-day, and 21-day and digested in batch reactors with garden waste collected from the local waste management facility for a period of 30 days. We found that the biomethane production rate from the 7-day inoculum sample peaked 2 days earlier than the other samples, but the peak was also 193.74 mL/day lower. Acetic acid for all groups peaked on day 5, with the 7-day group having the lowest peak. Butyric and propionic acid concentrations were highest at the start and continued to fall throughout the experiment. No measurable differences were seen between the 14-day and 21-day samples due to their microbial populations of the inocula already transitioning to the latest stage before addition to the reactors.

Title: PFAS removal from water using hydrotalcite and hydrotalcite nanoparticles

Presenter

Maria Ali – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

Poly- and perfluoroalkyl substances (PFAS) are anthropogenic chemicals, which are a class of highly fluorinated synthetic chemicals known as “Forever chemicals” due to their persistence in the environment. They are frequently used in many households, industrial products, and firefighting foams. PFAS are persistent in nature, highly soluble in aquatic environment, and associated with damaging health effects such as carcinogenicity, endocrine disruption, and liver damage. Hence, effective techniques are needed to remove the PFAS present in the environment.

Conventional methods like activated carbon and ion exchange resins have limitations, including reduced efficiency in the presence of dissolved organic matter and lack of selectivity for PFAS removal.

This project will investigate the efficient removal of perfluoroalkyl acids (PFAAs) such as PFOA and PFOS from the water using different hydrotalcite (HT) types. These are also known as anionic clays and are a family of layered minerals. HT generally exhibit positive surface charges over a range of environmentally relevant pH conditions, making them suitable for the adsorptive removal of anionic pollutants. It will be synthesized by tailoring its surface properties to check the sorption of PFAS commercially available HTs. Computational methods such as molecular dynamics simulation and density functional theory will be used to understand the surface interaction of PFAS and hydrotalcite. MD simulations will help understand the adsorption behaviour of PFAS on the hydrotalcite surface, providing insights into the adsorption mechanism and factors that influence the adsorption behaviour.

Title: Theoretical and experimental study of the persistent brominated compounds of the pyrolysis of e-waste plastics

Presenter

Angel Alberto Aguilar Morones – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

As electronic waste (e-waste) has increased at an alarming rate, several efforts have been made to improve its circularity, with success in its collection but with limitations on its recycling. Although chemical recycling promises to be a game changer, its efficiency and efficacy in removing undesired chemical compounds have yet to reach the levels needed to recover valuable components easily. We will assess the ability of a non-toxic Zn-based inorganic adsorber to remove the main persistent compounds found after the recycling process, compounds that are present even by using some other catalysts/adsorbers reported in the literature. We performed computational simulations of the possible pathways of the expected reactions between the persistent compounds and the adsorber. To confirm this experimentally, we built a laboratory set-up in which a syringe pump feeds the compound, which is evaporated and carried by nitrogen gas into a heated quartz crucible containing a solid adsorber bed. The efficacy of the process will be assessed by measuring the amount of the original compound in the condensable and gaseous products and by analysing the bromine content in the solid residue and in the liquid fraction. The theoretical studies indicate that the compounds will interact with the adsorber in different ways, such as efficiently removing the bromine, generating char on the surface of the adsorber, or even generating more complex products. The combination of the experimental setup and the simulation tool will allow us to understand and tune the parameters needed to reach the circularity of these materials.

Title: Operating Temperature of Non-Fullerene Acceptor Based Bulk Heterojunction Organic Solar Cells

Presenter

Kiran Sreedhar Ram – Doctor of Philosophy, Full Presentation (In Person)

Abstract

The research and development in the field of bulk heterojunction organic solar cells (BHJ OSCs) have been thriving over the last few decades due to their promise of low cost, light weight and flexibility compared to the inorganic solar cells (ISCs). A comprehensive study of the operating temperature (T_{CT} T_{CT}) of three non-fullerene acceptor based (NF) BHJ OSCs, two conventional (OSC1 and OSC2) and one inverted (OSC3) structure, is presented in detail. A quantitative analysis of the thermal power generated by photon absorption in transport layers and electrodes, thermalisation of photoexcited charge carriers, tail state recombination and resistive heating in a BHJ OSC are carried out in this study. The dependence of operating temperature T_{CT} T_{CT} on the voltage is simulated and found that OSC1 and OSC2 have nearly equal T_{CT} T_{CT} at about 320 K, a little higher than OSC3 at 319 K for most of its operating voltage range. It is also found that the thermal power generated due to thermalization (P_T) and absorption in other than the active layer (P_{Abs}^{ol} P_{Abs}^{ol}) in OSC3 are smaller than those in both OSC1 and OSC2 and the thermal power generated due to the resistive heating (P_R) is larger in OSC3 than in OSC1 and OSC2 leading to the net power absorbed in the active layer of OSC3 higher than that in OSC1 and OSC2. Thus, OSC3 may be regarded to be better in its photovoltaic performance although the operating temperature of all three cells remain in the range of 320 K to 321 K. [1] This study may help future researchers develop highly efficient and stable NF BHJ OSCs.

