

DOCTORAL CITATIONS

Doctoral Citations for 17 December 2008
– Doctoral awards will be presented in the following stage order: C, K and D.

SCIENCE, ENGINEERING & TECHNOLOGY

Mohammad Al Kobaisi

Doctor of Philosophy

Dr Al Kobaisi investigated the synthesis and characterisation of a series of Molecularly Imprinted Polymers (MIPs). He employed surface area determinations and other physico-chemical measurements to comprehensively explore the factors influencing their porosity, pore-size distribution and selectivity. In the course of the investigation, an MIP was developed which, when coated as a thin film on a quartz crystal microbalance (QCM), could be used for the quantitative detection of the viticulture fungicide, iprodione, in grape juice and white wines.

Zynab Al-Hassany

Doctor of Philosophy

Dr Al-Hassany has made important contributions to our understanding of flammable polymer materials that are used in construction, appliances, furnishings and fittings. New fire retardant polymers have been designed to form a ceramic structure when exposed to fire, which forms a barrier insulating the material from fire. These ceramifying polymers provide a flame and smoke retaining barrier during fires and protect vital services and personal safety. The composition, function, mechanism and performance of ceramifying polymers have been established.

Halil Ali

Doctor of Philosophy

Dr Ali investigated techniques for improving the efficiency of web crawlers, an important component of search engines. The thesis examines the problem of "index inconsistency", which occurs when changes to web pages are not reflected in the local indexed copy of pages (which are used to perform web searches), resulting in irrelevant search results. The thesis examines the performance of existing techniques and proposes novel approaches that can be combined with existing techniques to improve efficiency while maintaining effectiveness.

Andrew David Charles Alves

Doctor of Philosophy

Dr Alves explored the ultimate resolution in ion beam lithography by modifying a polymer resistant material with individually counted ion tracks. Straight latent damage tracks were etched to create high aspect ratio structures in the order of 10 nanometre diameter and were imaged with atomic force and scanning electron microscopy. Precise location of an ion beam using a nanoscale mask and piezoelectrically driven scanning stage tested the practical limits of ion beam lithography in the single ion realm.

Helma Antony

Doctor of Philosophy

Dr Antony has established a new research tool for studying A β , the protein regarded as the cause of Alzheimer's disease. She found that, in yeast, A β cause the altered expression of a number of genes, providing a definitive picture of A β 's effects in a highly tractable model. Her demonstration of A β oligomerisation and aggregation aided the development of yeast-based screens for inhibitors of these functions. Through her contributions we understand more about Alzheimer's disease, which will aid in its prevention.

Arathi Arakala

Doctor of Philosophy

Dr Arakala investigated techniques to secure error-prone biometric templates when used in an authentication system. The research, conducted on minutiae-based fingerprint templates, determined the suitability of two specific cryptographic constructs for this purpose and presents a proof-of-concept of an authentication system where the template (and hence the individual's identity) is protected during comparison as well as storage. This research helps solve one of the principle issues hindering the widespread implementation of biometric systems, the security of the biometric template.

Sreenivasulu Reddy Basi Reddy

Doctor of Philosophy

Dr Reddy has made an important contribution towards the development of a rapid detection method for Neisseria meningitidis, the predominant causative agent of bacterial meningitis which is responsible for significant morbidity and mortality throughout the world. He identified and developed a novel peptide marker which proved to be highly specific for N. meningitidis. Using a specific antibody to this marker, he has developed a highly selective quartz crystal microbalance (QCM)-based immunosensor for the rapid and sensitive detection of N. meningitidis.

James Cameron Bennett

Doctor of Philosophy

Dr Bennett undertook mathematical analysis of the industrial film blowing process, by which thin polymer film (as used in plastic bags) is manufactured. He applied a mixture of innovative analytical and numerical techniques to obtain explicit approximations to the film profile and related variables, and then employed numerical methods to improve these approximations. His investigation has led to a deeper insight into the structure of the film blowing process, and points the way for further work in the area.

Stefan Charles Bird

Doctor of Philosophy

Dr Bird developed several new techniques to improve the efficiency and usefulness of speciated particle swarm optimisation algorithms. Two techniques are proposed to reduce the reliance on user-set parameters, allowing the algorithms to be effective even without problem-specific knowledge. He then proposes a novel method to profile optimisation algorithms, providing valuable insight into how they can be improved. This insight is used to develop a regression heuristic that vastly increases the performance of existing speciated optimisation algorithms.

Flame Astra Burgmann

Doctor of Philosophy

Dr Burgmann explored ways of synthesising multilayer coatings of Tungsten, Aluminium and Aluminium Oxide using novel plasma synthesis techniques. Advanced microscopy & microanalysis methods were employed to determine the relationship between the coating microstructure and physical properties. A major outcome was that the type of coating produced depended critically on the preparation conditions. The findings of this thesis will be used to help produce optimum coatings for industrial applications such as wear resistant coatings for use on high performance tools.

Joo Lee Julie Cham

Doctor of Philosophy

Dr Cham investigated the role of a specific brain region, known as the hypothalamic paraventricular nucleus (PVN), in the regulation of the cardiovascular responses to hyperthermia. She showed that the PVN is a key site in the brain that is crucial for the changes in blood flow that are important in helping us lose heat when our body temperature rises too high. Her in depth analysis has highlighted the potential pathways from the PVN that mediate these effects.

Doris Chibo

Doctor of Philosophy

Dr Chibo has made highly significant contributions in the fields of viral epidemiology and the molecular evolution of viruses of clinical and public health importance; specifically, viruses such as measles virus, human immunodeficiency virus, herpes simplex virus and human corona viruses. Of particular significance, her ground-breaking work in the field of measles virus epidemiology, conducted at the WHO Regional Measles Reference Laboratory at VIDRL, Melbourne, has been recognised internationally as central to the implementation of vaccination campaigns for the eradication of measles.

Andrew George Chrissy

Doctor of Philosophy

Dr Chrissy investigated the rheological characteristics of coarse suspensions that display shear thickening viscosity. The transport properties of concentrated suspensions are of economic interest to Australia's mineral industries, and the resultant complex viscosity behaviour requires detailed characterisation for design purposes. The thesis establishes measurement techniques most appropriate to these suspensions, overcoming the many artefacts present. The fundamental processes that cause this phenomenon are also examined and modelled as a function of the hydrodynamic interactions between flowing lamina of particles.

Tobias August Colson

Doctor of Philosophy

Dr Colson investigated fundamentals of the energy transfer process through materials. In electron microscopy it is important to understand how the electrons interact within the material and how they are scattered by the structure unique to a specific material. He highlighted two significant ideas: first, that the elastic and inelastic scattering events are coupled rather than separate as was previously believed; and second, that all successive higher order scattering events in multiple scattering scenarios are dependent and connected.

Hossein Daryaei

Doctor of Philosophy

Dr Daryaei examined the efficiency of high pressure processing as an emerging non-thermal technology for controlling the outgrowth of spoilage micro-organisms and glycolytic activity of starter bacteria in fresh cheeses. His findings highlight the optimum process conditions required for treatment of cheese with hydrostatic pressure to extend the refrigerated shelf-life without the need for preservatives. The novel information generated from this research has much technological significance and will particularly assist the Australian specialty cheese manufacturers to take advantage of export opportunities.

Saravanan Dayalan

Doctor of Philosophy

Dr Dayalan's investigation showed significant structural differences between proteins with and without disulfide bonds. This difference was shown in different structural levels such as dihedral angles and secondary structures. His investigation and its results would assist in improving protein secondary and tertiary structure prediction methods. These prediction methods attempt to predict the three-dimensional structure of proteins from its primary sequence. Protein structures are of interest as they are used in important problems such as drug discovery.

Arun Kumar Doddathimmaiah

Doctor of Philosophy

Dr Doddathimmaiah investigated the use of Unitised Regenerative Fuel Cells (URFCs) in solar hydrogen systems for remote area power supply. He derived an improved theoretical relationship between voltage and current for a URFC based on a Proton Exchange Membrane covering both electrolyser and fuel cell modes. He designed and constructed URFCs with different catalysts and measured their performance. The model promises to be a useful design tool since a close fit between experimental and theoretical curves was obtained.

Sanchitha Nirodha Fernando

Doctor of Philosophy

Dr Fernando investigated how the deflection sensitivity of microcantilever sensors can be increased, and how their minute deflections can be measured using a simple optical technique. By modelling the dynamics of microcantilevers, he identified a profile for cantilever sensors that optimises their sensitivity. He also proposes a novel arrangement for an array of microcantilevers that enables their deflections to be easily measured. This thesis presents the basis for developing microcantilever-based sensors for the rapid and inexpensive examination of bio-chemical agents.

Jun Jie Foo

Doctor of Philosophy

Dr Foo examined the problem of detection of near-duplicates in collections of images. The thesis introduces methods for dramatically improving the efficiency of the most accurate of the existing image matching techniques, shows how matches to an image can be rapidly found with a special-purpose index, and explores ways of identifying all the sets of near-duplicates in image collections. The research contributed to the field of image processing, and has greatly improved the feasibility of image search.

