

Summary of Successful Linkage - Projects Proposals for Funding to Commence in 2010 by State and Organisation

Victoria

RMIT University

LP100100010 Prof John A Hawley, Prof Stuart M Phillips, Dr Trent Stellingwerff, Dr Daniel Moore, Prof Louise M Burke, Dr Vernon Coffey

Approved Project Title **Optimising Exercise and Nutrition Throughout the Life Cycle**

2010 \$109,000.00

2011 \$109,000.00

2012 \$106,851.00

Primary FoR 1106 HUMAN MOVEMENT AND SPORTS SCIENCE

APDI Dr Vernon Coffey

APAI 1

Partner Organisations

Australian Institute of Sport, McMaster University, Nestle Research Centre

Administering Organisation RMIT University

Project Summary

During the past decade the proportion of Australia's population aged 65 years and over has increased to 13% (2.7 million). During the same period, the proportion of the population aged 85 years and over has more than doubled and is now the fastest growing subpopulation in Australia. As the number of elderly persons continues to grow, sarcopenia-related conditions will have a dramatic and inevitable impact on the lives of all Australians. The novel dietary protocols developed from the results of the studies undertaken in this proposal will translate into better treatment options for reversing age-dependent muscle degeneration. This is a critical first step for improving the standard of living for a large portion of Australian society.

LP100100696 A/Prof Arnan Mitchell, Dr Thach G Nguyen, Dr Madhu Bhaskaran, Mr Neil J Baker

Approved Project Title **Silicon Photonic Platform for Quantum Encryption and Communications**

2010 \$97,851.00

2011 \$93,182.00

2012 \$88,182.00

Primary FoR 0205 OPTICAL PHYSICS

APDI Dr Thach G Nguyen

Partner Organisations

Quintessence Labs Pty. Ltd.

Administering Organisation RMIT University

Project Summary

The integrity of a secure communications link can mean the difference between life and death in a defence environment. In the civilian arena, the security of electronic financial transactions is also critical to guard against 'cyber' theft. Encryption of data using unique quantum 'noise' as a key has been proposed as an exceptionally strong approach. Attempts to intercept the key during transmission can easily be detected.

Quantum key transmission has been demonstrated but requires impractically expensive, bulky and exotic equipment. This project will explore low-cost, silicon chip based quantum key transfer modules. Our aim is to render quantum encryption as simple as adding an expansion card to a standard computer or portable device.

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LP100100037 Prof Lin Padgham, Dr John R Thangarajah, Dr Timothy Miller
Approved Project Title **Integrating and automating testing in multi-agent system development**

2010 \$80,000.00

2011 \$80,000.00

2012 \$70,000.00

Primary FoR 0801 ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING

Partner Organisations

CAE Professional Services Australia Pty Ltd

Administering Organisation RMIT University

Project Summary

This research will provide mechanisms that facilitate easier and more thorough testing of multi-agent systems. Multi-agent technology is extremely powerful and can save businesses substantial time and effort in developing complex systems. Automated testing will ensure that systems built using this technology are more robust, and will also enable substantial savings in time required for testing. Multi agent systems are notoriously difficult to test, due to their complexity. However the approaches used in this project will enable intelligent generation of test cases that are potentially difficult, and also generation of test cases that are based on specified functionality.

LP100100609 A/Prof Trevor W Stevenson, Dr Gregory D Nugent, Prof David M Stalker
Approved Project Title **The use of in planta digestion for pretreatment of biofuel feedstock**

2010 \$93,000.00

2011 \$93,000.00

2012 \$93,000.00

Primary FoR 1003 INDUSTRIAL BIOTECHNOLOGY

APAI 2

Partner Organisations

Biomass Conversion Technologies Pty Ltd

Administering Organisation RMIT University

Project Summary

This project will develop crop plants that overcome the current technical and economic impediments to the use of crop residues as biomass for large scale biofuel production. This innovation will position rural Australia at the forefront of global efforts to develop ligno-cellulose-based fuel ethanol industries and help meet mandatory renewable energy targets and the growing demand for alternative transport fuels. This project will also provide training and professional development for three early career researchers, exposing them to a suite of cutting edge technologies applied to a real world challenge - supplying renewable fuels in a sustainable and economically viable fashion.

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LP100100404 Prof Zahir Tari, A/Prof Jiankun Hu, Dr Abdun N Mahmood
Approved Project Title **Designing Distributed Intrusion Detection Systems for Critical Industrial Infrastructures**

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|-------------|---|
| 2010 | \$90,000.00 |
| 2011 | \$80,000.00 |
| 2012 | \$80,000.00 |
| Primary FoR | 0801 ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING |
| APAI_IT | 1 |

Partner Organisations

Australian Science and Management Academy Pty Ltd

Administering Organisation RMIT University

Project Summary

SCADA systems are computerized systems that control and monitor industrial and critical infrastructures, such as power grid, gas and water facilities and nuclear power plants. Many cyber-attacks on SCADA systems make such systems vulnerable. Also there is an increasing risk that SCADA vulnerabilities could be exploited by terrorist organizations. The security of SCADA systems of critical infrastructures has enormous and direct impact to our national security, economy and social life because of potential disasters that could happen from natural causes as well as malicious attacks. This project aims to investigate the relevant issues and provide efficient and reliable technological solutions to detect and prevent such problems.

LP100100250 A/Prof Andrew Turpin, Dr Allison McKendrick
Approved Project Title **Smart algorithms for visual field assessment**

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|-------------|-----------------|
| 2010 | \$52,935.00 |
| 2011 | \$48,013.00 |
| 2012 | \$50,590.00 |
| Primary FoR | 1701 PSYCHOLOGY |
| APAI | 1 |

Partner Organisations

Heidelberg Engineering

Administering Organisation RMIT University

Project Summary

Australian demographic studies show that visual impairment contributes significantly to elderly disability. Visual field loss due to glaucoma, the second leading cause of blindness in developed nations, may be slowed if detected early, but recent studies estimate 50% of Australians with glaucoma are undiagnosed. The fast and effective approaches to measuring visual fields discovered in this project will allow more accurate diagnosis and monitoring of vision loss; crucial for the ARC's priority goals of "ageing well, ageing productively" and "preventative healthcare". Developing smart algorithms in conjunction with Heidelberg Engineering creates an opportunity for the international promotion of Australia's biomedical software capabilities.