Day 2, Friday, 23 June 2023

Time	Details	Venue
8:30 – 9:00am	Tea and coffee on arrival	Mal Nairn
9:00 – 9:40am	**KEYNOTE:** **Professor Marilynne N Kirshbaum** Chair of the Human Research Ethics Committee Ethics and research Title: What are you doing? Thinking with care and respect before leaping into action	Mal Nairn
9:40 – 10:00am	Q & A session	Mal Nairn
10:00 – 10:30am	Morning tea and meet and greet with Keynote	Mal Nairn Foyer
10:30am – 12:45pm	Concurrent HDR Presentations **Session 1 – Social harmony and equality** **Session 2 – Sustainable and Healthy Behaviours**	Mal Nairn, Blue 5 lecture theatre
12:45pm – 1:15pm	Lunch break	Mal Nairn Foyer and Theatre
1:15pm – 2:00pm	Award presentation > Conference Awards Presentation DVCRI to present awards > Thank you and Closing remarks	Mal Nairn Auditorium

Keynote Session 2: Professor Marilynne N Kirshbaum

Professor Marilynne N Kirshbaum is Chair of the Human Research Ethics Committee and was previously Head and Professor of Nursing at CDU. She remains strongly committed to promoting excellence in nursing research and teaching. Throughout a long career, she has amassed 100 research articles, books, book chapters and international conference presentations, 15 PhD completions and has led doctoral programs for health care professionals. Her area of clinical and research expertise is in cancer and palliative care, specifically in exploring how people who suffer from debilitating fatigue can summon up sources of vitality and energy.

Session 1: Social Harmony and Equality

10:30 – 10:37am		Krista Alison Rechel Masarwa – Menzies School of Health Research	"Safeguarding Ngiyampaa-Wangaapuwan Intangible Cultural Heritage, Indigenous Intellectual Property, and endangered sacred archival song lines".
10:37 – 10:44am		Imroatul Hasanah – Faculty of Arts and Society	Developing English Materials in a Mobile Application for Junior and Senior High School Students
10:44 – 10:51am		Trudi Sieland – Menzies School of Health Research	Key turning points in health trajectories as told by First Nations People in the NT
10:51 – 10:58am		Laura Fairbrother – Faculty of Arts and Society	Co-Designing Curriculum to Build Capability and Increase Quality in Teaching and Learning.
10:58 – 11:13am		Dean Mobbs – Faculty of Arts and Society	Sleeping Dogs and Ashes: Love as Law – Marriage as Metaphor: Welfare Ordinances and Discrimination in Australia 1955 – 1965
11:13 – 11:28am		Merin Nielsen- Faculty of Arts and Society	Conscious cognition
11:28 – 11:35am		Fais Nurul Hadi – Faculty of Arts and Society	Mobile-Based Language Learning (MALL) in Rural Area of Indonesia: Early Findings

11:35 – 11:42am		Hujia(Vicky) Liu – Faculty of Arts and Society	The Role of Communication Platforms in the Study Experience of Nepalese, Indian and Chinese International Students in Northern Territory (NT), and How Communication Platform Usage Has Changed in the Post-Pandemic Era
11:42 – 11:57am		Jenne Roberts – Faculty of Health	De-colonising health program evaluation mindsets and methods
11:57am – 12:12pm		Michael Ifarajimi – Faculty of Arts and Society	Sustainability of Teacher Education: The Role of Mentoring
12:12 – 12:27pm		Raguib Muneer – Faculty of Arts and Society	Quantitative Measurement of Civic Scientific Literacy Among Senior Secondary School Students in the Northern Territory
12:27 – 12:34pm		Huda Syyed – Faculty of Arts and Society	Female Genital Cutting (FGC) in Pakistan: Reasons, Implications & Evolution of this Tradition.

Title: “Safeguarding Ngiyampaa-Wangaapuwan Intangible Cultural Heritage, Indigenous Intellectual Property, and endangered sacred archival song lines”.

Presenter

Krista Alison Rechel Masarwa – Doctor of Philosophy, Pitch Presentation (Online)

Abstract

PhD Doctor of Philosophy in society and culture at Menzies School of health research: Presents a mixed mode approach within the field of Ethnomusicology that endeavours to present a personalised qualitative family research project. The protection of intergenerational song lines through maintaining NgiyampaaWangaapuwan intangible cultural heritage (ICH) is very important to the recently established Fred Biggs Song Line Inheritance Advisory Committee (FBSIAC). The pivotal turning point here, is the sharing of cultural responsibilities that grasp the integral foundations for intergenerational song line transmission that is vital to cultural maintenance. The enabling of safeguarding intangible cultural heritage and reinvigoration of cultural protocols is indispensable to the inherent traditions of intergenerational transmission that coincides with integral cultural teachings. The collective visions of the FBSIAC instructed by key male and female elders is paramount to the encapsulation of data. The ontological epistemology sets the basis to the fundamental principles that is intertwined within ancestral oral and aural tradition. The drawing from key male and female elders is successionally a distinct endearment of ancestral depths from cultural knowledges. Unheard hierarchal education demonstrates the striking of ingest teachings that require new learnings that surrounds the truth about unorphaned archival song lines that are spoken for. Naturally this specific evidence sits at the base of family values systems that is inherently engrained and unquestionably connected intact and is justifiably automatic.