Keith MacKenzie Frampton

Doctor of Philosophy

Dr Frampton investigated important capabilities of a key role in the design and delivery of major IT systems. His research showed two non-technical capabilities, problem solving behaviour and long term thinking, were critical to success within the role of IT Architect. The findings provide guidance for industry in selecting and developing people for this critical role. He also investigated the teaching of these capabilities at university, and his findings inform curriculum design and course delivery for education of IT Architects.

Nirdosha Indrakumari Gamage Uwaragala Jathungeye

Doctor of Philosophy

Dr Uwaragala Jathungeye developed an innovative methodology to produce particleboard using 100% hard wood saw mill residue. Currently, 20% of logs used to produce sawn hardwood are disposed of by burning or as fertiliser. Consequently the new product is a significant contribution towards sustainability of the Australian Timber Industry and the environment by reducing logging for custom flaked softwood chips. In developing the method, innovative concepts of experimental design have been used to optimise mechanical and physical properties of particleboard.

Emily Gan Teck Fong

Doctor of Philosophy

Dr Gan has studied virulence characteristics of *Salmonella enterica* serovar II Sofia, an organism commonly isolated from chicken produce in Australia. She has shown that S. II Sofia is not pathogenic because it lacks specific genes associated with virulence. The absence of these genes reduces the ability of S. II Sofia to colonise and infect people. Consequently, S. II Sofia should not be considered as a source of human food poisoning.

Steven Garcia

Doctor of Philosophy

Dr Garcia investigated approaches to improving the efficiency of Internet search engines through the use of past search engine queries. He showed that the results presented by web search engines to millions of users are usually drawn from a small subset of possible documents. Based on the demonstrated bias, he proposed and tested search algorithms that favour such documents. The resulting search engine was significantly faster than existing approaches, and used less computational resources.

Gerard Patrick Healey

Doctor of Philosophy

Dr Healey examined the recent history of wind power in Australia to draw lessons about how the introduction of sustainable technologies can be achieved more effectively. He drew on the theory of Strategic Niche Management, which has been applied retrospectively to other related case studies, and identified a number of weaknesses in this approach, particularly in its potential as a guide to action. He recommended improvements to the theory based on his findings in the case study.

Paul Hubbard

Doctor of Philosophy

Dr Hubbard investigated active screen plasma nitriding, a novel technique used to improve the surface properties of components and products in many areas including aerospace, automotive and biomedical industries. This was the first thorough investigation of this technique on a commercial scale. A major outcome was the identification of key experimental parameters required for the technique to be successfully performed on a range of tools and components. The major findings have already been employed by local industry to optimise this process.

Antony William Iorio

Doctor of Philosophy

Dr Iorio examined the behaviour of evolutionary multi-objective optimisation algorithms on problems with parameter interactions. The thesis describes novel test problems for evaluating the performance of such algorithms, introduces techniques that perform well on problems with parameter-interactions, and provides an examination of the performance and behaviour of these techniques on a variety of truss design problems. The research also introduced a new evolutionary approach that scales well to very large numbers of interacting parameters, while out-performing other approaches.

Sasikaran Kandasamy

Doctor of Philosophy

Dr Kandasamy investigated novel Silicon Carbide based field effect devices (Schottky and transistor structures) with gas sensitive layers for monitoring hydrogen and propene gases at high temperatures. In his study he both analysed and established the gas interaction mechanism of these novel sensors, contributing new physical insights to knowledge in the field of gas sensors.

Sarvnaz Karimi

Doctor of Philosophy

Dr Karimi investigated techniques for machine transliteration - the process of transforming a word from a source to a target language while preserving pronunciation - of proper names between English and Persian. Her new approaches, which take the linguistic properties of these languages into account, achieved significant improvements in correctness. She also developed novel algorithms for word alignment and system combination, and identified new standards for the robust comparison of machine transliteration systems. Her findings have significantly advanced the field.

Joanne Kelly

Doctor of Philosophy

Dr Kelly's research explored the development of profitability models within financial lending portfolios. Using time to event techniques, the models developed provide a far more accurate prediction of loan lifetimes than traditional models. When incorporated with pricing models, they provide more accurate profit forecasts over the lifetime of the loan enabling the decline of potentially unprofitable lending, or the adjustment of interest rates, length of term or loan amount, to ensure the decision to approve lending is financially viable.

Roya Khalil

Doctor of Philosophy

Dr Khalil has made important contributions to our understanding of uses for rice hull ash, which is a high volume waste product from the rice industry. She used rice hull ash as a reinforcing filler in polypropylene, a commodity polymer. She characterised the rice hull ash then applied surface treatments to improve the properties of composites made from the filler and polymer. Her in depth analysis of surface chemistry identified the causes of the limited improvement in properties.

Joseph Khreish

Doctor of Philosophy

Dr Khreish investigated the interoperability issues of 'Vertical Take-Off Unmanned Aerial Vehicles' (VTUAV) from a holistic perspective. It addressed the issues governing network centric operations, and system architecture hierarchy of mission payload and sub-systems of an interoperable VTUAV. A novel VTUAV conceptual design methodology was developed as a case study. The research provides the avenue to achieve optimal interoperable VTUAV conceptual design - critical for integration of systems for network centric operations.

Gorgi Kostovski

Doctor of Philosophy

Dr Kostovski has made important contributions in the field of low-cost nanofabrication techniques. In the midst of working with conventional planar waveguide structures, his investigations uncovered an impressive capacity for 3-dimensional nanofabrication in a widely used, decades old, 2-dimensional microfabrication technique. He then went on to demonstrate that the tips of optical fibres are suited as a new platform for nanofabrication, one that can optically-interrogate itself, whereupon biological nanostructures were replicated to demonstrate an ultra-sensitive surface-enhanced Raman scattering sensor.

Lee Horng Jye*Doctor of Philosophy*

Dr Lee has completed a systematic comparative study of the starches from pulse grains. Globally these grains are staple foods and she has made an important contribution to our understanding of the potential utilisation of the starches as food ingredients. The research supports a major Australian export industry and has involved thorough characterisation of the starches. In addition, their unique properties have been demonstrated along with a range of food processing applications, providing foods which are both appealing and nutritious.

Anthony Raymond Lingham*Doctor of Philosophy*

Dr Lingham has made a significant contribution towards the economical chemical synthesis of salvinorin A, a natural product in the leaves of the hallucinogenic Mexican sage *Salvia divinorum* found to be a potent opioid receptor agonist, which is also the most active naturally occurring hallucinogen. The convergent synthesis of the tricyclic salvinorin permits the stereoselective assembly of the ketone and the lactone rings. In future, the combination of these fragments will complete the synthesis.

Khokan Kanti Majumder*Doctor of Philosophy*

Dr Majumder studied the rheology and film extrusion of polyethylene. He established a rheological constitutive equation and developed a set of governing equations for modelling the blown film process. He also carried out simulation, model prediction and experimental verification of the blow film process. The study made a significant contribution to polymer processing.

Glenn Ian Matthews*Doctor of Philosophy*

Dr Matthews investigated and proposed several novel advanced numerical modelling techniques for the analysis of Flexural Plate Wave devices. The studied structures can be applied to sense a wide range of analytes, ranging from biological species to gaseous compounds in the part-per-million concentration range. His work has allowed a more thorough understanding of acoustic wave propagation in multilayered micron size structures and provided an invaluable simulation technique for the design and evaluation of such devices.

Thu Hoa Thi McCann*Doctor of Philosophy*

Dr McCann investigated the ways in which lipids and proteins interact during the processing of wheat gluten. A novel approach was applied using acetic acid for fractionation of the proteins. From the results she has identified specific associations, representing a major advance in our understanding of a complex system. This piece of research supports a major Australian export industry and enhances the potential utilisation of a value added product having unique properties as a food ingredient.

Belinda McKenzie*Doctor of Philosophy*

Dr McKenzie examined the feasibility of using chloroplast genetic engineering to express cellulase genes within agricultural residues in an effort to create a non-food-based, alternative substrate for the production of fuel ethanol. She successfully expressed Endoglucanase 1 from *Acidothermus cellulolyticus* in the chloroplasts of *Nicotiana tabacum* and also genetically engineered both the chloroplast and nuclear genomes within a single plant to create the world's dual-transgenic plants.

Nedaossadat Mirzadeh*Doctor of Philosophy*

Dr Mirzadeh explored the chemistry of gold at molecular level. Gold is becoming increasingly useful in medicine and other industrial applications. She synthesised and explored the reactivity of dinuclear cyclometallated gold(I) complexes containing fluorinated and partially fluorinated ligands. The thesis sheds light on the effects the number and positioning of the fluorine substituents has on the reactivity of the gold complexes.

Krishna Mohanaragam*Doctor of Philosophy*

Dr Mohanaragam has contributed to our understanding of two-phase flows, encompassing all naturally and artificially occurring two phase flows known to human kind. His study has led to deeper understanding of these flows with special emphasis on their turbulence behaviour. His research has contributed to the better design of industrial equipment and their related processes in mineral and chemical processing plants as well as increasing the safety aspects of these processes.

