Membrane systems for milk protein hydrolysis to reduce allergenicity
Vicki Chen, Alissa Lee
Parvalbumin from southern hemisphere fish for immunodiagnostic tests
Alissa Lee, Ji Liang

Advanced materials and nano-materials
Control the synthesis of polymer via photosynthesis: toward to mimic the Nature
Cynthia Boyer, Jason Xu
Design of Magnetic Virus for Capturing Pathogenic Bacteria
Rino Amel and May Lim, J. Justin Gooding and Christopher Marqu
Design of Magnetc-Fibre Composites (MAGNIFIC)
May Lim, Vicki Chen
Development of Ag Biosensor for Live-Cell Probing
Cindy Gunawan, Palt Thordarson/Christopher P. Marquis
Development of Graphene Oxide as Smart Antimicrobials
Cindy Gunawan, Yen Hua Ng
Drawing graphene thin film supercapacitors using pencil
Dawei Wang, Rose Ann. Lee
How fast do big molecules move?
Stuart Precott, Patrick Spicer
How stable can an emulsion be?
Stuart Precott, Patrick Spicer
Polymer nanoparticle synthesis using CO2 – a versatile environmentally friendly approach
Per Zetterlund, Frank Lusilton
Remote control instrumentation: moving from the lab bench to the plant
Stuart Precott, Patrick Spicer
Shake me up: polymer adsorption and shake gels
Stuart Precott, Patrick Spicer
Surface Segregating Additives for Self-Cleaning Membranes and Surfaces
Vicki Chen, Jihel Mamou

Membrane Processes for Water and Wastewater Treatment
Bicatalytic Hollow Fibre Membranes for Removal of Micro-Biocontaminants
Vicki Chen, Jingwei Hou
Design of a rapid, portable and automated cell counting techniques for assessing algain population de
Rila Henderson, May Lim
Development of Mobile Groundwater Desalination Systems for Rural Communities in India
Greg Leslie, Matthew Kasarne
Glucose based enzymatic fuel cells with membrane electrodes
Vicki Chen, Jingwei Hou
Next generation of osmotic-based membrane system for water treatment
Pierre Le-Clech, Gavon Blende
Novel Submerged Forward Osmosis System for Treatment of Difficult Effluents and Resource Recovery
Vicki Chen, Yuan Ye
Nutrient Removal to Optimise Bioufloc Control, Raie of Macroand Micro-Nutrients
Pierre Le-Clech, Darrell Myatt
Validating the removal performances of reverse osmosis for wastewater recycling
Pierre Le-Clech, Alice Antony

Clean Energy Technologies
Designing microbial fuel cells to harvest energy from distillery wastewater
Greg Leslie, Alice Antony
Making hydrogen the fuel of the future
Francois Aguyas-Zinou, Yvonne Le

School of Civil and Environmental Engineering
Wei Gao 9385 4123 | w.gao@unsw.edu.au
Civil Structural Health Monitoring with Unmanned Aerial Vehicles (UAVs)
Jialing Wang, Zeyu Li
Cloud-based real-time high accuracy GPS positioning system
Chris Rizzo, Yong Li
Artificial Intelligence

Autonomous Robot for Search and Rescue
Claude Stumme, Maurice Pagano

CitySketch: Land-Use Annotiation on Water Pipe Networks
Nin Li, Yang Wang, Fang Chen

Classification of Time Series X-ray Crystallography Images
Aroc Sowmya, Thamal Laskampe

Data assembly of global water pipe networks
Zhongdong Li, Yang Wang, Fang Chen

Game Playing Robot
Michael Thielcrho, David Rajaparamek

Geospatial Information Extraction from Big Data Streams
Aroc Sowmya, Chris Riis

How to save millions of dollars for water utility companies by picking out dying pipes
Bing Zhang, Yang Wang, Fang Chen

Joint Clustering for Structural Health Monitoring
Kho Nguyen, Yang Wang, Fang Chen

Optimal Data Collection and Evaluation using Real-time Feedback in Big Data Security Scenarios
Aroc Sowmya, Omari Somarewicz

Real-time abnormal activity detection in surveillance systems
Aroc Sowmya, Yingying Li

Registration of Multi-modal Prostate Magnetic Resonance Data for Multiple Sclerosis
Aroc Sowmya, Ignacio Samarasheghi