Title: Developing English Materials in a Mobile Application for Junior and Senior High School Students

Presenter

Imroatul Hasanah – Doctor of Philosophy, Pitch Presentation (Online)

Abstract

The current curriculum used in Indonesia is Independent Curriculum defined by Bahasa Indonesia 'Kurikulum Merdeka'. In Independent Curriculum, teachers are encouraged to design their materials based on the national guidance. Based on information from national trainers of Kurikulum Merdeka, enabling teachers through training in Kurikulum Merdeka is work-in-progress. Even for those who experienced curriculum training, including English teachers, it is common to claim still being confused about how to make and deliver the materials based on the Independent Curriculum guidance. Hence, the researcher conducts the research to develop English materials based on Independent Curriculum and then inserts the materials into a mobile application to engage and motivate the students to learn English. To reach the aim of developing the materials, the method used is Design-Based Implementation Research (DBIR) with five steps: 1) exploratory, 2) co-design step that the researcher collaborates with English teachers, Independent Curriculum trainers, the experts of Teaching English as a Foreign Language, and the experts of Information and Technology (IT), 3) early implementation research, 4) trying out the product, and 5) assessment by the experts. This application hopefully benefits English teachers in their teaching processes and helps students increase their English skills and scores. In addition, this research is to support the Decree of the Minister of Education, Culture, Research, and Technology number 56/M/2022 about Independent Curriculum Implementation.

Title: Key turning points in health trajectories as told by First Nations People in the NT

Presenter

Trudi Sieland – Master by Research, Pitch Presentaion (In Person)

Abstract

The health disparities affecting First Nations Australians throughout their life course are well documented. Most evidence, however, is restricted to descriptive quantitative data. While providing important biomedical and social data, this does not afford an understanding of participants' lived experiences of how the social and cultural determinants of health, colonial legacies of intergenerational trauma and dispossession, as well as the resulting social norms shape health pathways. Nested in the Aboriginal Birth Cohort (ABC) study, the largest and longest running longitudinal study of First Nations Australians, this qualitative research aims to elucidate the lived health experiences of First Nations people in the Northern Territory (NT). Acknowledging the power and relevance of oral culture and storytelling, the study will apply research topic yarning. This form of yarning is purposeful, with a beginning and an end. It aims to create a relaxed, interactive, and trusting environment in which the participant and the researchers can hold a conversation and journey together. The ABC study's long-term relationship and rapport with remote communities and participants will enable direct recruitment of suitable individuals. 12-15 ABC Study participants from a range of communities in the NT will be invited to participate. The research endeavours to gain insights into the life course of participants through their stories, analysing relevant factors and strengths to understand key turning points in their health trajectory.

Title: Co-Designing Curriculum to Build Capability and Increase Quality in Teaching and Learning

Presenter

Laura Fairbrother – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

Universities are increasingly including the student experience as a benchmark for success, and this benchmark often relies on the design, development and implementation of quality curriculum. This reliance can be problematic as the academics responsible for designing curriculum may not have the necessary educational knowledge or expertise (Patfield et al., 2022), and because teaching so often sits in the shadow of their research obligations, motivation and commitment to improve practice or increase capability can be low. This Action Research project investigates the impact of implementing a Co-design process (McKercher, 2020) to build capability in curriculum development in HE through effective collaboration between subject experts and other major stakeholders. The research adopts a mixed methods approach collecting both qualitative and quantitative data regarding the effectiveness of the intervention. Qualitative data will be gathered through participant and student focus groups, interviews, and evaluation surveys. The quantitative data will include students' unit and course evaluation scores, and data for retention and success. The evidence of outcomes and effectiveness will be measured through increased academic buy-in and self-efficacy in quality curriculum design and delivery, and increased student success and satisfaction.

Title: Sleeping Dogs and Ashes: Love as Law – Marriage as Metaphor: Welfare Ordinances and Discrimination in Australia 1955 – 1965

Presenter

Dean Mobbs – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Mary 'Gladys' Namagu and Michael 'Mick' Daly, connected on country by human love, 'cohabitated' near Katherine in the Daly River region of Northern Territory, Australia in 1959. By exploring 'collective story' and embracing human love under the duress of racism, my research contributes to reconciliation within Australia by showing how creative, historic retelling of 'intercultural relationship' affects collective, societal narrative. Utilising Indigenous Research Methodologies, and creative writing to recount recorded history, the project strives to create a conduit between two cultures — highlighting the polarising policies against interracial marriage, upheld by law in Australia during the 1950s and the 1960s. Using 'strategies of inquiry,' derived from the likes of Larissa Behrendt, Bagele Chilisa, Karen Martin, Aileen Moreton-Robinson, Stephen Muecke, Lester Rigney, Linda Smith, and Shawn Wilson – all of whom embrace storytelling, as knowledge – my project strives to build meaningful relationships for all stakeholders. My methodology includes three benefits: first, improved understanding of interracial relationships within Australia; second, improved understanding of legislation affecting citizens in two different cultures; and third, the reconciliation of these two cultures by means of creative research. My methodology explores 'communicative relationship across cultures' raising mainstream awareness about loving relationships between Indigenous people and non-Indigenous people. The research aims to assist in the transmission of stories across cultures by creatively responding to the experience of country in the Northern Territory. The project values 'collective memory', and the research aims to improve the relationship between Colonialist Australians and Indigenous Australians by exploring intercultural relationships from the past.