Ty Bich Hoa Nguyen*Doctor of Philosophy*

Dr Nguyen investigates Solid Oxide Fuel Cells (SOFCs) using the implementation of solid electrolytes with higher ionic conductivity than zirconia and the development of thin electrolytes (~5microns). Films were evaluated in order to demonstrate their viability of relatively low temperature operations of 600°C. The approach taken in this work involved fabricating dense and thin gadolinia doped ceria oxide electrolyte using RF magnetron sputtering for the first time. The study has importance in the development of the next generation of SOFCs.

Luke James Norbury*Doctor of Philosophy*

Dr Norbury made significant progress in characterising a set of proteases that are used by the liver fluke parasite to infect their hosts. These are primarily ruminants, but include humans, particularly in developing countries. He discovered several new proteases, made recombinant versions of selected proteins, and analysed their enzymatic activity and evolutionary relationships. This work has considerably advanced this field, and may lead to targeted therapy that is able to effectively treat infected animals.

Abdusalam F Ahmad Nwesi*Doctor of Philosophy*

Dr Nwesi investigated techniques that enhance searching Arabic text. His approaches improved Arabic stemming using morphological rules, determined the effects of noisy and large text collections on retrieval, and introduced algorithms to identify the frequent occurrence of transliterated foreign words. He also developed novel techniques to unify variants of the same foreign word in Arabic text. The thesis provides new insights into the performance of Arabic information retrieval systems.

Muthukumaraswamy Pannirselvam*Doctor of Philosophy*

Dr Pannirselvam investigated a new method of producing nanocomposites using polypropylene and clay which is a layered silicate material. He used a variety of intercalants to examine their influence on the interfacial adhesion between the polymer and the clay. Poly (ethylene glycol) monolaurate was found to be the best intercalant. The nanocomposites, thus produced had improved mechanical strength, thermal resistance and gas barrier properties compared to the polymer alone.

Tatdao Paseephol*Doctor of Philosophy*

Dr Paseephol developed technological processes for the hydrothermal extraction of inulin from Jerusalem artichoke tubers and isomerisations of lactulose from milk concentration permeate; both prebiotic compounds. Her project elucidated the function of these prebiotics in supporting the growth and survival of probiotic cultures, and the role of extracted inulin to improve the rheological properties of fat-free yoghurt. The findings of this research are applicable to the functional food industry where fat-free probiotic dairy products are in demand by the consumers.

Thamara Mangalika Peduru Hewa*Doctor of Philosophy*

Dr Peduru Hewa has made important contributions to the detection of influenza viruses in clinical specimens, using the Quartz crystal microbalance (QCM). Rapid, sensitive tests allow the early institution of antiviral therapy and to provide an indication of the beginning of new influenza epidemics and pandemics. In the thesis the QCM and a modification involving the use of gold nanoparticles were shown to allow the detection of influenza viruses from nasal washes at rates at least as sensitive and specific as existing tests involving the use of cell culture.

Nimalsiri Pinnawala Ralalage*Doctor of Philosophy*

Dr Pinnawala Ralalage studied the algebraic foundations of coding theory. He developed a variety of new methods to construct new as well as known codes used in reliable communications. Studying the properties of a very useful mapping, called the trace map, over Galois rings and Galois fields, enabled him to construct these codes. In addition he was able to use these properties to construct mutually unbiased bases which play an important role in quantum encoding and quantum information theory.

David Alexander Poutakidis*Doctor of Philosophy*

Dr Poutakidis has developed a framework and prototype for the important task of debugging of complex software systems that use intelligent agent technology. This framework is based on monitoring of program execution to ensure consistency with respect to design models. The prototype system has been evaluated in a realistic setting and shown to provide substantial benefit for both novice and experienced programmers in identifying program errors.

Sathish Rajasekhar*Doctor of Philosophy*

Dr Rajasekhar has examined peer-to-peer network systems for information sharing anywhere anytime. The thesis introduces extended super-peer based architecture for file transfer and proposes static and dynamic routing schemes to maximise the available bandwidth between peers and super-peers. He also examines data replication techniques to minimise the load between super-peers since the data distribution is not uniform. The research endeavours to improve the performance, content availability, reliability and overall system stability of a peer-to-peer system.

Scott Raymond*Doctor of Philosophy*

Dr Raymond investigated the toxicity of pulse-exposed insecticides and their mixtures to larval rainbowfish and *Daphnia*. He demonstrated deleterious effects of single, binary and ternary insecticide exposure on survival and behaviour. His research provides new insight into the effects of pulse-exposed binary and ternary insecticide mixture toxicity. His thesis is a major contribution to pollution management in Australian freshwater environments.

Murali Mohan Reddy

Doctor of Philosophy

Dr Reddy investigated the ways of improving the biodegradation of polymer films used in flexible packaging applications. His research revealed that the addition of a pro-oxidant helps in the breakup of the polyethylene film into smaller fragments. He also uncovered that addition of nanoclay to polyethylene film along with the pro-oxidant helps in the easy assimilation of degraded film fragments by the microorganism *Pseudomonas aeruginosa*, which is commonly found in soils.

Peter Aziz Rizkalla

Doctor of Philosophy

Dr Rizkalla investigated the hydro erosion process applied to passenger vehicle diesel injectors during their manufacturing stage. He developed a new abrasion model using computational and experimental methods, and implemented this into a commercially available computer program. The model takes into account the change in geometry and predicts the quantity and location of wear. The research contributes to our understanding of the sensitivity of influencing parameters and aids in the rapid design and optimisation of hydraulic systems susceptible to erosive wear.

Abu Zafar Md. Sadek

Doctor of Philosophy

Dr Sadek has developed layered surface acoustic wave (SAW) based gas sensors. Such sensors have remarkable applications for health and safety, defence, industrial applications and environmental monitoring. He, for the first time, implemented mixtures of conductive polymers and metal oxides as the sensitive layer for hydrogen and hydrocarbon sensing. In addition, he used nanostructured materials which enhanced the quality of layered SAW sensors. The developed devices have real potential for commercialisation.

Indu Singh

Doctor of Philosophy

Dr Singh's studies for this thesis determined the effectiveness of antioxidants in attenuating selected risk factors that are associated with cardiovascular disease (i.e. platelet activity, blood lipids and markers of cellular inflammation). Several antioxidants were studied, including olive leaf extract, cocoa and vitamin E, using both in vitro and in vivo human experimental models. Collectively, the findings demonstrated that antioxidants can reduce effects of oxidative stress and thus potentially reduce risk factors for cardiovascular disease.

Robyn Nicole Smith

Doctor of Philosophy

Dr Smith has made significant contributions to the understanding of the environmental etiology of acne vulgaris. Her work describes the first modern randomised controlled trial in over 40 years to evaluate the role of diet in acne development. This work has provided new and critical insight into the understanding that glycemic and insulinemic responses to food can promote hormonal response which influences underlying causes of acne.

Piya Techateerawat

Doctor of Philosophy

Dr Techateerawat researched new security methods for sensor networks. Sensor networks are a new type of communication network based on very simple, self-sufficient nodes. They are to support monitoring in areas without existing infrastructure. This thesis proposes two new mechanisms to provide security for sensor networks: a method of key exchange, for better authentication of nodes, and a method of intrusion detection to detect intruders in the network.

Takehiro Tomita

Doctor of Philosophy

Dr Tomita investigated the mechanisms of transmission and disease production by *Streptococcus uberis*; an important cause of mastitis in dairy cattle. His thesis suggested an improved scheme for identification of *Streptococcus uberis* from the milk of infected cows, used a molecular typing method to separate disease-causing strains of *Streptococcus uberis* from harmless commensals, and identified new gene sequences that appear to contribute the virulence of this pathogen.

Dinesh Kumar Venkatachalam

Doctor of Philosophy

Dr Venkatachalam has investigated an accidental discovery of an unusual self-assembly of gold nanoparticles on silicon substrates by a well planned and careful experimentation followed by thoughtful modelling and analysis. His research has opened up new thoughts to develop novel techniques to pattern semiconductor surfaces over large length scales that will revolutionise the nanofabrication industry. The knowledge obtained from his study can be employed to explore similar metal-semiconductor systems to facilitate direct bottom-up self-assembly of nanomaterials.

Timo Volkmer

Doctor of Philosophy

Dr Volkmer explored video segmentation and analysis, and developed improved algorithms for segmenting video footage into smaller semantic sections known as shots, effectively modelling user classification judgements on the content of video short, and using automatically recognised speech for improved video retrieval. His work has enabled better understanding of video content and a more holistic approach to multimedia retrieval.

Bin Wang

Doctor of Philosophy

Dr Wang has made a substantial contribution to the sliding mode control systems – a special theory and technology for designing switching devices such as power converters. The thesis explores peculiar, irregular and chaotic behaviours in digitisation of sliding mode control systems. It has developed a new theory for the analysis of these behaviours, which can be used to understand and prevent ill-behaviours in digital controllers, resulting in improved control quality in industrial processes.

Nobuhiro Watanabe

Doctor of Philosophy

Dr Watanabe examined the contribution of neck muscle sensory inputs to autonomic regulation of cardiovascular function in humans. He employed a novel procedure (which alters muscle sensory inputs to the central nervous system in a systematic way without involvement of other sensory sources such as joint and skin) to examine the interaction between the neck and other controllers of cardiovascular function. This project provides a basis for considering the role of the neck in the aetiology of selected cardiovascular disorders.

