



NUI Galway
OÉ Gaillimh

Research Matters

National University of Ireland, Galway

Issue 4 • AUTUMN 2012

Our Cover Image: Research in Focus

Prof. Michel Destrade (Applied Mathematics, NUIG) has combined modelling with experiments to produce an intriguing picture (tropical forest? surreal painting?), published in Physics Today and on the New Scientist website. Destrade worked with Prof. Michael Gilchrist and Dr Badar Rashid (Mechanical Engineering, UCD) to model the mechanical behaviour of brain under rapid impacts, as it is crucial to the understanding of traumatic brain injury. "Badar decided to find out what brain matter looked like when blown up 3,500 times, using Scanning Electron Microscopy", says Destrade, "and it resulted in a beautiful rendering of neuron bundles". Destrade then teamed up with Prof. Sean Leen (Mechanical and Biomedical Engineering, NUIG) to develop new testing standards for biological soft tissues and was invited to a recent Symposium on Brain Mechanics at Oxford University, which brought together clinicians, engineers and mathematicians working in this exciting field.



Research Matters

National University of Ireland, Galway,
University Road, Galway,
Republic of Ireland

T: +353 9149 5312
E: researchmatters@nuigalway.ie

nuigalway.ie

Bridging the 'digital disconnect'

New Patient Safety Centre at NUI Galway Announced

Surgical Solutions from Sticky Sea Creatures

[↑ CONTENTS PAGE](#)

[← PREVIOUS PAGE](#)

[NEXT PAGE](#)



[ZOOM IN +](#)

[ZOOM OUT -](#)

VP Letter



Welcome to the fourth issue of Research Matters, my last issue as Vice President for Research. It has been a privilege and pleasure to lead the Research Support teams, and to work closely with the broad academic research community at NUI Galway. I would like to offer my thanks and personal gratitude to the excellent staff within the Research and Technology Transfer Offices for their fantastic work, dedication and commitment to the NUI Galway research community.

As my term as Vice President draws to a close at the end of 2012, I look back over the many research achievements and successes that NUI Galway has enjoyed over the last number of years, and I am proud to have been associated with these successes. The highlights for me include, in particular, NUI Galway's historic success in securing over €70 million in funding, from public and private sources, through the PRTLI Cycle 5 programme, which will result in the provision of significant dedicated research facilities for a range of major research programmes across the University. The restructuring of the Centre for Innovation and

Structural Change (CISC) and the ongoing strategic review of the Moore are other notable developments that will impact very positively on NUI Galway's research performance and reputation going forward.

We continue to face significant challenges as a research driven university in the new and very different economic landscape, and it will be even more essential than ever to work smarter, harder, and collaboratively, in order to maintain and enhance NUI Galway's research performance and reputation internationally. I look forward to returning to research myself, and to continue to work with many colleagues, with whom new research relationships and opportunities have been established or identified. I would like to wish all my colleagues at NUI Galway the very best wishes for continued success in your research endeavours.

Professor Terry Smith,
Vice President for Research

From the Editor

Welcome to another issue of Research Matters. As always we strive to deliver a collection of stories about which we, as a community, can be proud of. That's why we're so excited to bring you this issue, packed with articles on a range of work with one major focus – making our lives better. Wellbeing, be it of our physical selves; members of our community, from youth to the elderly; the infrastructure we encounter each day; or the living world, is something to be safeguarded if we care to live healthy, fulfilled lives.

This issue introduces you to researchers within our community who are working to improve breast cancer diagnosis, safeguard us from medical error, reduce the prescription of unnecessary medications to prevent environmental damage, reassess the impact of 'green energy' and to make our streets a safer place to walk and drive. Everyday on this campus men and women are working hard to bring about change that will literally lead to improvements in our wellbeing. It feels good to celebrate their efforts.

As always we welcome your feedback, get in touch to tell us what you think of the issue. And above all, have a great academic year.

Lindsay Deely,
Editor

Contents

Editorial Board

- Lindsay Deely, Editor
- Eithne O'Connell, Deputy Editor
- Sarah Knight
- Ailish Murray
- Valerie Parker
- Jim Duggan
- Edward Jones
- Patrick Hayes
- Patrick Lonergan
- Michelle NiChronin

Bridging the 'digital disconnect'



04

New Patient Safety Centre at NUI Galway Announced



05

Surgical Solutions from Sticky Sea Creatures



08

Gaining awareness to care for our aging population



15

New Hardiman Scholars Arrive



22

Improved access to healthcare for rural and remote communities

This connected health project will remove the burden of a long distance commute for therapy and treatment and will broaden access to health promotional activities.

The discipline of General Practice, NUI Galway, a founding member of Galway Connected Health, has joined with the University of Aberdeen and several internationally renowned Telehealthcare Centres across Scandinavia in an EU project which will implement 10 telemedicine and connected health technology projects in rural and remote communities in the West of Ireland. Dr. Liam Glynn is a principal investigator and is leading the NUI Galway team on Implementing Transnational Telemedicine Solutions (ITTS) a €2.3 million European Union Northern Periphery Programme project (fig 1.) Each partner country will be involved in importing and exporting existing services and supporting the roll out of services transnationally. Proven high quality internet connectivity is the key to a successful outcome to the projects. The services which will be implemented will include: tele-monitoring for patients with multimorbidity; video conference technology for speech therapy (fig 2), renal services, remote emergency psychiatry services, remote diabetes services and remote pulmonary rehabilitation for COPD as well as the use of smartphones as a platform to promote physical activity, to provide internet support for diabetes and for monitoring of inflammatory bowel disease.

“Smart Move” – Using smartphones to promote physical activity

There is increasing evidence linking sedentary and physically inactive lifestyles to higher risk of obesity, diabetes, coronary heart disease and lower quality of life. In an attempt to understand what motivates people to begin exercising and sustain activity a team of GP's and researchers at NUI Galway are leading a Randomised Control Trial on motivational health promotion.

The trial is based on author BJ Fogg's



concept of Captology (computers as persuasive technology) and how people are motivated by computers and specifically smartphones. As mobile phones are never far from their owners, smartphones with powerful on board computing abilities are now an ideal device for assessing physical activity.

To date 60 participants have enrolled in the trial with a total number of 80 required to substantiate initial pilot results. As some participants are returning to exercise after a number of years it was decided that walking, due to low impact self-regulated pace was to be the intervention of choice. By downloading a pedometer application called “Accupedo” fig 1, onto the participant's smartphone researchers can obtain a total step count on weekly, daily, or monthly basis (fig 2) with 2000 steps being the equivalent of 1 mile.

“Smart Move” if successful, may become an unobtrusive method for GP's to measure adherence to prescribed exercise. This project is part of a larger ITTS (Implementing Transnational Telemedicine Solutions) European telemedicine programme.

By Patrick S Hayes,
Discipline of General Practice

Fig 1.

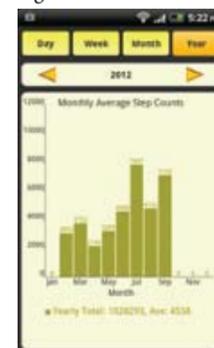


Fig 1.



Bridging the ‘digital disconnect’ – using technology to promote young people’s mental health and wellbeing

Bridging the Digital Disconnect is engaging with parents, teachers, health professionals, youth workers and young people to determine how best to use technology to improve the mental health and wellbeing of young people.

Dr Aleisha Clarke and Professor Margaret Barry of the Health Promotion Research Centre at NUI Galway are working in partnership with Inspire Foundation Ireland and international partners at the Young and Well Co-operative Research Centre for Young People Technology and Wellbeing in Australia. A three year programme of research is being conducted in Ireland linked to this international project, which is being led by the Inspire Foundation Australia and funded by the Australian Department of Innovation, Industry and Science.