Title: Conscious cognition

Presenter

Merin Nielsen – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Cognitive sensing or imagining entails attentional data-gleaning through the senses, including memory, but how do conscious and non-conscious attending differ? This study aims to illuminate the difference via two prominent views; the Predictive Processing Model stemming from Karl Friston, and the Biosemantic project of Ruth Millikan; with analysis of 'subjective' attending. Predictive Processing theories portray cognition as probabilistic error-correction based on a multi-contextual 'reality model' developed by inference regarding actions and information sources relevant to resolving an organism's disequilibria states, or satisfying wants. Prioritised wants are satisfied through actions whose suitability derives from past experience. Sensitivity to contextually salient data, however, results in diverse actions being simultaneously prioritised and withheld while resourcing new data for optimal action selection. Such dilemmas trigger the reality model to generate predictive simulations for comparing sensorially &/or against memory qua consistency. Alternative actions are also weighed for 'satisfaction value' in potentially broader contexts.

Biosemantic cognition involves systemic producer-consumer 'representations' possessing both qualitative and interrelational aspects. Action-selecting produces simulations essentially being reviewed for veracity and consequences, feeding back into revision of current priorities. In this view, originating action priorities must remain modifiable in response to feedback and hence quarantined from triggering interrelations, in the production and consumption processes, determining their relevance. That is, action motivating wants are necessarily separated from predictive simulations. These circumstances potentially create the familiar feeling of subjectivity, identifiable as detachment from objective reality, which may be incorporated in AI. Thus, exploring these models could progress the development of mind-like Artificial General Intelligence.

Title: Mobile-Based Language Learning (MALL) in Rural Area of Indonesia: Early Findings

Presenter

Fais Nurul Hadi – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

In recent decades, the utilization of educational technology has been of significant interest in terms of its potential to improve the quality of education in rural areas of Indonesia. As the issues of transportation, connectivity, and infrastructure for better education have been improved significantly, the development of education in rural areas still needs to be improved. In this case, mobile-based language learning can be a valuable tool for teachers and students to advance their teaching-learning activity beyond the current situation. This research is designed to investigate the experience and attitudes of teachers and students in using mobile-assisted language learning (MALL) for English language teaching and learning in senior secondary schools of rural Lampung, Indonesia. It aims to reveal the barriers and enablers for teachers and students in using MALL in rural areas of Lampung. The study uses a mixed-methods approach, combining surveys and interviews with selected teachers and students in Pesisir Barat, a rural district area of Indonesia. The early findings show some obstacles for participants in giving their data and minor issues in getting approval for some social issues. In this stage, the experience and acceptance of using MALL were relatively low even when government support was given. Social and cultural issues became major obstacles while the motivation and innovation in developing MALL were relatively low. These findings might be helpful for educational policymakers in rural areas of Indonesia and for school principals and school boards in improving the quality of teaching and learning in rural areas.

Title: The Role of Communication Platforms in the Study Experience of Nepalese, Indian and Chinese International Students in Northern Territory (NT), and How Communication Platform Usage Has Changed in the Post-Pandemic Era

Presenter

Hujia (Vicky) Liu – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

In recent years, the global pandemic and its aftermath have significantly impacted the Australian international education landscape. The Northern Territory (NT) has a unique blend of traditional indigenous culture and Western influences, and Charles Darwin University (CDU) has identified Nepal, India, and China as the top three countries of origin for international students (Charles Darwin University Annua Report 2020 in review). Communication platforms, such as WhatsApp, WeChat and Messenger, are a critical medium for international students to adapt to their new environment and to transition to Australia for continuing or starting their studies. This exploration aims to examining the significance and functionality of communication platforms in relation to the study experience of Nepalese, Indian, and Chinese international students in the NT to shed light on what constitutes a positive study experience. The study will employ ethnographic research methodology including survey and in-depth interview to collect data. To understand the social context and power relations beyond the communications, the study will also use discourse analysis to analyse how different student groups use media platforms to interact with each other and their environment in NT. The study will also apply the concept of Social Network Theory to understand the structure of students' social networks, how communication platforms create different networks, and how these networks influence the international study experience. By examining how these groups use communication platforms, the study seeks to identify opportunities to create better international student experiences, especially in the post-pandemic era. The research will present a way of understanding of the pattern of media use among these student groups, factors and conditions that affect their actions in a regional context in Australia.