Karen Valma Wealands

Doctor of Philosophy

Dr Wealands' research explored cartographic user interface design and alternative representation, presentation and interaction techniques towards improving the usefulness (utility and usability) of mobile Location-Based Services (mLBS). Her investigations produced practical models, guidelines and a comprehensive User-Centred Design methodology for designing mLBS applications to support the geospatial information needs of travellers. Highlighting the importance of use and user issues for the acceptance and success of mLBS, her research provides a valuable foundation for global mLBS research and development.

Kylie Suzanne White

Doctor of Philosophy

Dr White has identified a major mechanism of action for a broad spectrum microbicide. Her metabolic and genetic investigations have provided convincing evidence that 3,4-methylenedioxy-b-nitropropene selectivity inhibits protein tyrosine phosphatases, interfering with cell signalling in bacteria and yeast. This is a significant achievement as it identifies a novel target in microbial metabolism which can be selectively inhibited, providing a new basis for the development of novel antimicrobial agents to combat increasing resistance in microbial pathogens.

Wai Chee Yau

Doctor of Philosophy

Dr Yau investigated video analysis techniques for computer-based lip-reading. Her research examines a novel approach using motion templates to classify utterances from video data, without evaluating voice signals. Potential applications for lip-reading technologies include human computer interface for mobility-impaired users, defence applications, in-vehicle systems, and improvement of speech-based computer control in noisy environments.

Ying Zhao

Doctor of Philosophy

Dr Zhao has developed new automatic methods for identifying the likely authorship of documents. Her methods involve modelling of textual features of writing, such as word usage, to distinguish between different authors. She has shown that these methods can be applied to large corpora and can be used for tasks such as plagiarism detection and identification of the authorship of anonymous documents.

Wenyu Zhou

Doctor of Philosophy

Dr Zhou's study systematically investigated the current status of the Chinese medicine workforce in the state of Victoria, Australia, which is the first jurisdiction establishing a credible standard for safe and effective Chinese medicine practice. This study also took an educational perspective to determine the required capabilities of Chinese medicine professionals. Findings from this two-stage study provided critical data on workforce and educational requirements as bases for future educational development and further educational needs for existing practitioners.

Kara Anne Granger

Doctor of Psychology

Dr Granger investigated the profile of rape victims and rape myths by constructing the Rape Attitudinal Questionnaire (RAQ). Results indicated almost 40% of the sample had been raped, 8.60% were male, and victims came from diverse backgrounds. Few victims (14%) reported their rape to the police. The RAQ was a reliable and valid measure, with participants from particular backgrounds more likely to endorse certain rape myths. The findings highlight the need for targeted victim support and rape education campaigns.

Celeste Grant

Doctor of Psychology

Dr Grant has made a critical contribution to our understanding of young Australians' attitudes and behaviours in intimate relationships. The thesis investigated the prevalence of physical and psychological intimate partner abuse among young Australian high school, university, and TAFE students. Alarmingly high levels of abuse were reported, which led to the development, implementation, and evaluation of a dating violence prevention program. The thesis makes considerable advances to existing knowledge on the primary prevention of intimate partner abuse among young Australians.

Bridget Moller*Doctor of Psychology*

Dr Moller investigated the effectiveness of a community-based trial of cognitive behavioural therapy for individuals experiencing treatment-resistant positive psychotic symptoms. The results of the research indicated that following treatment, participants experienced significant lowering of pre-occupation, conviction, and distress associated with their delusions. Improvements were also observed in a range of social functioning and quality of life domains. The findings provide further support for the efficacy of cognitive-behavioural therapy for the treatment of psychotic illness and its sequelae.

Katherine Anne Neilson*Doctor of Psychology*

Dr Neilson investigated client outcomes of the psychology service for cancer patients at Peter McCallum Cancer Centre. Client outcomes were assessed by questionnaires, interviews and information from psychologists and hospital records. The findings evidenced the usefulness of the service, including improvement in client functioning. Results also identified factors that predicted client improvement and service usage. Overall, the results support the efficacy of the service and enhance our understanding of cancer patients' needs.

BUSINESS**Terence Owen Miles***Doctor of Business Administration*

Dr Miles explored the difficulties involved in effectively communicating new strategy within an organisational context. His research significantly advances understanding of the contextual factors that senior managers need to take into account when seeking middle management commitment to the implementation of new strategic directions: factors such as structure, organisational politics and organisational culture. He successfully articulated the webs of meaning that emerge from the management, and the mismanagement, of those contextual and mediating shapers of organisational sense-making.

Ahmad Abareshi*Doctor of Philosophy*

Dr Abareshi's research took a fresh look at one of the most fundamental issues in Information Systems, that of the search for alignment between organisational structure and information and communications technologies. In this case not only was the mix of technologies different from that in the original 1980s research but also, the subsequent emergence of new forms of organisation was taken into account. It was found that strategic alignment impacted significantly on new organisational forms.

Kevin John Burgess*Doctor of Philosophy*

Dr Burgess studied the role played by the social system in generating innovation in a supply chain stretching across three mature, capital industries. His investigation used a critical realist research framework to explore the social issues in a depth greater than was available through traditional methods. Despite massive information technology investments by all firms, the results showed that information flows critical to operating and improving the supply chain had to move across a web of deeply-embedded social networks.

Marie-Anne Cam*Doctor of Philosophy*

Dr Cam investigated the impact of terrorist attacks on equity markets. She employed traditional event study approaches to identify and measure stock market reactions to terrorist attacks in New York, and subsequent terrorist attacks in Madrid, London and Bali. The empirical results suggest that equity markets remain efficient in the wake of terrorist events. The thesis contributes to eliminating some uncertainty about the market's response to terrorist events, and identifies opportunities for reducing terrorist risk in stock markets.

Alan James Collier*Doctor of Philosophy*

Dr Collier investigated the effectiveness of technology transfer and research commercialisation by Australian universities. His analysis compared practices among Australian universities with those employed by leading commercialisation universities in the United States, Canada and New Zealand. He also examined how effectively Australian high technology small to medium enterprises take-up and use university research. His findings provide a comprehensive and original insight into factors that influence university research commercialisation, and how university research commercialisation can be improved.

Ling Deng*Doctor of Philosophy*

Dr Deng has conducted an in depth study of the leadership strategies adopted by expatriate managers who work with local staff in China. Based upon her findings, Dr Deng has constructed a comprehensive and pragmatic model of cross-cultural leadership effectiveness, which contributes to our homothetic knowledge, and to those organisations that provide training and development for leader-managers, prior to and during their offshore assignments. Her model reveals the conjunctive interplay between key elements of cultural intelligence, emotional intelligence, and transformational leadership.

Michael Andrew Gangemi*Doctor of Philosophy*

Dr Gangemi constructed input-output models to measure the economic impact of a farming innovation organisation (The Birchip Cropping Group) on the Victorian regional economy of Buloke Shire. The input-output modelling was of two forms; a simple naïve top-down model and a more sophisticated hybrid model. The results suggest that the construction of a hybrid model was advisable, as the naïve model produced over-estimates of economic effects. Nevertheless, even using the hybrid model, the Birchip Cropping Group was shown to have had a significant effect on the regional economy.

Afsaneh Hazeri Baghdad Abad*Doctor of Philosophy*

Dr Hazeri Baghdad Abad investigated the status of knowledge management within the Library and Information Science curriculum. Her innovative research highlighted the risk of complacency among LIS academics opening the door to competition from other disciplines. Knowledge management is both a threat and an opportunity to LIS education. Effective responses must occur at the broad curricular level rather than in the form of stand-alone knowledge management modules. Of necessity, they will entail cooperation with internal and external stakeholders, both practitioners and academics.

Robert Michael Inglis*Doctor of Philosophy*

Dr Inglis conducted two major case studies to investigate the interface between management accounting and market orientation in Australian industry. His concerns were how and why organisational managers deal with product-level decision making and the information required and used. His work is ground-breaking because of a dearth of empirical data. Theorists in management accounting and marketing orientation will benefit as his findings indicate a substantial theory/practice gap. He also provides some explanations for that gap and suggestions for its reduction.

Foula Zografina Kopanidis*Doctor of Philosophy*

Dr Kopanidis investigated the drivers of the choice behaviour of first year undergraduate students. These include the psychological constructs of personal values, motivation, selection criteria, demographic and socioeconomic factors. Through proposing and testing a conceptual model, her thesis determined the strength and significance of drivers facilitating the prediction of student types. The findings have significant implications for higher education in terms of designing marketing strategies, in appealing to and retaining the students most suited to particular academic programs and universities.

Tianshu Liu

Doctor of Philosophy

Dr Liu investigated the impact of Regional Trade Agreements on trade flows, foreign direct investment inflows and total factor productivity paying particular attention to Australia and China. Based on an extensive review of the current literature, she utilised econometric modelling to untangle some of the complexities of regional trade cooperation. Her thesis makes a significant contribution in investigating both Australia's and China's past experience in pursuing free trade within regional areas and highlights important policy implications.