The internet is the first place that many young people will turn to for support but sometimes a focus on risk prevails in public discourse around the internet and mental health. This project is focused on addressing this disconnect between young people's information and help-seeking preferences and adults' anxieties about technologies. The research will inform how best to embrace the opportunity that technology affords to support and promote youth mental health.

The nature and extent of the digital disconnect varies from adult to adult, and the motivation, needs and knowledge base of parents differs from those of, for example, mental health professionals. In order to explore these different needs, under Bridging the Digital

Disconnect we are conducting a structured needs assessment for adult stakeholder groups, followed by in-depth group interviews – starting with the group closest to young people: their parents. This research will then guide the development of tailored online resources that connect adults with the promotion of youth mental health in meaningful ways.

From a research perspective, parents' responses to the Bridging the Digital Disconnect project have been extremely positive and have given everyone involved in the project increased belief in the importance of the work we're undertaking.

A number of leading statutory and voluntary organisations are participating on the project's National Advisory Group and they will help facilitate access to respondents for the needs assessment research.

Most importantly, young people will be centrally involved, ensuring the project remains focused on producing meaningful outcomes for young people in Ireland and beyond.

To ensure the widespread dissemination of the project's outputs and new knowledge we are fostering ongoing collaboration and discussion with our international partners in Australia and beyond as the project develops.

Further project details from: Dr Aleisha Clarke and Professor Margaret Barry of the Health Promotion Research Centre.

By Margaret Barry, Professor of Health Promotion and Public Health



New Patient Safety Centre at NUI Galway Announced

It has been estimated that medical error affects approximately 10% of hospitalised patients. The report of the Irish Commission on Patient Safety and Quality identified a need for an active research programme on patient safety and quality issues in healthcare for Ireland. The recently formed Irish Centre for Patient Safety at NUI Galway has been established to meet this need.

The Centre is inter-disciplinary and draws upon expertise from the Medical School, Engineering, Medical Physics, the Whitaker Institute, and the Galway and Roscommon University Hospital Group. To date, the research has focused on three specific domains of healthcare.

- **Radiology:** Research is focused on the application of Systems Engineering practices to this branch of medicine. This work is funded by the Health Research Board.
- **Surgery:** Research in surgery has examined attitudes to team-working and communication, and the use of a checklist designed to prevent wrong site surgeries. A number of specific surgical procedures are also being examined from a human factors perspective.
- **Interns:** Internship is the first year of a doctor's working life. The research in

this domain has taken an evidence-based approach to identifying specific areas in which interns have difficulty (e.g. practical skills such as assertiveness and ordering tests correctly), and the design and evaluation of interventions to improve future performance.

Patient safety education is also an important goal of the Centre. Input is being provided as part of the West North West Intern Training Programme, the final medical year modules, and for students on the NUI Galway Masters course in Medical Physics and the MCh in Surgery. We would be very interested in hearing from anyone who is working in this area, or would be interested in becoming involved in patient safety research in the future (please contact Dr Paul O'Connor, Whitaker Institute paul.oconnor@nuigalway.ie).



New wiki-type database of instruments for Social Sciences

The Measurement Instrument Database for the Social Sciences (MIDSS) is a new online wiki-type database of instruments that are used to collect data in the social sciences. The MIDSS Database was funded by the Irish Social Sciences Platform, which is part of the Programme for Research in Third Level Institutions (cycle 4) and is administered by the Whitaker Institute, NUI Galway. The MIDSS Database already contains almost 250 instruments concerned with a wide

range of topics from across the social sciences from Walkability in Cities to Psychological tests. The database can be accessed at www.midss.ie. As we are in a growth phase, we would strongly encourage social sciences researchers to submit any instruments they have developed to MIDSS. For more information, please contact Dr Paul O'Connor at the Whitaker Institute paul.oconnor@nuigalway.ie.



Overcoming the Barriers to Well-Being in Ireland

Scientists, community organizations and policy-makers come together to discuss the latest advances in well-being research and policy. Helen Johnson, author of the Well-being in Ireland Report (NESC, 2009) and Alex Zautra, Arizona State University, delivered keynote papers on well-being.

In advance of the workshop, conference participants also reflected on the broad issue of well-being in Ireland and generated a list of barriers to well-being in Ireland. Interactive Management, a software supported collaborative design process, was used to structure interrelationships between barriers (see Figure 1). In response to critical drivers of negative influence in the system (i.e. the barriers to the left of Figure 1), including Lack of trust/dissatisfaction with the system, government, and decision-makers in general, and A national sense of gloom due to emphasis on austerity, conference participants agreed that high-impact, feasible options that could help to overcome these barriers include:

- Focus on what can be done despite the economic environment;
- Encourage people to get involved in/ take control of well-being initiatives; and
- Build on community spirit through organising support groups and local initiatives.

In response to the absence of a holistic approach to health-care, some of the highly ranked options participants generated and selected included:

- Change the way physical education is taught in primary schools to include a

- more holistic approach to health and well-being;
- Encourage mental health promotion initiatives in schools and workplaces;
- Promote help-seeking as a skill (amongst young people in particular); and
- Implement evidence-based education and behaviour change interventions to improve health and well-being.

In response to the Lack of education about the importance of well-being in schools, participants propose:

- Implement well-being modules across the education system, from primary to third level;
- Create a national well-being committee responsible for policies, training and sustaining interventions etc;
- Set up a website that educates people about well-being; and
- Define what well-being is from a national perspective.

In response to the leadership barrier (including no charismatic leader to advance the well-being of the nation) participants proposed:

- Promote awareness of the importance of well-being in one's own community and be a leader on a small scale first;

- Encourage more youth involvement in public office, which may give rise to many new leaders;
- More focused awareness raising of mental health and well-being from the minister for health.

There has been a strong positive response to the Conference and the interactive management methodology used. There is significant interest in hosting similar workshops in local communities and across a variety of different sectors (e.g., education, health, policy design) to facilitate more dialogue, debate and systems thinking in relation to barriers to well-being in Ireland and how to overcome them.

By Dr. Michael Hogan, School of Psychology and Whitaker Institute, NUI Galway
Email: michael.hogan@nuigalway.ie

In Brief

UN launches CDLP Report On Structural Funds

The Centre for Disability Law and Policy was recently commissioned by the UN Office of the High Commissioner for Human Rights to author a report, *Getting a Life - Living Independently and Being Included in the Community*. The report is a legal study of the EU Structural Funds and their ability to contribute to the achievement of Article 19 of the United Nations Convention on the Rights of Persons with Disabilities. It was launched at, and formed the basis of, a colloquium in Brussels on 7 May 2012, at which Professor spoke. The aim of the colloquium was to explore the legal implications of the Convention on the rights of persons with disabilities (CRPD), particularly its Article 19, on the use of European Union Structural Funds in EU Member States. It was attended by representatives of Bulgaria, Croatia, the Czech Republic, Estonia, Latvia, Malta, Poland, Romania, Slovakia and the European Commission as well as by representatives of civil society organizations.

Two Law School Members Appointed To Law Reform Commission

The Government has appointed two members of the School of Law to the Law Reform Commission, the independent statutory body charged with keeping the law under review and making recommendations for law reform. Donncha O'Connell was originally appointed in February 2012 to serve out the term of a member who had been appointed to the Supreme Court. In July, he and Tom O'Malley were appointed by the Government on the nomination of the Attorney General for full terms commencing in September 2012. O'Connell is the former Dean of Law and specialises in Constitutional Law and European Human Rights. O'Malley is a recognised authority in Criminal Law and Administrative Law. Both will serve as part-time Commissioners while continuing to teach in the School of Law.