Title: De-colonising health program evaluation mindsets and methods

Presenter

Jenne Roberts – Doctor of Philosophy, Full Presentation (In Person)

Abstract

CDU's Molly Wardaguga Research Centre was invited by Waminda, a First Nations community-controlled health service, to partner in the evaluation of their women's health programs. The researchers, Waminda staff and community women formed an evaluation leadership group to guide and take shared responsibility for the evaluation projects. The aim of this study was to develop and apply decolonising research approaches, practices, tools, methods and mindsets to a study of program effectiveness. Initially the evaluation leadership group identified potential benefits and research impacts at an individual, organisation and community level. The group collectively reviewed various methods and discussed Yuin Nation and Western approaches to collaboratively determine their appropriateness. Yuin Nation women's ways of knowing, being, and doing, and Indigenous leadership were privileged to co-create evaluation plans, findings and recommendations.

The project produced context-specific tools to decolonise evaluation mindsets and methods. The project invested in reciprocity and developed a system to exchange (as opposed to simply build) capacity for research and evaluative thinking. The project implemented regular 'benefit check-ins' and found they were an effective practice for collectively reflecting on what was working, sharing feedback and maintaining a strengths-based approach to the evaluations. The study provides evidence of how program evaluation can be re-conceptualised, and mindsets and methods shifted to dismantle oppressive practices in academia, support self-determination and produce robust findings, actionable recommendations and contextualised evidence of program value.

Title: Sustainability of Teacher Education: The Role of Mentoring

Presenter

Michael Ifarajimi – Doctor of Philosophy, Full Presentation (Online)

Abstract

Daily human activities impact the environment and affect the planet's ability to support future generations. The continued destruction of the ecosystem endangers both wildlife and humans alike, leading to unknown infectious diseases. Individuals and societies must change their thinking and behaviour through Education for sustainable development. For individuals to build citizenship and develop secure, and prosperous communities, Education for Sustainability or Education for Sustainable Development (ESD) must be at the heart of teacher education.

This study reviewed the literature on Education for Sustainable Development and methods of teacher preparation. This research investigates the current strategies of building capacities of needed to transition to Education for sustainable Development. This paper examines Education for Sustainable Development (ESD) teacher preparation and roles of mentors. The study discovered, there are numerous ways for teachers to prepare to teach ESD themes, and that, despite the outlined SDGs (Sustainable Development Goals) in most educational sector, ESD and Mentorship are still optional and peripheral in teacher education. The study therefore recommends networking opportunities for teachers to share expertise and pragmatic approach in recognising a specific starting point for strategic cooperation.

Title: Quantitative Measurement of Civic Scientific Literacy Among Senior Secondary School Students in the Northern Territory

Presenter

Raguib Muneer – Master by Research, Full Presentation (In Person)

Abstract

Science and technology play a key role in our 21st century global civilization. The general public frequently participates in decision-making with science-related concerns in a personal and community setting. Yet scientific literacy among the general population worldwide is below a satisfactory level. Secondary schools can, and should, play a major role in developing scientifically literate future citizens. However, there has been little or no research on how effective the secondary education system has been in achieving this goal by the time a student has completed their secondary years of schooling, usually around the age of 18. There is little or no quantitative data regarding scientific literacy among senior secondary school students. This research attempts to address some of the substantial gaps in knowledge and proposes a suitable methodology to measure scientific literacy. This research used surveys to quantitatively measure civic scientific literacy among senior secondary school students in the Northern Territory. The methodology for this research can be replicated in secondary schools around the world to measure the level of scientific literacy among senior secondary school students.

Title: Female Genital Cutting (FGC) in Pakistan: Reasons, Implications & Evolution of this Tradition

Presenter

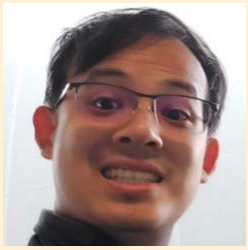
Huda Syyed – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

This research focused on the political invisibility of Female Genital Cutting (FGC) within the minority community of Dawoodi Bohras in Pakistan. It is rooted in cultural and religious notions to reinforce women's chastity and controlled sexuality. There is lack of political and governmental dialogue about it which explains the absence of national statistics or legal acknowledgement of FGC. This allows for girls to be cut at a very young age where they cannot provide consent therefore, compromising their bodily autonomy. The study aims to provide contextualised reasoning and possible implications of FGC in the community. It explores the absence of FGC within women's activism in Pakistan and investigates how and why it continues to exist in an Islamic society. In essence, it studies the effects of this practice on women and its grave absence from activist and humanitarian circles in Pakistani society. This study employed a qualitative methodology where Dawoodi Bohra women were interviewed and divided into categories of personal and collective experiences. It creates a correlation between FGC and the overall treatment of women in society through the lens of post-colonial feminism and political Islam. The qualitative data reflected a generational variation of views and attitudes towards FGC which are generally maintained through silence and use of cultural euphemisms. Furthermore, it investigated the contemporary use of medicalisation of FGC on young girls, unlike traditional cutting. This research is a significant step towards bridging the national data gap for social scientists and understanding its importance to the Dawoodi Bohra community.