Siddhi Pittayachawan

Doctor of Philosophy

Dr Pittayachawan's research aim is to address trust issues in B2C e-commerce. Findings from his research provide guidelines for e-vendors to foster consumer trust and purchase intention in online shopping as well as to add a new scholarly dimension in the topic to be pursued in future academic research. His contribution also enables both practitioners and academia to further understand how trust is developed and how consumers trust e-vendors and e-commerce websites in B2C e-commerce.

Marcus Powe

Doctor of Philosophy

Dr Powe investigated the measurement of innovation in large service organisations in Australia. The measurement of innovation appears to present many challenges for those used to managing tangible products. The results of measuring innovation programs over a six-year period have indicated repeatable outcomes and now provide leadership groups with a set of tools that can be adjusted to complement different organisational cultures. It can be argued that growth through creativity, innovation and enterprising behaviour is measurable, achievable and repeatable.

Rosa Elvira Rios

Doctor of Philosophy

Dr Rios investigated the applicability of the traditional model of brand equity to online firms by applying structural equation modelling (SEM). Her research spans both an aggregated and individual study of brand equity. This research is one of the first to identify online value drivers such as customer support service, web functionality and fulfilment and to assess their impact on sources of brand equity. The study offers several interesting answers to the questions posed in the study.

Maryam Sarrafzadeh

Doctor of Philosophy

Dr Sarrafzadeh investigated the implications of knowledge management (KM) for library and information (LIS) professions. The results have implications for LIS professions generally and for professionals working in the sector and for LIS educators. To engage in KM, LIS professionals need to extend their focus from one on information objects to one on people aspects; adopt a holistic view of their organisations and increase their levels of business knowledge. This can be potentially achieved through developments in education for LIS.

Xue Mei Tian

Doctor of Philosophy

Dr Tian investigated the current and potential impact of digitisation on book publishing in Australia. Her case-based research identified a range of new and hybrid business models that are of interest beyond the publishing domain. Publishing is experiencing major cost and competitive pressures, with digitisation a threat as well as a potential source of advantage. The key issues facing publishers, however, are likely to be resolved through business acumen rather than through the application of digital technology.

Jiaying Zhang

Doctor of Philosophy

Dr Zhang has investigated the key influential factors on community attitudes towards tourism and explored the initiation factors of resident-tourist interaction. The thesis provides an insight into the complexity of the antecedents of such attitudes and behaviour. Innovatively drawing on the well-established cognitive theories, his study has successfully established a theoretically driven model in the prediction of residents' interactive behaviour with tourists. His research outcomes significantly advance the field of psychological tourism studies.

DESIGN &

SOCIAL CONTEXT

Yoko Akama

Doctor of Philosophy

Dr Akama's research explored how human values and concerns are manifested and negotiated through the process of design. In doing so, the research has made an important contribution in addressing the communication designer's role in society and how they can design for, and with, other people. Various design interventions were explored to enrich the experience of dialogue and exchange amongst people engaged in design projects. This exploration carved a path, or a Tao, of a human-centred design practice in communication design.

Emma Jane Barrow

Doctor of Philosophy

Dr Barrow investigated visual practices as cultural translations at the intersection of indigenous and non-indigenous perspectives. She worked with Larrakia artists indigenous to the Darwin area, Northern Territory, who guided her research into changing concepts of land, identity, continuity and discontinuity. Utilising art-based methodology, she produced site-specific paintings, land art, film and collaborative performances with the Larrakia artists. Her research questioned and disrupted assumptions of knowing derived from dominant ideologies, and revealed the effectiveness of visual arts as relational practice for cultural exchange.

Uschi Bay

Doctor of Philosophy

Dr Bay explored the strengths and weaknesses of modern social work theory and practice designed to enhance the power of socially disadvantaged people. Dr Bay demonstrated the value of political theory (represented, for example by Hannah Arendt and Michel Foucault) in enabling social work practitioners to rethink the nature of power. Case studies of interventions like the anti-poverty project run by the Brotherhood of St Laurence pointed to the potential of good practice to make a difference to socially disadvantaged people.

Denise Kaye Bell

Doctor of Philosophy

Dr Bell's project-based thesis explored the process of change management across two networked TAFE Institutes trying to develop and implement a culture of planning oriented to quality improvement. Using change management principles, organisational learning and development processes and practices, the researcher worked with TAFE staff to trial various organisational strategies. The thesis describes the numerous successes and failures, highlights the importance of building trust and genuine consultative processes in any organisational change process.

Sarah Kirstie Benton

Doctor of Philosophy

Dr Benton explored the relationship between the architectural designer and the use that he or she makes of digital media as part of the design process. Utilising a participant-observer view embedded within a respected mid-sized Australian architectural firm, her research acknowledges that the computer has a legitimate place in designing but equally should not necessarily take centre stage. The insights contribute to our understanding of the evolutions that can occur in creative practice.

Garry John Bish*Doctor of Philosophy*

Dr Bish's research involved development of a new series of vessel based ceramics that explored the enigma of pictorial visual illusion and its representation on three dimensional ceramic form. His project explored how illusory architectural perspectives on the picture plane interact with the physicality of three dimensional ceramic form and the influence of this synergy on visual interpretation. The project was informed through an investigation of Eastern and Western approaches to the conceptualisation of pictorial space.

Andrew Robert Catford*Doctor of Philosophy*

Dr Catford explored the effectiveness of village-based planning and development approaches within the Vietnamese context, particularly in relation to notions of democracy, civil society, decentralisation and community participation. He explored the effectiveness of such approaches in four case study programs of a non-government organisation which was then triangulated against programs of other agencies and a literature review. A set of key elements that contribute to effective village based planning and development was created, as well as acknowledgement of the challenges.

Supaporn Chalapati*Doctor of Philosophy*

Dr Chalapati's research explored and analysed the internationalisation of higher education in Thailand. Using case studies of English-medium postgraduate business degree programs, the thesis found local alternatives to foreign business degrees were underdeveloped. Rather than import foreign, largely American, business education models and texts, the thesis called upon Thai universities to design business curricula with a distinctive Thai and regional focus to better prepare Thai graduates for careers in international business in a globalising world.

Anne Cloonan*Doctor of Philosophy*

Dr Cloonan explored the professional learning of literacy educators within the context of an increasingly digitised networked environment. The case study involved interventions in teacher learning as a means for influencing print based literacy pedagogy to incorporate multimodality literacy practices. The study indicates that schemas emanating from the Net London Group's multiliteracies theory acted as stimuli for expanding teacher repertoires of multimodality pedagogies, thereby addressing disjunctures between digitised multimodal literacy and existing print based literacy pedagogical practices.

Susan Letitia Costello*Doctor of Philosophy*

Dr Costello has developed social work curriculum on the Thai Burma border for locally-trained health and community workers, through a critical exploration of the participatory action research methodology. The curriculum development critiques colonialist impositions of western social work in developing Asian countries. Her project explores the application of adult learning principles and critical pedagogy across ethnic, cultural, religious, international and linguistic barriers, aiming to create a culturally-sensitive exchange of learning and teaching.

John Stephen Donnelly*Doctor of Philosophy*

Dr Donnelly explored the impact of the Catholic Diocese of Aitape, Papua New Guinea, on the lives of the women living within that Diocese. He did this by seeking the views of women in relation to the Diocese, its functions and the opportunities it provided them to become more empowered in their daily lives. By giving voice to women in remote areas, the close relationship between Church, Church institutions and development in developing countries is highlighted.

Pia Hope Ednie-Brown*Doctor of Philosophy*

Dr Ednie-Brown explored the idea of emergence as a contemporary model of design practice. She examined its relevance through examples of digital architecture, where emergence is commonly discussed, showing how they draw attention to affects and highlight aesthetic modes of know-how. Via her own practices and projects, she shows how attention to affects that arise through design activity can offer new insight into connections between design processes, products and the social practices of everyday life.

Stefan Greuter*Doctor of Philosophy*

Dr Greuter explored the importance of visual variety in game worlds in relation to the illusion of presence experienced by a player. Utilising a design based methodology he developed several approaches to computer generate objects and virtual spaces in a visual variety in real-time. The research contributed some weight to the argument, that extremely large game worlds can be created without the need to repeat or meticulously construct every single object, to fill the world with content.

Treahna Mary Hamm*Doctor of Philosophy*

Dr Hamm creatively explored how stories reflect both individual narratives as well as the total community experience. She examined how artwork can reveal these connections and strengthen the links between story, language and country. The construction and connectivity of individual and community identities is illuminated through three major projects as well as through a body of her artwork including weaving, possum skin cloak making, sculpture, glass, printing, painting, public art, breast plates and digital story-telling.

Jan Marion Hamon*Doctor of Philosophy*

Dr Hamon considered the socio-economic contribution of 'home' dressmakers in New Zealand during the period from the 1940s to the 1980s. The research explored through the experiences of a representative group of practitioners, the social and economic environment in which the dressmakers worked; their rationale for establishing their businesses; the skills and knowledge that they acquired and utilised; the extent of their production; and the manufacturing and retail opportunities that existed in competition to them.