Speech Interaction with a Mobile Robot
Claude Sammut, Maurice Pagano

Stable Marriages and Kidney Exchanges: Matching with Preferences and Constraints
Toby Walsh, Nicholas Malthet

Water Pipe Bandits
Fan Li, Yang Wang, Fang Chen

Software Engineering

Availability Analysis for Applications in Public Cloud
Liming Zhu, Lei Bass

Cloud performance analysis using statistical modelling
Adneine Guibout, Lim Bass

Continuous Deployment for Big Data Analytics Applications
Liming Zhu, Lei Bass

Dependable Auditing on Operations in Cloud-Applications
Liming Zhu, Lei Bass

Evaluation of performance, resilience, and cost effectiveness of cloud deployment architectures
Adneine Guibout, Lim Bass

Implementing Secure Protocols for Quadcopters
Peter Hofner, Gwenn Klein

Understanding and Improving Operational Processes in Large-scale Distributed Systems
Liming Zhu, Lei Bass

Embedded, Real Time & Operating Systems

Benchmarking and Optimising a Microkernel
Kevin Ephremenko, Horst Heister

CamElK on Linux
Ihor Kur, Matthew Fernandez

Effective cross-kernel communication
Gernot Heister, Kevin Ephremenko

Fast cross-domain communication
Gernot Heister, Kevin Ephremenko

SLX vs eChronos
Gernot Heister, Anna Lyons

PFGA configurations for the RUSH Q850 Payload
Olivier Devissen, Ediz Celik

Generated verified file system
Gernot Heister, Peter Chubb

High-Assurance POSIX Implementation
Ihor Kur, Toby Murray

High-Performance User-Level Device Drivers
Kevin Ephremenko, Ihor Kur

Interrupt-Related Covert Channels on seL4
Gernot Heister, Toby Murray

Operating System Components
Ihor Kur, Matthew Fernandez

Protected-mode eChronos
Gernot Heister, Alex Kush

Real-time Programming for the RUSH Q850 Payload
Olivier Devissen, Ediz Celik

Secure Quadruplet
Ihor Kur, Alexander Kroh

Secure systems: Build an unhackable system!
Kevin Ephremenko, Ihor Kur

Secure systems: Can you hack an unhackable system?
Ihor Kur, Kevin Ephremenko

Image Processing

Blood Vessel Extraction in Retinal Images
Aroc Sowmya, Analessia Xerokova

Change detection based on multi-temporal data sets
Aroc Sowmya, John Trinder

Segmentation and Symmetry Analysis of human rib pairs in lung MDCT images
Aroc Sowmya, Banafsheh Pakoohar

Algorithms

Cake Cutting Algorithms
Hare Ariz, Toby Walsh

Event-driven Data Mining in Social Media
Hoang Minh Duong Nguyen, Chen Cai

Financial Market Volatility Forecasting using Machine Learning Techniques
Cheri Cai, Fang Chen

Human Computer Interaction

Driving a model car "from the inside"
Ranvee Talib, Julien Epsit

Driving simulator: luring the sensors
Ranvee Talib, Julien Epsit

Interactive Visualization using Gesture Recognition
Aroc Sowmya, Mohammadhossein Hoosaei

Sensor Data Visualization on Android-based Devices
Jiankang Zhou

Uncertainty Visual Analytics in Machine Learning
Jiankang Zhou, Jingjin Sun

Urban environment in Unity3D for a driving simulator
Ranvee Talib, Julien Epsit

Visual Analytics of Time Series Data
Jiankong Zhou, Fang Chen, Jingjin Sun

Databases

Efficient Fuzzy Search
Wei Wang, Jianbin Qin

Personal Process Management with Social Software:
Automated Capturing of User Actions in a Process
Helen Park, John Shepherd

TableBase: Towards a Table Management System
Helen Park, John Shepherd

Programming Languages and Compilers

Finding and fixing memory leak for web applications
Yulei Su, Jingjing Xie

Precise and efficient pointer analysis for JavaScript programs
Yulei Su, Jingjing Xie

Static and dynamic analysis for detecting data races of C/C++ programs
Yulei Su, Jingjing Xie

Symbolic execution for detecting system bugs on binary code
Yulei Su, Jingjing Xie