Session 2: Sustainable and Healthy Behaviours

10:30 – 10:37am		Breeanna Spring – Faculty of Health	How to improve preterm labour aeromedical care for remote dwelling women: Mixed methods research project
10:37 – 10:52am		Raymond Ukaegbu – Faculty of Arts and Society	The Cultural Interpretation of Clothing: A Study of the Igbo Man of South-Eastern Nigeria.
10:52 – 11:07am		Lucy Hoang – Faculty of Arts and Society	How can Tertiary Education contribute to Sustainable Economic Development? A case Study from Technological Innovation in Seafood Industry
11:07 – 11:22am		Sarah Cassidy-Seyoum – Menzies School of Health Research	Exploring Plasmodium vivax malaria complete treatment interventions in Cambodia: the impact of trust
11:22 – 11:37am		Rachel Buckley – Menzies School of Health Research	Exploring young people's perspectives to design an emergency department model of care.
11:37 – 11:44am		Amy Bleakley – Menzies School of Health Research	Establishing models of RSV-pneumococcal co-infection to examine the effects of vitaminD on respiratory epithelial cell immune responses

11:44 – 11:59am		Yao Long Lew – Menzies School of Health Research	The epidemiology of multidrug-resistant tuberculosis in Sabah, Malaysia: Gains and losses from 2016 to 2021
11:59am – 12:14pm		Angelica Tan – Menzies School of Health Research	The role of neutrophil elastase in severe Plasmodium knowlesi malaria
12:14 – 12:29pm		Yuri Arvian – Faculty of Arts and Society	Social Acceptance of Large-scale Renewable Energy: Socio-Economic Review

Title: How to improve preterm labour aeromedical care for remote dwelling women: Mixed methods research project

Presenter

Breeanna Spring – Doctor of Philosophy, Pitch Presentation (Online)

Abstract

Preterm birth increases the risk of neonatal mortality, short and long-term morbidity. For rural, remote and very remote dwelling women, preterm labour requires an aeromedical retrieval to a tertiary hospital with specialist obstetric and neonatal services. Aeromedical care aims to achieve inutero retrieval so that preterm birth occurs inside specialist services optimising short and long-term neonatal outcomes. To date, limited high-quality evidence exists to support clinical care of women during aeromedical retrieval for preterm labour. Also, true preterm birth rates in the Northern Territory are unknown due to preterm labour interstate aeromedical transfers.

The aim of this research is to generate evidence-based recommendations for Australian clinical practice in the aeromedical management of preterm labour and birth. A second aim is to determine the actual preterm birth rate in Central Australia. This research will use a mixed method, triangulation, convergence design. Study 1, a scoping review, will synthesise international research and clinical guidelines regarding prehospital and aeromedical preterm labour care. Study 2, a data linkage study in Central Australia, will estimate the actual preterm birth rate for First Nations cohort. Study 3, using a qualitative descriptive design, will use semi-structured interviews to explore the experiences of aeromedical clinicians (focus groups) and women involved in preterm labour retrieval (one-to-one). Findings from the three studies will be integrated to make clinical practice recommendations in aeromedical preterm labour care, aiming to improve maternal and neonatal outcomes.

Title: The Cultural Interpretation of Clothing: A Study of the Igbo Man of South-Eastern Nigeria

Presenter

Raymond Ukaegbu – Doctor of Philosophy, Full Presentation (In Person)

Abstract

The Igbo man of South-Eastern Nigeria believes that every ceremony is an opportunity to wear one-ofa-kind clothing, such as Ishi-agu fabric, Akwaete fabric, okpu-agu (war-hats), nza (skirts) royal beads, and other types of Indigenous adornments. This study investigated how Igbo men in South-Eastern Nigeria communicate their indigenous culture and identity through the clothing they wear in recent times. The study focused specifically on how this communication occurs through the use of traditional and modern garments. The study's goal was to determine how the Igbo man dresses, the cultural significance of those patterns, and the factors that contribute to the cultural identity conveyed through the Igbo man's clothing choice. The Afrocentric framework served as the theoretical foundation for this research and provided the people of South-Eastern Nigeria with a platform from which they told their own stories from their own points of view and within their own contexts. Photo-elicitation was used as a research instrument in this study, which used post-colonial research methodologies. It also used direct observations as well as in-depth interviews to allow participants to tell their own stories through their own lenses. The data were analyzed using thematic analysis. The study deconstructed the significance and cultural communicative elements found in the clothing of SouthEastern Nigerian Igbo men, as well as how they use that clothing to convey their culture and identity.