Barry Laurence Hudson (posthumous)*Doctor of Philosophy*

Dr Hudson utilised the knowledge he had gained from a lifetime of experience as an industrial designer to richly investigate and bring to fruition his quest to design an internal combustion engine employing only pure rotary motion. His patented five-cycle engine is small, light and efficient. His work exemplifies the very idea of producing new knowledge as a designer through designing and making processes. The embodied design knowledge is revealed in the designs and physical outcomes of his research inquiry.

Anthony Patrick Pierce Jaques*Doctor of Philosophy*

Dr Jaques examined the discipline of Issue Management through a thoughtful review and reflection of his publications alongside those of scholars and practitioners in the business and communication fields. In tracing the evolution of the developing discipline, he clarifies key concepts, identifies new models, and highlights the potential of issue management beyond traditional corporate application and into the realm of activist, not-for-profit and community organisations. His work comprises a significant contribution to the scholarship and practice of issue management.

Gareth Leslie Knapman*Doctor of Philosophy*

Dr Knapman examined the emergence of the nation in the British Empire during the nineteenth century. A key aspect of this, the thesis argues, was concern over the dialectic of civilization and order as it related to the barbarian and the savage. While the complex grammar of the British Empire divided the world into spheres of civilization, barbarism and savagery, the rhetoric and practice of 'civilizing' the natives paradoxically allowed for the naturalisation of nations at the fringe of empire.

Sanné Mestrom*Doctor of Philosophy*

Dr Mestrom's doctoral project entitled *The Power of Place and the Politics of Perception Multiple Viewpoints Explored through Painting and Installation Practice* enabled the readings and experience of place and the politics of perception to be addressed through practice based research in the visual arts. Her exegesis contextualised her research through an analysis of the Situationist strategies of the *dérive* and intervention, realist painting and the use of non-perspectival pictorial space in Medieval and Chinese painting.

Bruce Mowson*Doctor of Philosophy*

Dr Mowson examined philosophical ideas of immanence and converged them with advanced experimentation in audio-visual installation. Working from the disciplinary field of the sonic arts, he endeavoured to elicit, in a performative rather than illustrative manner, concepts of time, embodiment, presence in relation to immanence. The research admirably contributes to knowledge in the field, especially in relation to the subtle inflections of "being in time and space".

Stephen Neille*Doctor of Philosophy*

Dr Neille explored architectural spatial experience and its relationship to the constructed and degrading landscape. His research critically reflects on the connections and consequences of human imagination, it reveals that complex abstract thought processes, developed through being in the world, can be modelled. The research embodied this evidence in a new physical model and demonstrated that architectural spatial experience, rather than operating as a sequence of facts collected together, acts on the imagination as a self-made constellation.

Paul William Nicholas*Doctor of Philosophy*

Dr Nicholas examined the way 3D digital methods and tools can enable architectural and engineering designers to collaborate in new ways across domain boundaries. Working on live building projects within the engineering consultancy Arup, he developed and applied new digital methods to address issues fundamental to design interdependency: differing perceptions, shared and creative problem solving, communication and trust. The findings contribute to our understanding of how digital tools can better integrate into design processes and the work of multi-disciplinary teams.

Sandra Nolte

Doctor of Philosophy

Dr Nolte examined the validity of the traditional pre-test – post-test and retrospective pre-test methods to assess outcomes of chronic disease self-management education interventions. Her research uncovered that the cognitive task that respondents are asked to perform when providing questionnaire data significantly influenced their self-reported outcomes, whereas neither confounding through response shift nor social desirability bias was found. The research is an important contribution to understanding the psychometric performance of approaches to the measurement of change in health education programs by self-report.

John Keith Waller

Doctor of Philosophy

Dr Waller's research investigated interactive, artificial life-inspired computer animation through a creative research project with the aims of developing a work of personal artistic expression in order to elicit an interactive engagement. Through the use of a computer mouse the animation could be tickled, stroked and/or punched, which caused it to make appropriate sounds. The combination of image and sound during the interaction evoked emotive responses from the viewer in ways not anticipated at the start of the research.

Susan Mary Wright

Doctor of Philosophy

Dr Wright made an important contribution to our understanding of teachers' perceptions of difference. Her hermeneutical phenomenological research investigated the lived experience of difference with thirteen teachers in Melbourne, Australia and revealed deeply imbedded cultural constructs of identity. In a time of increased transnational movements of people, this research highlighted the complex challenges teachers encounter in their need to accommodate, share and transform their understandings of being with difference.

CONFERRED

2008 Doctoral Citations—Conferred since Graduation 2007.

BUSINESS

Jelita Asian

Doctor of Philosophy

Dr Asian explored information retrieval of documents in the Indonesian language; her work improved algorithms that stem words to their morphological roots, automatically identify the language of a document for language-dependent processing, and detect equivalent documents in multiple languages. Together, her results provide a substantial advance in understanding techniques that can be applied for effective Indonesian text retrieval.

Huei-Chun Chang

Doctor of Philosophy

Dr Chang examined environmental management accounting (EMA) implementation within five universities located either in Australia or Taiwan. EMA is an area that had previously been subject to limited international research, but nevertheless is a very important area of research from both a business perspective, as well as from an academic perspective. This study makes a significant, and systematic, contribution to the understanding of EMA practices in the university sector, and to the development of theoretical foundations for EMA.

Naruemon Choochinprakarn

Doctor of Philosophy

Dr Choochinprakarn examined the relationship of complementary products and services in the travel industry offered by the electronic business operators to customers' perceived value. The thesis also explored the effects of customers' perceived value of products and services offered by online travel agencies' purchasing behaviour. The results showed that the key influencing effects in creating customer value in the travel industry include product range, and the amount of both online and offline services offered.

Stacey Lynn Cowan

Doctor of Philosophy

Dr Cowan investigated voluntary environmental disclosures and their potential to counteract the usefulness of mandatory annual report disclosure requirements. The study found that while environmental regulation may be perceived as a legitimacy threat by Australian corporations, mandatory disclosure requirements were not considered equally threatening. The findings provide insight into the use of voluntary environmental disclosures and raise further questions as to whether existing mandatory environmental disclosure regulation is able to produce its desired outcomes when coupled with voluntary corporate disclosures.

K.D. Dushantha Nimal Dissanayake

Doctor of Philosophy

Dr Dissanayake investigated 'reverse logistics and information management issues' in two Australian industries, the E-Business and Manufacturing industries, and made important contributions to our understanding of this topic. His research highlights the fact that reverse logistics is an important business process for the management of returned goods. It highlights that substantial monetary value can be gained from returned goods with processes such as resale, repair and recycle. To manage reverse logistics processes, an efficient information management system is essential.

Alison Mary Fincher

Doctor of Business Administration

Dr Fincher explored the many challenges facing leaders of Australian universities, given decreasing funding and increasing accountability. Her research significantly advances understanding of effective management in higher education by identifying eleven widespread dilemmas that confront university leadership, and by detailing the new set of professional competencies that effective leaders are developing. Her analysis employed dilemma resolution theory to illuminate the thought and actions that are making it possible for some university leaders to move forward in extremely difficult circumstances.

Ian Fraser

Doctor of Philosophy

Dr Fraser explored the process by which Chinese universities carry out strategy formation, using a stakeholder theory framework. Three approaches to strategy were identified: the President making decisions on strategy, a consultative approach with stakeholders and an approach that involved consultation with staff. The process varied across universities, depending on factors such as the relationships of the university President. The project has lessons that can be applied to joint ventures in education in China.

Hui-Chung Liang

Doctor of Philosophy

Dr Liang studied the impact of logistics service performance on tourism. This thesis used a mixed-method approach to address the contribution of logistics service performance to tourist satisfaction. The findings show that professional service quality can improve logistics service performance and thereby service value as perceived by customers. This research has demonstrated the significance of logistics service performance within the tourism industry. It builds a tourist loyalty model to improve service in tourism.

Errol Muir

Doctor of Philosophy

Dr Muir explored the application of personal construct psychology and the repertory grid to performance management in a technical consulting organisation. The research examines what is important for a manager in assessing work performance and how each manager's mental model for performance compares with his/her peers. A method of aggregating to identify a team mental model 'in use' was developed. The approach can be used to develop Frames of Reference for appraisal, improving consistency, effectiveness and fairness.

Peter Francis Sheldrake

Doctor of Philosophy

Dr Sheldrake's research was published in three books, *Inclusive Leadership*, *Ronin and Revolutionaries* and *The Ronin Age*. It explores the idea of the internal revolutionary, or Ronin. The books examine models of leadership and influence that have characterised organisational thinking over many years, and the challenges that Ronin pose for leadership and effective management. They also explore the extent to which the focus on innovative thinking is increased by the growing importance of knowledge as a key competitive issue.

Sally Skinner

Doctor of Philosophy

Dr Skinner explored the problem of racist disinformation on the World Wide Web and the balancing role of anti-racist sites. There has been relatively little research in Australia on racism on the Web. Facilitated by a critical realist methodology, the research revealed that while anti-racist websites take on diverse roles in tackling racism, few provide content to directly balance Web racist disinformation. Attempts to control the Web are problematic but balancing disinformation is not in itself an adequate solution.

Christopher James White*Doctor of Philosophy*

Dr White aimed to advance theoretical and practical knowledge of service quality, customer satisfaction and loyalty intentions. He achieved this by refining existing models or concepts, testing relationships between constructs that have not previously been examined and applying constructs that have been well understood in a specific academic domain in a service industry context.