EU Marine Economy Project Launched in NUI Galway

The Socio Economic Marine Research Unit (SEMURU) at the Whitaker Institute, NUI Galway together with The Border, Midland and Western Regional Assembly, recently launched the MARNET Project (Marine Atlantic Regions Network). MARNET is a 2.5 year collaborative transnational project which will map the value of the Atlantic marine economy through the development of reliable and comparable socio economic data, and involves maritime regions from the Basque country of Spain, Brittany in France, Stirling in Scotland, Porto in Portugal as well as the Border Midland and West region of Ireland. The €1.3m project is part funded by the ERDF through the EU Interreg Atlantic Area Programme, and involves the participation of marine researchers as well as Regional Authorities across the Atlantic area. In Ireland the expertise of SEMURU at NUI Galway will be crucial in developing a framework from which new added value activities within the marine sector can be developed to add to the 17,000 jobs already supported by marine related activities in Ireland.

Research Group Receives Valuable Donation

An Irish company specialising in laboratory equipment, Chemical Systems Control, has donated high-tech equipment to the University's Multiple Sclerosis and Stroke Research Group led by Dr Una Fitzgerald to help in the battle against multiple sclerosis. The cabinet will be used to decipher the molecular mechanisms underlying nerve damage in multiple sclerosis and to develop novel ways of achieving nerve repair. Dr Fitzgerald and her team are currently conducting a research project funded through MS Ireland. The project is looking at the role of a particular type of cellular stress has on myelin loss.

Visiting fellow at Irish Centre for Social Gerontology

The Irish Centre for Social Gerontology welcomed Professor Norah Keating, Department of Human Ecology, University of Alberta, Canada as a visiting fellow to its Rural Ageing Observatory in April 2012. Norah Keating is one of Canada's leading social gerontologists and is current Director of The Global Social Initiative on Ageing. During her time at ICSG, Professor Keating contributed to the inaugural meeting of the International Network on Rural Ageing, and a public workshop on operationalising age-related social exclusion. Professor Keating continues to work closely with colleagues at the Irish Centre for Social Gerontology and is involved in a number of writing projects with members of the Centre team.

Lecturer Appointed to Royal Historical Society

Dr. Marie-Louise Coolahan, Lecturer in English, was elected Fellow of the Royal Historical Society (UK) in May 2012. This election comes in acknowledgement of her contribution to the field of early modern history and literature. Dr. Coolahan's work centres on the production and reception of women's writing in the sixteenth and seventeenth centuries. Her monograph, *Women, Writing, and Language in Early Modern Ireland** (Oxford University Press, 2010) was awarded Honorable Mention in the Society for the Study of Early Modern Women Book Prize (2011). She was awarded a Research Fellowship at the Folger Shakespeare Library, Washington D.C., in March 2012.

Surgical Solutions from Sticky Sea Creatures

The ocean covers 70% of the earth's surface, but most of its watery depths remain unexplored. While Mother Nature has surely filled that watery space with strange and amazing organisms, we don't actually have to look that deep to find astounding natural innovations.

A huge number of marine species have the ability to stick to a surface, and while it might seem quite commonplace that barnacles and mussels can attach themselves really well to rocks in the ocean, it's actually a process that has so far eluded us poor humans, despite all of our amazing technology. We don't have glues that work well underwater and there are many instances where glue with underwater capabilities would come in really useful. One such example would be for surgical applications, where structures inside a warm, wet body must be repaired and reattached. The search for technology to fill this gap has led scientists to investigate natural underwater glues that are produced by marine animals, in the hope that one day we will be able to mimic those substances. **Research in this area** is currently being conducted right here at NUI Galway, on an elusive species of barnacle, led by Dr Anne Marie Power of the Ryan Institute and Discipline of Zoology.

Barnacles produce a very strong natural adhesive that can adhere to virtually every substrate imaginable. While some processes involved in the adhesion of mussels and tubeworms have been elucidated and even

successfully mimicked, scientists still have no idea how barnacle adhesive works. The research currently underway began by taking a morphological (body) approach and investigating the tissues and structures that produce the adhesive. The results showed clearly that the adhesive gland of the barnacle is incredibly different to the glands that produce adhesive in other animals. Jaimie-Leigh Jonker, a PhD student in Dr. Powers group working on barnacles, explains "In the barnacle there are many very large secretory cells that are isolated from one another within the connective tissue, which all seem to be producing all of the components that make up the adhesive. Which makes this particular adhesive all the more mysterious – if everything is all produced in the same place, why does it not begin to interact and become solid right there inside the barnacle? How does it retain cohesiveness when it is released, and quickly form a bond between the substrate and the barnacle?"

To answer questions such as these, the team moved on to chemical and molecular investigations. However, in order to continue the research fresh samples were needed. The species being studied, the goose barnacle *Lepas*

anatifera, is oceanic and only rarely washes ashore. Thus, over the last summer, an appeal to the public was made, to inform them of this interesting work and to bring in more samples. A social media campaign was begun with Facebook and twitter and a range of newspapers, science magazines and radio stations helped to spread the word. Many people responded with information of past sightings of these strange looking creatures (which they now know to be barnacles) and finally fresh samples began to wash ashore as autumn arrived. For now the search for barnacles has been put on hold, but the search for the mechanisms of this mysterious natural adhesive is still just beginning.

By Jaimie Leigh Jonker,
Ryan Institute & Zoology

Jaimie Leigh Jonker and her work on barnacles with Dr. Power has recently been reported in Nature.

Research In Action: Using theatre, dance and song to teach women lifesaving health solutions

This participatory Action Research was recognized as one of the top 10 educational initiative ideas and solutions for improving the lives of girls and women worldwide by Women Deliver, a global advocacy organization.

As part of my PhD in Health System & Policy in NUI Galway I designed and conducted an Innovative Participatory Health Education Project 'IPHE' where I brought together a team of researchers, development workers, and local volunteers in Renk County, South Sudan to educate communities about women's health through theatre performances, singing and pictograms. Working together, the team identified pressing maternal and child health issues and developed a live songs and theatre program to educate those in the hardest-to-reach rural Renk County communities. Through the tradition of song, IPHE helped influence traditional views on maternal health and educate communities about lifesaving solutions for women and girls.

A parallel training workshop was conducted on Reproductive Health Project Management that targeted senior health officers in Renk County to strengthen their capacity to develop, implement, monitor and evaluate reproductive health projects. They used the list of maternal health issues generated by the IPHE participants to develop reproductive health project

proposals. In the last day of the workshop the local people and senior officers were brought together to discuss maternal health issues in the area. The senior officers presented the proposals to the IPHE participants who gave them feedback and comments.

The senior officers said that this approach helped them to identify the maternal health issues through the eyes of the local population which will influence their future decision making. This approach effectively advocated for maternal health, strengthened the capacity for researchers and policy makers, and engaged the community. The approach enhanced the contribution of marginalized communities to identifying needs, planning and designing future health services in a post conflict setting.

<http://www.youtube.com/rcrutv>

By Khalifa Elmusharaf and Diarmuid O'Donovan
School of Medicine



Chemical amendment to agricultural effluent could help solve environmental pollution

It has been estimated that medical error affects approximately 10% of hospitalised patients.

The report of the Irish Commission on Patient Safety and Quality identified a need for an active research programme on patient safety and quality issues in healthcare for Ireland. The recently formed Irish Centre for Patient Safety at NUI Galway has been established to meet this need.