Title: How can tertiary education contribute to sustainable economic development? A case study from technological innovation in seafood industry

Presenter

Lucy Hoang – Doctor of Philosophy, Full Presentation (In Person)

Abstract

While a substantial amount of technological change and innovation typically originate from the research and development activities of universities and the private sector, the role of tertiary education (TE), and research in regional economic development is still poorly understood and somewhat controversial in Vietnam. This study examines the relationship between TE and sustainable economic development assumed to operate through the main channels of technological innovation (aside from other channels such as human capital and governance of the State). Empirical work was undertaken around the seafood industry in the Mekong Delta. We employed qualitative and quantitative research methods to collect and analyse primary and secondary data. We interviewed 30 participants, including industry stakeholders, divided into eight groups (aquaculture farmers, lecturers/researchers, seafood enterprise managers, policy-makers, extension service officials, students, aquaculture collectives, and independent researchers).
The research findings show that TE has an insignificant contribution to the industry's development due to information asymmetry about what types of R&D should be done, perception gaps between stakeholders, and limitations characterising the transfer of knowledge and technology. The study recommends several solutions to accelerate TE's transformation for the sake of sustainable economic development of the Mekong Delta. The research findings are expected to benefit TE organisations, who can reconsider their various future roles and better align them with regional needs. Also, policy-makers might benefit if the study provides useful advice about additional legal tools, documents, and policies required to support the sector, thus facilitating the farmers and seafood enterprises to achieve increased business yield.

Title: Exploring Plasmodium vivax malaria complete treatment interventions in Cambodia: the impact of trust

Presenter

Sarah Cassidy-Seyoum – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Plasmodium vivax (P.v.) malaria is the second most common cause of malaria globally, with approximately 2.5 billion people at risk of *P.v.* infection and an estimated 14.3 million cases in 2017. *P.v.* has a dormant liver stage, termed hypnozoites, which allows for relapse if not treated appropriately. Complete treatment for *P.v.* is long and can cause haemolytic anaemia in individuals with an enzyme deficiency called Glucose-6Phosphate Dehydrogenase (G6PD). A combination of hesitancy to administer complete treatment to due risk, unavailability of point-of-care G6PD testing, and lack of adherence to long treatment courses has resulted in a significant proportion of the vivax cases resulting from relapses. Such challenges with access and effectiveness of treatment cause a heavy burden to individuals and health systems alike. Alternative interventions to increase the use and effectiveness of *P.v.* treatment are being assessed. In Cambodia, we are exploring the effectiveness and feasibility of novel interventions and the implementation of routine interventions aimed at increasing access to vivax treatment. These interventions include use of the SD Biosensor quantitative G6PD test recommended for treatment, village malaria worker follow-up, and a health facility-based day 3 visit for novel shorter and stronger treatment regimens. Aiming to inform vivax policies in Cambodia and offer insights to other Greater Mekong Subregion countries and vivax endemic countries facing similar challenges, this study uses a mixed methods approach (interviews, observation, surveillance data analysis). We will present results focused on the qualitative findings—narrowing in on how trust affects the implementation of these interventions.

Title: Exploring young people's perspectives to design an emergency department model of care

Presenter

Rachel Buckley – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Young people in the Northern Territory (NT) have substantial and largely unmet health and social needs compared to the general Australian youth population. With low rates of primary health care use, high rates of Emergency Department (ED) presentations and hospitalisations among NT youth, Royal Darwin Hospital (RDH) is a central point of healthcare delivery. Young people with complex health, environmental and social concerns present to the ED frequently and in crisis, with multidimensional needs spanning sectors including education, housing, child protection and mental health services. Unaddressed, these needs can lead to physical, mental, and spiritual health decline. Despite this, there is no model of care within the ED for young people, missing a significant opportunity for intervention. Whilst there is a growing body of evidence around the needs of young people accessing hospital services and their experience of care, there is less evidence about how systems can take a social determinants approach to improving outcomes for marginalised youth accessing acute care (particularly the ED). There is also limited documentation of how young people who experience multiple forms of disadvantage due to intersecting social inequalities (intersectionality) access and experience health and other social services. This qualitative research is undertaking focus groups exploring the perspectives of young people who are marginalised and their experiences of health and wellbeing, factors contributing to overcoming adversity, barriers to accessing help, and what they feel they need when presenting to any system in crisis. Findings will inform a model of care that will be implemented at in RDH ED.

Title: Establishing models of RSV-pneumococcal co-infection to examine the effects of vitaminD on respiratory epithelial cell immune responses

Presenter

Amy Bleakley – Doctor of Philosophy, Pitch Presentation (In Person)

Abstract

Vitamin D (vitD) has diverse immunomodulatory functions. Its role during acute respiratory infections (ARI) in infants remains unclear. Paediatric ARIs have complex aetiology, with Respiratory Syncytial Virus (RSV) and Streptococcus pneumoniae (pneumococcus) often co-detected in the lungs. Increasing evidence demonstrates that primary viral respiratory infections can lead to opportunistic secondary infections, by common bacterial pathogens, such as pneumococcus, which have been associated with more severe disease outcomes. VitD has the potential to modulate respiratory immune responses, although evidence for its effect in response to pneumococcus or RSV-pneumococcus co-infection is limited. The aim of this research is to characterise the effects of vitD on human respiratory epithelial cell responses to challenge with pneumococcus and RSV. Respiratory cell monolayers will be challenged with RSV, pneumococcus, or both, in the presence or absence of vitD (100nmol/L). Outcomes include adherence of pneumococcus to monolayers, measured by viable cell counts (CFU/mL); and cytokine/chemokine concentrations in culture supernatants, measured by ELISA. Bacterial adherence, and cytokine/chemokine will be compared between vitD groups. Results show that infection with RSV enhances the attachment of pneumococcus to respiratory cells. Furthermore, preliminary experiments suggest that pre-treatment of RSV-infected cells with vitD suppresses the enhanced adherence of pneumococcus. Optimisation of vitD pre-treatment and cytokine/chemokine quantification assays are in progress. This study is the first to explore if vitD beneficially modulates immune responses to pneumococcus and pneumococcus-RSV co-infections in the lung. It aims to better define the utility of vitD supplementation in clinical practice by examining the impact of vitD in the context of co-infections.