Xibao Zhang*Doctor of Philosophy*

Dr Zhang studied culture emergence international cross-cultural management contexts in China. The result is a theory that explains cultural practices, which are different from what can be predicted from participants' national cultural values that emerge in these contexts. It is a framework that includes cognitive elements which are different in influencing behaviour in terms of scope and duration. It significantly advances the field of culture research by moving beyond the dominant view which sees culture as stable and immutable.

**DESIGN &
SOCIAL CONTEXT****Sharon Lee Andrews***Doctor of Philosophy*

Dr Andrews explored the relations of power and freedom in contemporary Australian universities. Using an expansive definition of power and freedom she has detailed the diverse ways in which academic activity is governed across a number of different institutional settings. The issue of academic freedom in Australian universities is both under-researched and under-theorised. In this regard, the study makes a strong contribution to the field of research into higher education in Australia.

Kalinda Ann Ashton*Doctor of Philosophy*

Dr Ashton's investigation of literary form and the representation of politics and history in Amanda Lohrey's novels *The Reading Group* and *The Morality of Gentlemen* have provided the intellectual impetus for her original work of fiction. Her novel uses its own stylistic innovations, such as multiple perspectives and the use of the second person point of view, to explore the tensions of class and gender in a disadvantaged Australian family traumatised by the death of a ten-year-old boy.

John Richard Barbour*Doctor of Philosophy*

Dr Barbour's doctoral research project *Interiority and Interior Space in Contemporary International and Australian Sculpture and Installation Art: a selective approach to the realisation of forms* explored the complex relations between artefacts, architectural site, and 'events' as installation. The project combined, in an original manner, the ideas and experience of 'interior architectural space' with those of 'interiority' – the subjective aspect of lived experience. The exegesis component focused upon Georges Bataille's and Gilles Deleuze's ideas of the 'formless' and 'becoming'.

Patrick Foong Chan*Doctor of Philosophy*

Dr Chan forwards a radical rethinking of political and creative subjectivities and spatialities in the context of postcolonial Singapore. Deploying the philosophical thought of Gilles Deleuze, Benedict de Spinoza and Antonio Negri, amongst others, Chan experiments with the creative potentialities inherent to the work of the theorist operating across the disciplines of design, cultural theory and philosophy. Chan argues that through the creative theory new ways to engage with Singapore city, its artworks and people can be framed.

Chen-Chih Feng*Doctor of Fine Art*

Dr Feng explored the role of portraiture in oil painting integrated with aspects of the traditions of Chinese brush painting. The research addresses the major indigenous race of Taiwan; the Atayal people. He examines the concept of Gaga, which is fundamental to the understanding of the Atayal people and their traditional culture. The research reveals that within a study that examines a particular culture that equally and paradoxically an experience and an expression of universal humanity is made manifest.

Matthias Haeusler*Doctor of Philosophy*

Dr Haeusler has developed an original dynamic digital/physical hybrid display together with novel new applications. His starting point was a review of digital display systems and technologies, from which he developed the theoretical foundation of a 3D light-point matrix. He proved his hypothesis by investigations and test pieces in terms of hardware and electronics to establish a prototype system and further tested this system in an architectural context. Visual experiments were the focus when applying media content and software.

Marina A Haikin*Doctor of Philosophy*

Dr Haikin's research focused on the design, evaluation, and refinement of a curriculum fostering the development of critical thinking strategies in young adults in the refugee camps along the Thailand-Burma border. She employed a constructivist qualitative paradigm, a case study approach and an action research process. She designed a culturally relevant, community focused social studies curriculum in three refugee camps and a framework for developing locally relevant curriculum for young adults in places of temporary asylum or other marginalised communities.

Lisa Marie Harris*Doctor of Philosophy*

Dr Harris used three case studies to explore tertiary students' thoughts and expectations about community in the online environment and to explore the relationship between the constructed online learning environment and the development of learning communities. She has provided new evidence of the benefit of community, or what she has termed Social Learning Support Networks, for students and argues that future eLearning environments should be shaped by five key principles designed to foster a sense of social connection between students.

Soonran Heo*Doctor of Philosophy*

Dr Heo studied an evaluative measure for arts organisations using content analysis of websites that affords a perspective on the current state of online and offline integrated arts management. The results of this study show that arts management in the virtual venue is the same, or at least similar to the real venue, and that websites allow arts organisations to coordinate integrated management. This study contributes to integrated arts management, enhances its perspective and enlarges its practice.

Robin Anna Kingston*Doctor of Philosophy*

Dr Kingston's practice-based research project produced art works that make an original contribution to our knowledge and experience of contemporary abstract art. By producing artworks that examined and applied the use of intuitive and rational thought in the construction of abstract painting and installation, she demonstrated how an awareness and sensitive manipulation of materials, process, context, can generate feeling and concept. The supporting exegesis located her research amid current international practice with a focus upon contemporary New York abstraction.

Steven Anthony Middleton*Doctor of Philosophy*

Dr Middleton's research engaged with the definitions of, and discourses around, sentience and human intelligence. Artworks and artefacts produced in the project included prosthetic visualisation, artificially intelligent conversation agents and both virtual and functional robots. His work incorporated theories of embodiment, situated intelligence and machine intelligence, all of which challenge boundaries of what is special about the human capacity for thought that have been built upon more traditional ideas inherited from Judeo-Christian thought, capitalist dogma and the utopian promises of Cybernetics.

Nasar Momin

Doctor of Philosophy

Dr Momin explored the application of Chitosan, a natural biopolymer, in ink-jet printing of textiles. He developed a novel Chitosan based post-treatment method for fixation of pigment based inks on various ink-jet printed textile fabrics. He has also developed a novel technique for preparation of Chitosan/pigment nanoparticles and formulated ink-jet inks using these nanoparticles. He demonstrated that Chitosan can be incorporated into the ink formulations and the cotton fabric can be ink-jet printed using these inks.

Sonia Jane Orchard

Doctor of Philosophy

Dr Orchard's research into the life of Australian pianist Noel Mewton-Wood has resulted in a novel which explores the pianist's life through the eyes of an obsessed lover, whose narrative is warped by his own desires. Although based on actual events, the manuscript is essentially a fictional study of obsession, fantasy and creativity. Rather than providing an historical account of Mewton-Wood's life it draws attention to the difficulty of creating any definitive biographical record.

Supriya Pattanayak

Doctor of Philosophy

Dr Pattanayak examines the incongruence between the rhetoric and practice of community development in India, especially in relation to women. Supported by an extensive literature review, a multi-level analytical framework and empirical research, the manner in which rural Indian women engaged with structures and processes of community development and the benefits accrued to them – if any – were explored. Unless international aid agencies and governments include women's every-day agency in their programs, many will continue to fail to advance their interests.

Anna Maria Pollard

Doctor of Philosophy

Dr Pollard investigated professional development needs of Literacy Coordinators in secondary schools in Melbourne, Australia. This qualitative research involved comprehensive case studies of six school sites and six Literacy Coordinators. The study revealed criteria explaining effective program management skills and pedagogical knowledge of the Literacy Coordinators. Recommendations for enhancing professional practice flow from this research and have significance for the roles of Literacy Coordinators, the Department of Education, Early Childhood Development policy, Principals and Higher Education teacher pre-service programs.

Kevin Lemoine Rabalais

Doctor of Philosophy

Dr Rabalais examined the French literary theorist René Girard's concept of triangular desire in the Western Novel. He investigated, specifically, one contemporary novel, James Salters's *A Sport and a Pastime*. His research revealed that certain currents run throughout the art of the novel, from Cervantes and Flaubert to Coetzee and his own novel, *The Landscape of Desire*, the creative component of his degree. His research advances the creative writer's understanding of character development in the art of the novel.

Rebecca Alison Turner

Doctor of Project Management

Dr Turner researched the impact of Emotional Intelligence on the levels of job satisfaction and job performance in predicting project outcome. Her investigation revealed a rich body of management and behavioural discourse in relationship to the field of project management. It significantly advances the field of project management studies. It innovatively draws on work of critical theorists and provides insight into the complexity of management and leadership issues within projects, an area gaining importance in today's competitive global economy.

Mark Gerard Wagner

Doctor of Philosophy

Dr Wagner's research investigated the history and current understandings of the 'communicative body'. He explored how the social values of caring, listening, and a sense of belonging, are created prior to the use of language. His research offers new insights and orientations for teaching in schools and colleges by showing how vocal tones, facial expression, and hand gestures create social values in learning spaces that are separate from racial, ethnic, and/or intellectual differences.

Leslie George Walking

Doctor of Philosophy

Dr Walking explored the development of new colour printing techniques in the field of fine art photography. His investigation encompassed the genealogy, technology and methodology of analogue and digital imaging systems, reformulating their design, implementation and application in printing workflows. His research significantly advances the field of digital imaging through new tools, procedures and strategies for existing digital applications, while also unifying colour printing theory and practice in the tradition of the fine print in the age of digital reproduction.