The addition of chemicals to agricultural wastewater could help solve water quality problems associated with the landspreading of wastewater, researchers at NUI Galway have found. A research project, lead by Dr Mark Healy, has proven that the runoff of harmful nutrients and sediment can be abated if farmers add chemicals to slurry prior to landspreading. This finding could have major implications for practitioners, as well as policy makers.

In a 3 year study, funded by Teagasc, PhD researcher, Raymond Brennan, found that in addition to the mitigation of short-term losses from agricultural wastewater, chemical amendment could also have a positive long-term impact on the release of nutrients from soil. Speaking at NUI Galway recently, Dr

Healy said, 'This is a significant finding and could potentially represent substantial savings to farmers as nutrients would be held within the soil and not be lost to surface waters.' The researchers are currently investigating greenhouse gas emissions associated with this treatment process, in addition to its impact on soil health.

Related on-going research within Dr Healy's group include chemical amendment to pig slurry and dirty water, and the use of biosolids as a soil fertiliser. The results of the present work have recently been published in Science of the Total Environment (409: 5111-5118).

By Dr. Mark Healy,
Civil Engineering

Creating smarter patient health records

In the telehealth domain, caregiver networks provide support to the patient in the community, often through a personal health record (PHR). Current PHR systems typically are used where data and services are delivered through a single integrated data store that limits choice, is a fixed solution, and forces providers to conform to a specific data interface. As part of our research in the Health Care and Life Sciences (HCLS) group in DERI we are addressing these limitations and have developed two novel applications in the area: Sqwelch and Caregap.

Challenges in telehealth include the need to cater for complex, differing environments, users with different requirements, needs and expectations, distributed collaboration as the patient is in the community, and cost sensitivity where one of the key requirements for telehealth

is the pressure of an ageing population beset by an epidemic of chronic illness.

Sqwelch provides an intuitive means for the caregiver network to create personalized mashups, while the patient retains privacy control through trust specifications. Sqwelch is a mashup tool, initially designed for traditional web access (laptops and PCs), which allows custom applications such as PHRs to be built without the need for software. Caregap leverages Sqwelch onto the mobile where we have built a cross-platform application demonstrating how current mobile infrastructure can be used to enable portions of the telehealth ecosystem - sending medical alerts, locating caregivers and patients, making contact, and giving map directions to allow quick intervention if required.

The goal for our research is to engage with patients and their caregivers to evaluate these technologies in a meaningful way. In the DERI HCLS group we are also working on other projects paving the way for the reuse of patient information in clinical research, which will ultimately integrate with the remote patient, providing better, more personalised, clinical decision support.

By Ronan Fox PhD
Health Care and Life Sciences Leader
Digital Enterprise Research Institute (DERI)

Safety First: EEE Researchers Developing Image Processing Technology for Safer Driving

Every year, 1.2 million people are killed in traffic accidents, and more than 30 million more suffer non-fatal injuries. Many of these accidents occur because a driver simply didn't see a victim – "he came out of nowhere!" Researchers in the Connaught Automotive Research (CAR) Group in Electrical & Electronic Engineering are developing new camera-based technologies to assist drivers in gaining greater situational awareness of their environment.

The goal is to enable the vehicle to automatically "sense" danger – potential collision hazards, pedestrians about to jaywalk, the child on the tricycle immediately behind that you're about to reverse over – and thus give a vital extra few seconds to enable the driver (or indeed the car itself) to react and avoid an accident.

The technology exploits the fact that cameras are becoming a standard feature in cars, used for functions such as reverse assist and blind zone coverage. CAR Group researchers are developing sophisticated image processing algorithms to automatically detect, classify and predict the future path of potential hazards in each frame of video from a camera, and to either provide a warning to the driver, or instruct the car to take evasive action.

Much of the Group's research is funded by Valeo Vision Systems, located in Tuam, Co. Galway, and the Irish Research Council.

The involvement of Valeo gives particular commercial relevance to the Group's research, and the company has appointed a member of its technical staff to act as liaison with the Group. Current projects include pedestrian detection at night, lane departure warning, and developing "3D" models of the environment around the vehicle. The Group is also looking at the practical issues relating to transporting large volumes of video around a vehicle, while maintaining good quality images. The academic staff members involved in the Group are Edward Jones, Martin Glavin and Liam Kilmartin, along with one post-doctoral researcher and five PhD students.

To learn more, go to <http://car.nugalway.ie>

By Dr. Edward Jones, Electrical & Electronic Engineering

A prescription for better health: The UTI-C Project

Researchers in the Discipline of General Practice, School of Medicine are currently working on an intervention to improve antibiotic prescribing in general practice, with a focus on urinary tract infections (UTI). The UTI-C team is multidisciplinary and includes experts in microbiology, epidemiology, social marketing and health economics and primary care.

"Antibiotic resistance is an increasing problem in the modern world, largely due to the fact that antibiotics are so over-prescribed." Explains Prof. Martin Cormican, School of Medicine and Director of the Ryan Institute's Centre for Health from Environment "Currently, microbes are developing resistance

to antibiotics faster than new antibiotics are being discovered. If this problem isn't dealt with, we will face a day when there isn't medicine available to treat simple infections."

The UTI-C team is working together to develop and deliver a complex intervention involving GPs and patients in the west of Ireland. The intervention will include providing easier access for GPs and patients to relevant information concerning the right antibiotics in the appropriate situations. However, the main challenge for the UTI-C project remains convincing everyone that antibiotic resistance is a problem that affects us all; only by collaborative action from patients, GP and the public, can a difference can be made. The

message remains, use antibiotics carefully.

The UTI-C project is a three year research project, funded by the Health Research Board in Ireland, under an Interdisciplinary Capacity Enhancement (ICE) award. NUI Galway was awarded three out of the six available ICE awards in 2011. A national ICE networking event, funded by the Health Research Board, will be hosted by NUI Galway in January 2013 to facilitate networking of postdoctoral researchers, encourage future collaborations and showcase current research.

By Dr. Sandra Galvin, Discipline of General Practice, School of Medicine, Centre for Health from Environment, Ryan Institut

The Human Touch: Trauma in the Townships

'Global Awareness' award winner, Katherine Lydon contributes to the fight against HIV and AIDS in South Africa. The 23 year old NUI Galway medical student completed an eight week volunteer programme in a township outside Cape Town.

34 million people are estimated to be living with HIV and AIDS in the world and South Africa has one of the highest prevalence rates. Katherine's programme was supported by the United Nations and Irish Aid. During her eight weeks Katherine worked in the Anti-Retroviral (ARV) Clinic and Trauma unit in Mitchell's Plain day hospital where she assisted doctors and counsellors in educating HIV positive patients. She also completed a number of outreach programmes educating school children about the HIV epidemic. The objective of the Global Awareness Programme is to raise awareness in Ireland about the HIV and AIDS crisis in South Africa. "I want so very much to participate in this programme" Katherine says, "to make sure no victim is left in the dark; to ensure that everyone has access to the support they need; to increase society's awareness of this condition and to take HIV/AIDS out of the closet so sufferers don't feel isolated".