Networks, Sensor Networks, etc

Road traffic density estimation with wireless vehicular networks
Lawrence Libman, S. Travis Wolfle

Hardware Design, Computer Architectures, etc

Self-Checking, SEU-resistant Vocoder Design for Space-based FPGA systems
Olivier Devissen, Ediz Celik

Theoretical Computer Science

SMT Solvers for C++ and Test Case Generation
Ralf Hauck, Franck Casssez

Bioinformatics

Understanding the immune system with bioinformatics
Bruno Gattay, Mike Baim
**School of Electrical Engineering and Telecommunications**

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**Satellite Systems**

- Application of Cooperative Positioning in Urban Canyons  
  Joon Wayne Cheong, Andrew Dempster
- Calibration of MEMS/Micro Electro Mechanical System gyroscopes for UNSW ECO Cube Satellite mission  
  U Glas, Barnaby Osborne
- Development of an operation for a CubeSat ground station  
  Barnaby Osborne, Andrew Dempster
- Firmware Architecture Design and Development for a Multi-core GNSS Receiver on an FPGA  
  Joon Wayne Cheong, Andrew Dempster
- FPGA configurations for the RUSH Q50 Payload  
  Ed Colen, Oliver Dassell
- FPGA implementation of a Space-qualified CubeSat GPS receiver using Smart Fusion II  
  Joon Wayne Cheong, Eamonn Gleannon
- GPS Receivers for the Sounding Rockets  
  Eamonn Gleannon, Andrew Dempster
- High Speed VC-TCXO Control for Improved GPS Synchronization  
  Eamonn Gleannon, Joon Wayne Cheong
- Mission Control Software Development for the Q50 CubeSat  
  Barnaby Osborne, Andrew Dempster
- Modelling and Digital Compensation of the Satellite Transponder Non-linearities  
  Ed Colen, Andrew Dempster
- Real-time Programming for the RUSH Q50 Payload  
  Ed Colen, Oliver Dassell
- Self-Checking, SEU Resilient Voter Design for Space-based FPGA systems  
  Ed Colen, Oliver Dassell
- Space Based GPS Reflectometry Experiment with Q500  
  Eamonn Gleannon, Joon Wayne Cheong
- Space Based Tracking of Aircraft on CubeSats  
  Ed Colen, Barnaby Osborne
- Test and calibration of the integrated CubeSense ADCS board for UNSW ECO CubeSat mission  
  U Glas, Barnaby Osborne
- Test of magnetic torque board for CubeSat attitude control  
  U Glas, Barnaby Osborne
- Use of Multiple GPS Antennas in a Single Radio GPS Receiver  
  Eamonn Gleannon, Andrew Dempster

**Quantum Computing and Microelectronics**

- Charge Pumping for Electrical Current Standards  
  Andrew Drozun, Alessandro Rossi
- Engineering quantum logic circuits  
  Andrea Morello, Arne Lauter
- High performance inertial sensors based on silicon chips evaporated in a vacuum  
  Aron Michael, Chee Yee Kwek
- Spin-based silicon Quantum Computing  
  Andrew Drozun, Menno van Veldhoven

**Multimedia Signal Processing**

- Design of an automated System for Crack Detection Using a Low Cost Camera  
  Sameh Mustapha, Peter Runcie (NICTA)
- Development of edge detection analysis for an ISS experiment  
  Barnaby Osborne, Ed Colen
- Parallelising machine learning systems – GPU computing  
  Vishwakaran Sethu, Julien Epps

**Smart Grid and Energy Systems**

- Detection of arcing faults in photovoltaic installations  
  Toon Phung, Katharyn Ambikairajah

**Data and Mobile Networks**

- Location Verification in Wireless Networks  
  Robert Malaney, Shihao Yan
- Software defined radio for wireless communications  
  Jin Hong Yu, Tom Yang

**Systems & Control and Biomedical Systems**

- Network based Collaborative Enhanced Interference Detection and Localization  
  Ed Colen, Andrew Dempster
- Sub-Space Projection Based Enhanced Interference Detection and Localization  
  Ed Colen, Andrew Dempster

**Energy System Modelling and Economics**

- Novel Controller Implementation for an Electric Machine connected to a Microgrid  
  Jayashri Ravichandran
- Advanced Photonics  
  Optical fibre amplifiers and lasers based on ultra broadband Er<sup>3+</sup> doped optical fibre  
  Geng Ding Peng, Venkata Luo