Title: The epidemiology of multidrug-resistant tuberculosis in Sabah, Malaysia: Gains and losses from 2016 to 2021

Presenter

Yao Long Lew – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Tuberculosis (TB) was the world's leading cause of death by a single infectious agent, usurped by Covid-19 in 2020 and 2021. While Malaysia is classified as "upper-moderate" TB incidence, the eastern-most state of Sabah reported 135 cases per 100,000 in 2019, qualifying as an endemic region. The burden of multidrug-resistant TB (MDR-TB) in Sabah is poorly described, we aim to characterise the epidemiology of MDR-TB to inform public health measures. The state TB registry database was reviewed. The impact of Covid-19 was evaluated by designating 2016-2019 as pre-Covid, and 2020-2021 as Covid years. Investigations include age, citizenship, and other indicators. Logistic regression of variables associated with poor MDR-TB treatment outcomes was done using R software.

Sabah reported an average of 5027 cases annually pre-Covid, declining by 10.3% to 4508 per year during Covid. Within study period, there were 97 MDR-TB cases, with median age of 38 years, and 33% being non-citizens (n=32). The proportion of MDR-TB in Sabah was 0.27% of TB cases pre-Covid, rising to 0.47% of TB cases reported during Covid. The proportion of treatment success decreased from 60% to 24% between pre-Covid and Covid periods (OR=3.45, $p<0.01$); the proportion of non-citizens who completed MDR-TB treatment decreased from 47.4% to 10.0%. Improving adherence to MDR-TB treatment and adequate management of side effects could reduce likelihood of poor outcomes. The proportion of MDR-TB in Malaysia and Sabah remains relatively low compared to endemic countries, but surveillance is needed to detect and treat new cases to prevent future outbreaks.

Title: The role of neutrophil elastase in severe Plasmodium knowlesi malaria

Presenter

Angelica Tan – Doctor of Philosophy, Full Presentation (In Person)

Abstract

Neutrophils are crucial in human innate immune response against external pathogens, including *Plasmodia* parasites responsible for malaria. Previous studies have shown that neutrophil activation products inhibit the growth of *P. falciparum* parasites, but also positively correlate with parasite biomass, mediating host organ damage, and potentially contributing to severe disease. This study investigated the role of neutrophil elastase (NE), a marker of neutrophil activation, in *P. knowlesi* malaria pathogenesis. Plasma samples were collected from 200 consenting knowlesi malaria patients from Sabah, Malaysia. Quantitative enzyme-linked immunosorbent assay (ELISA) revealed a correlation between plasma NE concentrations with parasite counts and other indicators of disease severity. Immunofluorescent microscopy was carried out to enumerate neutrophil extracellular traps as a secondary marker of neutrophil activation. The results showed that plasma NE concentrations were higher in severe malaria than in uncomplicated cases ($p<0.001$). Additionally, among the severe malaria cohort, patients who met WHO severity criteria for jaundice were observed to have higher plasma NE concentrations ($p<0.001$), suggesting a role in hepatocellular damage. These preliminary findings suggest that enhanced neutrophil activation plays a role in the pathogenesis of knowlesi malaria and may contribute to severe disease if left unregulated during routine treatment.

Title: Social Acceptance of Large-scale Renewable Energy: Socio-Economic Review

Presenter

Yuri Arvian – Master by Research, Full Presentation (In Person)

Abstract

Renewable energy is critical for the energy transition from fossil fuels to clean energy in response to global concerns about climate change. However, largescale renewable energy projects promoting green and clean energy sometimes face objections from the public and residents. Movements such as Not in My Backyard (NIMB) and other public objections have attracted research related to the development of renewable energy projects. Social Acceptance or public support is one of the key factors in implementing any energy project development for the project to run sustainably. Public support is a significant factor, especially if the energy project is proposed in a location that impacts residents, the environment, and aesthetics. This literature review explored trends and factors that trigger social acceptance of renewable energy projects in countries with different socioeconomic factors, such as what social accessibility factors influence in emerging or developing countries. The method of this review is referred to the conceptual framework called the triangle of social acceptance of renewable energy innovation formulated by Wüstenhagen, et al. (2007). The findings will contribute towards a better understanding of social acceptability indicators for policymakers, developers, and consultants resulting in the acceleration of implementation and running of renewable energy projects.

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