Work began every day at 7am. Katherine spent the first few hours talking to patients learning about their experiences of HIV

and AIDS. "Some of the stories were heart-wrenching, but the patients are so brave", she explained. The ARV clinic is open five-days a week and managed by Sister Titus along with her colleagues, counsellors and doctors. Patients are weighed at every visit after which they see the counsellor, ensuring they are compliant with their medication and are given the opportunity to ask any questions. As resources are limited, patients will only see the doctor if they have medical complications. In the absence of doctors, nurses provide advice and can prescribe medication. In the afternoon Katherine worked in the Trauma Unit (Emergency Department). The average waiting time is approximately 8 hours as there are only two doctors for the entire population of Mitchell's Plain (approximately two million people). The majority of patients are assault victims. Although the Trauma Unit is open 24 hours a day, the Day Hospital has no overnight facilities, and patients requiring additional care are transferred to Groote Schuur hospital or Jooste, both in Cape Town, depending on the case. The majority of patients have no transport

and therefore wait for ambulance transfer which can take up to four hours.

Katherine received training on "Understanding HIV in Development" run by Dtalk, prior to her departure. This helped her deal with the culture shock and was "highly beneficial and a real eye-opener", which centred on the stigma associated with HIV and AIDS and possible mechanisms that could be employed to end this in society. She visited the Open Heart House in Dublin, which is Ireland's largest peer support network of HIV positive people and met with representatives of Dublin AIDS Alliance. While in Cape Town, Katherine also completed a course in Stellenbosch University entitled "Basic HIV and Gender Facilitation" along with other volunteers and students from South Africa. She will now be involved in a series of events around Ireland in the lead up to World AIDS day on December 1st.

By Katherine Lydon, School of Medicine

Recent Events

Ryan Institute for Environmental, Marine and Energy Launches

The Ryan Institute for Environmental, Marine and Energy research was officially launched on July 10th by the EU Commissioner for Research, Innovation and Science Máire Geoghegan-Quinn.

She stated: "This new Institute, embedded in NUI Galway, will build on the long-standing excellence of the Environmental Change Institute and the Martin Ryan Institute for Marine Science, and will pool resources and expertise. I am convinced that the Ryan Institute will increase Ireland's already considerable contribution to European environmental, marine and energy research."

The Ryan Institute has over 300 researchers making it Ireland's largest institute to focus on some of the most pressing environmental and energy issues of the 21st century. Prof. Colin Brown, Director, says: "We are positioning ourselves as the key institute in Ireland for all research related to the rapidly-changing national environmental, marine and energy agenda, and to this end, we will be engaging creatively with state agencies, civil society and the private sector."

Students Showcasing Diverse Range of Research

Students from the Structured PhD in Child & Youth Research programme recently showcased the diverse range of research being carried out on the programme in both NUI Galway and TCD at a Research Symposium in June. Each student presented their research by poster presentation and was available to answer questions on their research topics. This was an opportunity for students to share information and promote their research findings among staff and students at NUI, Galway.

Plenary Lecture by Director of the Biomolecular Research Laboratory

The Director of the Biomolecular Electronics Research Laboratory, Dónal Leech, delivered a plenary lecture as part of an international conference hosted by TCD from the 3-4th September 2012: Electrochem 2012: Electrochemical Horizons. The lecture, titled Bioelectrocatalysis using enzyme or microbe films on electrodes, presented recent results from the laboratory exploring the use of biological catalysts for fuel cell applications.

Armed Conflict in Comparative Perspective Conference

Armed Conflict in Comparative Perspective, a multidisciplinary Conference brought together leading scholars working on aspects of armed conflict from a range of disciplinary perspectives, including Prof. Kristine Höglund (Uppsala University, Sweden), Prof. Stathis Kalyvas (Yale University, USA), Prof. Eric Kaufmann (University of London), Prof. Brendan O'Leary (University of Pennsylvania, USA) and Dr Niall Ó Dochartaigh (Whitaker Institute, National University of Ireland Galway). It addressed key issues of concern to sociologists, political scientists and historians studying inter-state wars, civil wars, armed conflicts, urban violence and insurgencies. The conference was supported by the Irish Research Council for the Humanities and Social Sciences, the Moore Institute and the Whitaker Institute, NUI Galway.

6th annual Irish Human-Computer Interaction (iHCI) Conference

The sixth annual Irish Human-Computer Interaction (iHCI) Conference took place at NUI Galway in June. Organised by the School of Education, NUI Galway, it was the first time that the conference was hosted in the west of Ireland.

The theme of iHCI 2012 was 'Poetics of Design, Narratives of Use', looking at the broad array of creative methods and tools used to design different technologies for a range of user contexts and application domains, including healthcare, education and mobile work.

The conference featured presentations and technology showcases from academia and industry, with speakers from NUIG, UL, GMIT, TCD, DCU, UCC, UCD, Dundalk IT and Umeå Institute of Design, Sweden. A novel aspect of the iHCI conference in recent years has been the IxDA presentation by industry on experience design and technology. The industry presenters this year were from Cisco Systems, iQ Content and Logitech Ireland. Karen Young, Discipline of Information Technology, NUIG won the prize for best conference presentation for her collaborative research with Elise Karlsson in the development of an app for musical notation on mobile devices: 'MicroStave - Music Notation for the Mobile Screen'.

Conference proceedings have been published and are available to download

4th International Disability Summer School

The Centre for Disability Law and Policy held its 4th International Disability Summer School, in association with the Harvard [University] Project on Disability, in June. The School this year had the stated purpose of equipping participants with the insights and skills necessary to translate the generalities of the Convention on the Rights of Persons with Disabilities into tangible reform for persons with disabilities. It took place over an intensive six days and attracted just under 89 participants from 29 countries and featured a first class faculty drawn mainly from disability scholars/activists who themselves took part in the negotiations of the Convention. It was launched by the President of Ireland, Michael D. Higgins and certificates were awarded by the Attorney General, Maire Whelan.

Developing Rapid Diagnostic Tools

Researchers at NUI Galway are involved in a new European project which hopes to deliver a cost effective tool for the speedy diagnosis of infections such as pneumonia. The test would reduce diagnosis time from days to hours, so that the appropriate treatments can be administered as early as possible for the best possible outcome.

The diagnostic products for the rapid diagnosis of Respiratory Tract Infections, specifically pneumonia, will be based on a novel 'sample-in, result-out' technology platform.

"There is an urgent need for rapid diagnostic tests capable of identifying the large range of microorganisms and antibiotic resistances involved with infection", explains Dr Thomas Barry of the Molecular Diagnostics Research Group at NUI Galway. "Speed and accuracy are key to appropriate therapy and survival of the patient. The ultimate objective is to develop new cost effective, user-friendly products that will be routinely used in hospitals. This could replace time-consuming and labour-intensive methods so that a diagnosis can be achieved within a couple of hours, rather than days or weeks."

Also in development by the group is a new diagnostic DNA test to help in the global effort to control tuberculosis (TB). The rapid laboratory test allows for the identification of the exact bacteria causing a patient's TB which will give valuable information for their treatment.

In humans, TB is caused by a group of eight bacteria collectively known as the Mycobacterium tuberculosis complex (MTC). National University of Ireland Galway's Molecular Diagnostics Research Group has developed and validated a new assay or laboratory test called SeekTB to identify all members of the MTC.

Dr Thomas Barry at the University, along with his colleagues Dr Justin O'Grady and Dr Kate Reddington, realised there was a need to rapidly and accurately detect and identify each member of the MTC for better treatment of TB. "The optimal patient treatment can be different, depending which of the eight bacteria are causing the TB, as some of these bacteria are naturally resistant to a commonly used anti-TB drugs", explains Dr Barry.

By Dr. Thomas Barry, Director, MDRG

Launch of Galway Diabetes Research Centre

The launch of the Galway Diabetes Research Centre (GDRC) in November will bring together an interdisciplinary research consortium of active researchers and clinicians who have a track record in the field of diabetes. The GDRC, based at NUI Galway, will link researchers from a diverse range of disciplines across all the Colleges together with strengthening and developing close links with clinicians from Galway University Hospital and the hospitals linked to the NUI Galway regional Medical Academies.