**School of Mechanical and Manufacturing Engineering**

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**Design and Analysis**

- A statistical analysis for the correlation between vibration signals and wear particles  
  Zhangxia Peng, Chongping Hu
- Experimental study on the correlation between friction-induced vibration and dynamic wear mechanism  
  Z. Peng, Chongping Hu
- Exploring Virtual Space Engineering  
  John Page, Nathan Kinkaid

**Thermofluids**

- Air conditioning with magnetic refrigeration  
  Ann Lee, Victoria Timchenko
- Design and development of novel inertial microfluidic devices for particle sorting  
  Majid Ebrahimzadeh, Robert Nordon
- Future cooling technology with nanofluids  
  Ann Lee, Quan-Hang Yeoh
- High-speed imaging of flame propagation in an optical SIDI engine  
  Shawn Kook, Lewis Clark
- Laser fluid dynamics measurement of in-vitro vascular flow  
  Tracie Barber, Ann Simmons
- LED diagnostic of fuel sprays in an optically-accessible diesel engine  
  Shawn Kook, Minh Khai Le
- Modelling combustion in a low-emissions diesel engine  
  Evtaii Hawkes, Michelle Bolla
- Modelling extinction and ignition in syngas Barnes  
  Evtaii Hawkes, Michelle Bolla

**Air and ground vehicles**

- Automated Image Capture for Grape Vine Inspection  
  Mark Whitty, Sanakung Lim
- Street View for a Vineyard: Efficient Database Management for Large Scale Image Processing  
  Mark Whitty, Samsung Lim
- Surveying Asteroids Using Self-Organised Swarms  
  John Pees, Nathan Kinkaid
- Georeferencing Vineyard imagery without GPS  
  Mark Whitty, Samsung Lim

**School of Mining Engineering**

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**Mining Systems and Processing**

- An experimental investigation of the blasting effect on downstream process energy saving  
  Farnshad Rashidi Najad, Ali Asgari
- The effect of reagents on bubble size in froth flotation  
  Seher Ata, Chistain bournival
- The interaction of flotation reagents with particles at the air-liquid interface  
  Seher Ata, Chistain bournival

**Mining Geomechanics**

- Investigation into the mechanical behaviour of Gosford sandstone under cyclic loading-relaxations  
  Hossein Masoomi, Fidelis Guirreri

**Sustainable Mining Practices**

- Rock strength and porosity under variable stress and saturation  
  Wendy Timms, Katarina David (PhD student) & Rodra Mitra
- Stress assessment of native trees around Yerranderie silver mine using airborne hyperspectral data  
  SimarKrinar Raval, Raja Tipple

**School of Photovoltaic and Renewable Energy Engineering**

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**2nd Generation Solar Cells (Thin Film)**

- Rock contact improvement for CZTS solar cells  
  Hongtao Cui, Xiaojing Hao
- Use of silver nanoparticles for the light trapping in Organic Solar Cells  
  Ashraf Uddin, Kesh Chen (Alex)

**Characterisation**

- Electronic Characterisation of Ultrathin Doped Silicon Dioxide Layers  
  Dirk König, Yao Yao (HDR student)

**1st Generation Solar Cells**

- Improved Structures for Enhanced Hydrogenation in Screen Printed Solar Cells  
  Stuart Wernham, Brett Hallam
- In-Line Belt Firing for Advanced Hydrogenation  
  Stuart Wernham, Brett Hallam
- Kinetic Modelling for Advanced Hydrogenation Processes  
  Stuart Wernham, Phil Hamer
- Spatially Resolved Lifetime Spectroscopy from Temperature-Dependent Photoluminescence Imaging  
  Ziv Hamerk, Thorsten Trupke

**Combustion and Biofuels**

- Lean premixed combustion of hydrogen  
  Evtaii Hawkes, Michelle Bolla

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**Students who are awarded a NICTA Taste of Research Summer Scholarship 2014/2015 are expected to participate in NICTA’s Summer Scholars Showcase. The Showcase is an integral part of the research training experience that NICTA is providing to its Summer Scholars. Further information can be found at NICTA / Summer Scholars Program, nicta.com.au/education/summer_scholars_program**