Mon-Xi Wu

Doctor of Fine Art

Dr Wu's research involved development of a new series of sculptural ceramics that explored natural form with reference to the aesthetic perspectives of contemporary organic abstraction and the Chinese philosophical concept of Yin and Yang. Through their formal and aesthetic attributes, Dr Wu articulated an interpretation of the contrary and complementary qualities of Yin and Yang and how such qualities can be married to form a unified expression in sculptural ceramic form.

Nikolas Askitis

Doctor of Philosophy

Dr Askitis has developed dramatic improvements to some of the most fundamental string data structures used in computation by redesigning them for use on current computer architectures. His new string algorithms are much faster and require much less space than their predecessors, some of which have been the subject of research for over fifty years. These improvements have the potential to greatly improve the efficiency of a wide range of computing applications including databases, web search and data processing.

Jennifer May Audsley

Doctor of Philosophy

Dr Audsley has examined different methods for increasing the yields of the influenza B virus antigens of human influenza vaccines. She also examined the growth of influenza B viruses in cell cultures maintained in serum-free media. Mutant donor strains of influenza B/Lee/40 were used to prepare high-yielding potential vaccine seeds by gene re-assortment with current epidemic strains. Influenza B virus genes were shown to re-assort more randomly than has been experienced in the preparation of influenza A vaccine seed viruses.

Jason Chung

Doctor of Philosophy

Dr Chung investigated whether activation of a specific protein, namely HSP72, could protect against the development of insulin resistance. He showed that heat shock therapy which activated the protein, and muscle specific transgenic over expression of HSP72 provided protection against diet or obesity-induced insulin resistance. This was tightly associated with the ability of HSP72 to block inflammation. Dr Chung's findings identify an essential role for HSP72 in blocking inflammation and preventing insulin resistance in the context of obesity.

Sandy Citro

Doctor of Philosophy

Dr Citro has investigated highly complex collaborative computing applications on small devices, such as digital assistants and mobile phones with limited processing power, over wireless networks with inherent low band width and connectivity. He developed new integrated algorithms that correctly and efficiently handle concurrent use, manage conflicts, support ad hoc joining and leaving, and can process large documents in a mobile collaborative editor. His research has provided the basis for use of more complex applications on emerging portable computing devices.

Aaron Charles Davis

Doctor of Philosophy

Dr Davis investigated the problems of calibration and the effects of towed-bird swing on survey data in airborne electromagnetic systems. He developed a data-dependent filtering process that removes bird swing effects from historical data records, and also developed a method that can accurately calibrate any airborne electromagnetic system in flight. The topic is relevant to high precision geophysical surveys for exploration and land management and will be of interest to scientists requiring detailed estimates of earth conductivity structure.

Britta Drevermann*Doctor of Philosophy*

Dr Drevermann investigated the structure-odour relationships of the marine fragrance Calone 1951®, developed a novel synthesis of marine fragrance analogues and found that a 7-alkyl group in Calone 1951® substantiates the maintenance of the significant marine odour characteristic. Her diligent studies support the concept that the odorant structure occupying the hydrophobic pocket adjacent to the aromatic ring-binding site of the olfactory receptor is pivotal in the design and discovery of more potent and characteristic marine fragrances.

Su-Yong Eum*Doctor of Philosophy*

Dr Eum has investigated the problem of estimating a traffic matrix for networks based on the Internet Protocol. A traffic matrix stores point-to-point traffic demands and is used by network planners to determine how much network capacity should be purchased to handle existing and future demands. Existing methods cannot accurately determine point-to-point traffic demands – such information can only be inferred from inadequate measurement data. Three new techniques using deterministic, statistical, and dynamic approaches have been developed in this study to improve the accuracy of traffic matrices.

Eugene Travers Georgiades*Doctor of Philosophy*

Dr Georgiades studied the possible use of the eleven-armed asteroid *Coscinasterias muricata* as an environmental sentinel species in Port Phillip Bay. The Southern Australian coastline, specifically the main ports and harbours such as Port Phillip Bay, are susceptible to environmental contamination as the major Australian population bases are located around these coastal zones. Therefore, the establishment of an environmental sentinel species, and biomarkers within, are of the utmost importance to provide early warning of contamination events and thus environmental protection.

Mark Alexander Gregory*Doctor of Philosophy*

Dr Gregory has made important contributions to knowledge and understanding of the relationship between performance management, project management and life cycle management. The research introduced a new architecture, TRManager, which brings these management activities together to improve the rate of project success by enhancing the performance and reliability of management processes and practice. An important insight into current knowledge and practice was provided through a survey of project managers.

Xiang Li*Doctor of Philosophy*

Dr Li studied genetic programming, the process of generating computer programs by simulated evolution. He is the first researcher to successfully evolve programs that contain the kinds of looping constructs that are normally written by human programmers. His discoveries will enable the application of the genetic programming technique to a much larger range of problems.

Terry Adam O'Bree*Doctor of Philosophy*

Dr O'Bree has made an important contribution to our understanding of the scattering properties of natural waters, which are critical for the interpretation of remote sensing images. In this work he developed equipment and analysis procedures, and conducted extensive measurements on Gippsland Lakes and Great Barrier Reef water samples. These represent the first laboratory measurements of scattering from southern hemisphere natural waters, and will enable more accurate determination of concentrations of phytoplankton, pollutants and other water constituents using remote sensing.

Hema Raina*Doctor of Philosophy*

Dr Raina explored the contribution of the sodium-calcium exchanger to myogenically active small blood vessels (arterioles). The studies involved manipulation of extracellular Na⁺ levels and inhibition of the exchanger. Studies were performed to demonstrate the expression of mRNA and protein for the exchanger isoforms. Antisense oligonucleotides against mRNA were introduced in an isolated cremaster arteriole followed by functional studies with protein levels determined by western blotting. The data are consistent with the presence of the NCX1 exchanger in cremaster arterioles.

Achula Rajapakse*Doctor of Philosophy*

Dr Rajapakse investigated the production of emulsion explosives which are preferred blasting agents for numerous industries including mining, agriculture and construction. He prepared emulsifiers by reacting immiscible viscous liquids within a stirred tank reactor, examined the effect of various design variables and finally achieved optimised production parameters. This fundamental study will find application in many mineral, chemical, food and pharmaceutical industries.

Anthony Michael Robinson*Doctor of Psychology*

Dr Robinson examined parent report of sleep problems in children with an intellectual disability. Child and parent factors were explored in relation to parent perception of a sleep problem. Sleep problem perception was related to amount of child sleep, parent perceived control over the child's sleep and daytime behaviour. The efficacy of a general parent-training program for the treatment of sleep problems was trialled. Parents reported improvement in target sleep behaviour; however improvement on child and parent outcomes was equivocal.

Shujun Sheng*Doctor of Philosophy*

Dr Sheng investigated the feasibility of cultivation of important medicinal herbs in Victoria, Australia. He has made important contributions to our understanding of optimal agricultural conditions and variety selections for selected herbal species. He also developed some analytical methods to evaluate the quality of Australian grown medicinal herbs. His findings are an important addition to the existing knowledge, and are valuable for developing a related herbal farming industry in Australia.

Milad Shokouhi*Doctor of Philosophy*

Dr Shokouhi investigated the problem of searching for documents when they are held in separate collections, such as online libraries distributed across the Internet. Standard search techniques assume that the documents can be collected centrally. The thesis showed that when centralisation is impossible, documents can still be reliably found with techniques such as sampling, which profiles each collection. Such methods have the potential to greatly increase the reach of search engines.

Truong Nguyen Vu*Doctor of Philosophy*

Dr Truong investigated and developed new, efficient and systematic approaches to the identification of nonlinear dynamic systems using wavelet based State Dependent Parameter (SDP) models, from structure determination to parameter estimation and validated them by engineering applications. The thesis also presents solutions to a number of important issues in nonlinear system identification, including: multi-dimensional nonlinearities, measurement noise, and stability. The presented results provide computationally efficient, new tools for nonlinear system identification, offering valuable insights into the system's dynamics.

Jianhong Xia*Doctor of Philosophy*

Dr Xia has made an important contribution towards developing methods for modelling the spatial and temporal movement of visitors to tourist destinations. She has developed methods for defining these movements at both macro and micro spatial and temporal scales and has applied innovative methods for acquiring and modelling tourism behaviour. This research has endeavoured to assist park managers when developing tourist park facilities and services.

Elisa Joy Young*Doctor of Philosophy*

Dr Young studied the role of endothelium-derived hyperpolarising factor, or EDHF, in the development of blood vessel defects in animal models of type 2 diabetes. Her research revealed that EDHF activity is reduced in the mesenteric artery from Type 2 diabetic rats, and that this is associated with a reduction in cellular communication through gap junctions. This novel finding suggests that gap junctions may be a potential therapeutic target for diabetic vascular disease.

Jianjun Zhang*Doctor of Philosophy*

Dr Zhang has investigated the theoretical basis for precise velocity and acceleration determination using a stand-alone GPS receiver. He has developed new algorithms for the computation of the satellite velocity and acceleration and the most accurate observation model for Doppler shift measurement with the effect of relativity considered. He has also studied in great detail the error sources in both the carrier phase and the Doppler measurements which are the most important limitations of real-time high-precision satellite positioning.