Diabetes is a chronic condition associated with significant morbidity and mortality. It is the commonest metabolic illness globally with 346 million people worldwide having the condition (WHO 2010). It is estimated that this figure

will increase to 550million by 2030. About 90% of all diabetes is type 2. The prevalence of type 2 diabetes is increasing at an alarming rate in tandem with rising obesity rates.

In Ireland the number of people with type 2 diabetes is growing as a result of an ageing population and rising obesity rates. The Diabetes Federation of Ireland estimated that 200,000 people had diabetes in Ireland in 2003 and a further 200,000 had the condition but were unaware of it. They also estimated that a further 250,000 had pre-diabetes and 50% would develop diabetes in the ensuing 5 years if lifestyle changes were not met. The Institute of Public Health (2005) concluded that 4.7% of the population (circa 150,000) of the Republic had established diabetes, with the highest prevalence in the Western Region (5.2%). The

Institute of Public Health have revised their figures again (2012) and now conclude that 9.6% of the population have Diabetes.

Through three main clusters: Aetiology and Prevention, Clinical Management, and Population/Health Services Research, the GDRC will serve the needs of patients with diabetes mellitus and those at risk of developing diabetes mellitus by creating the treatments of the future through research, providing state of the art clinical care and developing the carers of the future through education.

By Dr Ailish Murray, College Research Development Office, College of Medicine, Nursing and Health Sciences

Gaining awareness to care for our aging population



The 2011 Census shows that more than two out of every five people aged 65 and over live in a rural community. Surprisingly, relatively little is known about the situation of this important demographic group. The Rural Ageing Observatory at the Irish Centre for Social Gerontology is seeking to fill some of the gaps in knowledge on rural ageing. In July 2012 the observatory launched the first two reports in a series that, in time, will provide vital information about the ageing population in rural Ireland. The first of the short reports focuses on key demographic trends and issues facing rural older people. The second report summarises evidence relating to income, poverty and deprivation of Ireland's older rural population.

Launching the reports, Professor Thomas Scharf, Director of the Irish Centre for Social Gerontology said: "More than 200,000 people over the age of 65 live in rural communities across Ireland. In the autumn, the government

will be launching its National Positive Ageing Strategy. It's important that this is a strategy for older people wherever they live – in rural as well as in urban communities. Greater awareness of the circumstances of rural older people, in particular, is essential if the right policy measures are to be adopted." Both reports are available online at www.icsg.ie

A new book, jointly edited by Prof. Scharf and Norah Keating of the University of Alberta, Canada, was recently published. Bringing together leading international experts on ageing issues, *From exclusion to inclusion in old age: a global challenge* casts light on patterns and processes that either place groups of older adults at risk of social exclusion or are conducive to their inclusion. See www.policypress.co.uk for further details.

By Christine De Lary, Development Officer, Irish Centre for Social Gerontology

Keeping the winds of change blowing in the right direction

A research team from the Ryan Institute is investigating whether the push towards renewable energy through wind-farms is inadvertently releasing greenhouse gasses into the atmosphere.

The Irish Government has proposed that, in order to meet the 2009 EU Renewable Energy Directive, 40% of gross electricity consumption will come from renewable sources, primarily through wind energy. The most suitable locations for the new wind farms necessary to fulfill this commitment are on upland peat sites along the Western seaboard.

However, peatlands contain large amounts of poorly protected carbon. This means that activities central to the construction of these wind-farms, such as drainage and peat excavation for the foundations of roads and turbines, could lead to carbon emissions through the exposition and disturbance of high-density carbon containing peatlands.

Dr Liwen Xiao of the Ryan Institute and College of Engineering and Informatics, and principal investigator with the team, said "As

further large scale wind farm development on peats will commence soon, there is an urgent need to develop a reliable method for assessing greenhouse gas emissions from peat soils, and to develop best management practices to mitigate these emissions"

The project team financially supported by the Sustainable Energy Authority of Ireland, will address the uncertainties surrounding greenhouse gas emissions from new peatland-located wind-farms. They aim to establish a database for climate change parameters for existing wind-farms in the West of Ireland as well as examine the performance of best management practices already in existence in regards to greenhouse gas emissions and carbon release. Ultimately, they hope to develop sustainability guidelines and best management practice in Ireland for the construction of new wind-farms to mitigate against greenhouse gas emissions and nutrient releases from peatlands.

By Dr. Liwen Xiao & Mr. Dave Finn, Ryan Institute



Profile: Dr. Martin O'Halloran

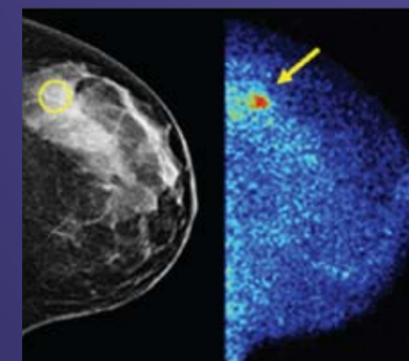
Breast cancer is one of the most common cancers to affect women. In Ireland alone, almost 2500 new cases of the disease are diagnosed each year. The current standard screening method for detecting non-palpable early stage breast cancer is X-ray mammography.



Despite the fact that X-ray mammography provides high resolution images using relatively low radiation doses, its limitations are well documented. In one U.S. study, up to 75% of all malignancies identified by X-ray mammography were later found to be benign after biopsies. These false positive conclusions result in unnecessary biopsies, causing considerable distress to the patient and an unnecessary financial burden on the health service. However, much more worrying is the fact that up to 15% of all breast cancers present at the time of screening are missed by conventional mammography, often delaying treatment to the point where it's no longer effective.

One of the most promising alternative breast imaging techniques is Microwave Imaging. Rather than using the density contrast between healthy and cancerous tissue associated with X-Ray mammography, Microwave Imaging exploits the very considerable dielectric contrast between normal and cancerous tissue.

Dr. Martin O'Halloran (working with



Dr. Martin Glavin and Dr. Edward Jones) is currently developing a prototype Microwave Imaging System at NUIG, which they hope to bring to clinical trials in the next 2-3 years, in collaboration with Prof. Michael Kerin from the National Breast Cancer Research Institute (NBCRI). The benefits of the technology to patients are many: Microwave imaging is non-ionising, non-invasive, does not require the uncomfortable breast compression associated with X-Ray mammography, and significantly, has the potential to detect breast cancer at a much earlier stage, when treatment is most effective.

Dr. O'Halloran has been working in the area of Microwave Breast Imaging since 2004, funded initially by IRCSET and later by Science Foundation Ireland. Over the last eight years, the group has developed state-of-the-art breast imaging algorithms and methods to differentiate between benign and malignant breast cancer. Dr. O'Halloran has just been awarded Science Foundation Ireland's prestigious Starting Investigator Research Grant, worth almost €500,000. This funding will allow Dr. O'Halloran to build a complete prototype Microwave Breast Imaging system at NUIG and bring the technology to clinical trials. As Dr. O'Halloran explains: "Over the last decade the Microwave Imaging group at NUIG have been at the very forefront of image-algorithm development, publishing their work in several high-ranking journals. Despite this, the group did not have the required funding to build a working prototype system, instead testing their algorithms on simulated data or experimental data provided by collaborators. The SIRG award means that the group can now truly compete

with international Microwave Imaging research groups and hopefully develop one of the first microwave-based breast imaging systems at NUIG."

Dr. O'Halloran completed a degree in Electronic Engineering at NUI Galway in 2004 prior to commencing his PhD. Electronic Engineering was an obvious choice of degree. "I always had a strong interest in science at second-level. Electronic Engineering seemed like a natural "fit" for me, because it involved the direct application of science to real-world practical problems, such as the breast cancer detection system we're currently developing."

Continuing his career in research has been a rewarding challenge. "Firstly, all involved in the Microwave Imaging project here at NUIG are keenly aware of the potential societal benefits of a more effective technology for breast cancer detection. Secondly, building a prototype medical imaging device requires the development of a wide-range of skills, ranging from hardware design to algorithm development and clinical trial management. It's also very exciting to see eight years of fundamental research culminating in a working prototype system."

Celebrating Success

Dr. Stephen Hynes Awarded Scholarship

Dr. Stephen Hynes of the J.E. Cairnes School of Business and Economics has been awarded a 2012/2013 Fulbright Scholarship. Dr Hynes will undertake research at the Center for the Blue Economy (CBE) in the Monterey Institute of International Studies, California, in the area of marine economics and ecosystem service valuation.

Ireland Fund Business Plan Competition

Four PhD students Paul Lohan, Ana Cimpian, Sean Gaynard and Fiona Griffin, reached the final of the Ireland Fund Business Plan competition held at the Aviva Stadium in Dublin in June. Their innovative medical device business proposition, created as part of their participation in the BioInnovate Ireland programme, secured the team joint third place. BioInnovate Ireland is a specialist training and collaboration programme in medical device innovation. It is modelled on Stanford University's prestigious Biodesign Programme.

Article cited by EU Court of Justice

An article by Dr. Laurent Pech (Law School), co-written with two other law professors, was cited by one of the EU Court of Justice's top legal advisers. The case in which it was raised addresses complex issues about the field of application of the Charter of Fundamental Rights of the European Union. In his Opinion, the Advocate General relies on Dr. Pech's paper to determine when national authorities are bound by EU fundamental rights standards. Dr Pech's paper, entitled "The Scope of Application of EU Fundamental Rights on Member States' Action: In Search of Certainty in EU Adjudication" was published by the Czech Society for European and Comparative Law in 2011.

Colin O'Dowd Awarded the Appleton Medal

Professor Colin O'Dowd has been awarded the Appleton Medal by the Institute of Physics in the UK for his 'distinguished research in environmental and atmospheric physics'. In particular, the NUI Galway physicist was lauded for his work on the formation and transformation of aerosols, the tiny particles which can effect cloud formation and impact climate change.

Dr. Darius Ceburnis, a researcher at the Centre for Climate and Air Pollution Research has won the Lithuanian National Science Award, the most prestigious science award in Lithuania. Darius has been at the forefront of marine aerosol research since 2001 and was a key co-author of the seminal paper in the journal Nature (2004) highlighting biogenic organic matter in marine aerosols and linking it to biological activity in the ocean waters.

NUIG Receives Interdisciplinary Capacity Enhancement Award

NUI Galway have succeeded in obtaining three new HRB research grants called the Interdisciplinary Capacity Enhancement Award. The recipients were Fidelma Dunne, for work on Gestational Diabetes; Andrew Murphy for work on Urinary Tract Infections; and Brian McGuire for work on Chronic Pain. This has led to the employment of nine postdoctoral researchers. As a result a research networking meeting showcasing the research will be held in the Radisson in Galway in January. This is being organized by Dr. Akke Vellinga in General Practice / Bacteriology and will be funded by the HRB.

Frank Glavin Receives Best Student's Paper Award

Frank Glavin from the College of Engineering and Informatics has received the Best Student's Paper award for a paper co-authored with Michael Madden, at CGAMES 2012, the 17th International Conference on Computer Games. The CGAMES conference is one of the leading research conferences devoted to the advancement of the theory and practice of games development.

Their paper was entitled "DRE-Bot: A Hierarchical First Person Shooter Bot Using Multiple Sarsa(λ) Reinforcement Learners", and described a hierarchical Danger-Replenish-Explore architecture for controlling non-player characters (NPC) in a first person shooter game.

Dr. Eilís Dowd Receives 3-year Health Research Award

Dr. Eilís Dowd (Pharmacology & Therapeutics) along with her co-applicants, Dr. David Finn (Pharmacology & Therapeutics) and Dr. Adrienne Gorman (Biochemistry), were awarded a 3-year Health Research Award from the HRB to investigate the anti-inflammatory and disease-modifying potential of the endocannabinoid system in Parkinson's disease. One of the tragedies of this condition is that by the time a patient presents with initial symptoms, the disease is already well advanced and current symptomatic therapies can do nothing to prevent further disease-associated neurodegeneration. The aim of this project is to determine if pharmacological manipulation of the endocannabinoid system can mediate functional neuroprotection in models of Parkinson's disease.

Professor Ivan J. Keogh Recommended for CORLAS Membership

Professor Ivan J. Keogh, Consultant Otolaryngologist Head & Neck Surgeon, has been recommended for membership by his peers to The Collegium Oto-Rhinolaryngologicum Amicitiae Sacrum (CORLAS) which was formed in 1926 in The Netherlands to encourage the free exchange of scientific research within Europe (after the horrors of WW1). This is the first Irish recommendation in over 20 years.

His presentation will be based on research carried out at NUIG on "The development of an accelerometer based biofeedback device for the management of Benign Paroxysmal Positional Vertigo

Creating an International Hub of High Performing Software Organisations

Almost every aspect of our daily lives depends on software and yet much of it is poorly understood, under-utilised, and quickly out-dated, and is often used for purposes its original designers never imagined. Software organisations struggle to satisfy an audience, particularly the younger 'digital natives' who, never knowing life without technology, have huge appetites and expectations for today's software applications.

This multi-disciplinary research brings together researchers from the Whitaker Institute at NUI Galway and the Lero Irish Software Engineering Research Centre. Funded by Science Foundation Ireland, this €1.8m initiative involves three research fellows, five full-time and three industry-based PhDs in NUI Galway. In addition, dedicated time from more than 20 staff from companies including Cisco, Information Mosaic, Almir, Intel and Storm Technologies, amongst others.

The research and the broader industry network have grown organically over the last

five years, resulting in what is now a very rich and diverse set of industry partners. Companies we have worked with on these projects range from local Galway-based SMEs to global multinationals, producers of critical systems for space shuttles, distributed and outsourced teams, developers of cloud and open source products, and stand-alone organisations versus those who develop as part of a large 'open' consortium.

Outputs from the research will include validated standards, and a searchable repository where any organization can benchmark their software development processes against organisations of similar size, industry, and general type. Where this benchmarking reveals shortcomings, the organisation can search for industry best practices, and can download associated templates, detailed guidelines, exemplar cases of those practices, and a set of metrics against which to measure the effectiveness of their own implementation over time. Other outputs include simulations and

exercises, case study textbooks, and training material and modules for third level institutions and industry.

According to Ken Power, co-founder of Cisco's Agile Office "this initiative helps build and reinforce this reputation by implementing leading-edge research, sharing practices and experiences across industry, and by providing a feedback mechanism to test out new and emerging ideas. The work conducted with NUI Galway has already resulted in significant reductions in process waste and ultimately in significant gains in productivity for Cisco".

By Dr. Kieran Conboy, School of Business and Economics and Whitaker Institute, NUI Galway, kieran.conboy@nuigalway.ie

Critical edition of important travel writings to be published

Richard Hakluyt's monumental compilation of Renaissance travel accounts, *The Principal Navigations ... of the English Nation* (published 1598-1600) is the most important collection of English travels writing ever produced. The territories it describes cover every area of European activity and aspiration in the period, from the New World to Muscovy, the Levant, Persia, the East Indies and Africa. The work was published in three massive folio volumes containing approx. 1.76 million words, and it spurred colonial settlement in Virginia and a global expansion of trade, with lasting consequences to the present day.

Prof. Daniel Carey of the School of Humanities and the Moore Institute is general editor of the first-ever critical edition of the work, which will be published by Oxford University

Press in 14 volumes from 2016-18. The edition will make available Hakluyt's text in a way that has not been possible before, opening up the era of early modern travel and exploration to a new generation of readers.

The project has recently launched a website, www.hakluyt.org, and a new volume of essays, edited by Prof. Carey and Claire Jowitt, has just appeared: *Richard Hakluyt and Travel Writing in Early Modern Europe* (Ashgate, 2012). The project has been funded in 2012 by the Irish Research Council, supporting the work of Prof. Carey and a postdoctoral fellow, Dr. Anders Ingram.

Prof. Daniel Carey,
School of Humanities & Moore Institute



Spotlight on Outreach: NUI Galway & BABORÓ DEMONSTRATE the POWER OF ART & SCIENCE



Through the Baboró International Arts Festival for Children, Researchers at NUI Galway were given a unique opportunity to work with local artists on project that was designed to get school children thinking creatively about how to live more sustainably.

Baboró launched BEAST! (Baboró: Environment, Arts, Science and Technology) Phase 1, in Spring 2012, as a continuation of their development of art through science, by exploring Science, Technology and the Arts with 8 NUI Galway Researchers, 8 Artists, 8 Teachers and over 200 Primary School students from Galway city and county schools. The students were given the opportunity to engage in research and science with specialists in the classroom, at the Ryan Institute's Carna Research Centre, at an NUI Galway Chemistry

Laboratory and even during a visit to one of the researcher's own Eco-house.

"What struck me most was the willingness of 8/9 year olds to get involved." Said Chemistry's Dr. Peter Crowley, who was one of the BEAST! Project Researchers. He added,

"They always had more questions and possible explanations... just the opposite of university students!"

Following their scientific and technical work, the children then worked with 8 Artists to create an artistic interpretation of what they had learned from the Researchers. This work was presented during the Baboró festival in October as BEAST! Phase 2 The Exhibition.

The BEAST! project partners include the Ryan Institute at NUI Galway and Dublin City of Science 2012. **BEAST! Fundit Campaign**

Volvo Ocean Race Festival

One of the surprise success stories of the recent Volvo Ocean Race Festival was the popular enthusiasm generated for a heritage exhibition whose theme and displays are something not normally associated with history.

The NUI Galway-based Computing and Communications Museum of Ireland was relocated to the Global Village in the Claddagh for the duration of the festival where it provided a fascinating insight into advances in communications from ancient hieroglyphics to today's Internet. The array of electronic artefacts on display included such iconic computers/ consoles as the *Apple II*, *IBM PC*, *Amiga*, *Atari 2600*, *BBC*, *Sinclair ZX81*, *PDP 11* and the *Commodore Vic-20*.

"Its presence at the festival touched an emotional cord with so many visitors," according to Brendan Smith, curator and co-founder of the museum in his capacity as Education Outreach Officer of the Digital Enterprise Research Institute (DERI), where it is permanently located.

'Accelerating Science' flagship exhibition comes to Galway

CERN, the world's leading laboratory for particle physics, has brought 'Accelerating Science', its flagship travelling exhibition, to Galway this Autumn in partnership with the Galway Science & Technology Forum and Boston Scientific. Starting with the History of the Universe, the Exhibition takes visitors on an extraordinary journey which will include activating a model of the Large Hadron Collider, understand how a particle detector works and what happens when particles collide at almost the speed of light. Our own Dr. Andy Shearer has played a key role in the exhibition and his research group have led the talks and tours over the past weeks. The exhibition gives the story of the Higgs particle whose detection CERN announced in July. **Find out more** and plan a visit soon.

Congratulations is due once more to Dr. Shearer, along with colleagues from the Ryan Institute, Irish Seaweed Research Group, Griffith Geoscience Project, Marine Botany, Energy Research Centre, Marine Zoology, Air-Sea Group, College of Engineering & Informatics, Centre for Climate and Air Pollution Studies and the Centre for Astronomy as well as the Marine Institute, Galway Atlantaquaria and Blackrock Castle observatory in Cork for a wildly successful 2nd year of Sea2Sky in September.

Work in Progress: Examining the Impact of the Youth Café

Two members of staff at the School of Political Science and Sociology and the UNESCO Child and Family Research Centre have been awarded funding by the Irish Research Council as part of its 2012 Research Development Initiative competition. Dr. Cormac Forkan and Mr. Liam Coen won a competitive tendering process to examine the impact of the Youth Café Initiative in Ireland.

While youth cafes have existed in Ireland for some time, the Initiative was formally launched in Ireland by the then Office for the Minister for Children and Youth Affairs in 2010 with financial support of €1.5 million from the Dormant Accounts Fund. Youth cafes aim to provide safe recreational spaces for young people and contribute to positive youth development. Central to the governance and operation of the cafes are young people, in partnership with adults in the community.

The research has a number of aims. Firstly, it will document the development and implementation of the Initiative since 2010, identifying the number of cafes provided and number of users involved. It will also examine the self-reported impact on young people attending and participating in a sample of youth cafes representing both urban and rural settings. It will also seek to identify the Initiative's broader community impact as perceived by a number of key informants and wider stakeholders in each setting. The research will culminate in a number of policy and practice lessons for future implementation of the Initiative elsewhere in the country. The research is expected to conclude in late 2013.

By Liam Coen, School of Political Science and Sociology, Child and Family Research Centre

NUI Galway Establishes the Whitaker Institute

The eminent economist and former Secretary of the Department of Finance, Dr T.K. Whitaker, was warmly received at NUI Galway recently as the University announced the establishment of the Whitaker Institute for Innovation and Societal Change. Over 200 members make up the faculty with expertise spanning across the College of Business, Public Policy and Law and the College of Arts, Social Sciences and Celtic Studies. Subsuming the University's Centre for Innovation and Structural Change (CISC), the Whitaker Institute builds on a decade of research-excellence and policy-focused contributions supported by over €11 million in competitive national and international research funding.

For more information, please visit www.nuigalway.ie/whitakerinstitute



Books Published

Higher Education and Civic Engagement: Comparative Perspectives

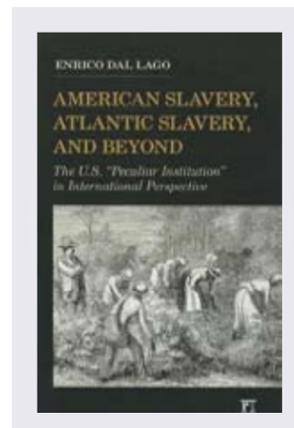
Both Lorraine McIlrath and Ann Lyons from the Community Knowledge Initiative (CKI) at NUI Galway along with Professor Ronaldo Munck from Dublin City University (DCU) recently edited a new Palgrave Macmillan publication entitled Higher Education and Civic Engagement: Comparative Perspectives. The book that was published in July 2012 provides an original and challenging contribution to contemporary debates on the civic purpose of higher education, exploring diverse manifestations of civic engagement through teaching and learning, research and volunteering, in a range of international contexts. The chapters offer critical contemporary perspectives from a robust comparative perspective on the role of higher education institutions in terms of civic engagement. Perspectives from the United States, Argentina, Australia, Ireland, Spain, Lebanon and the United Kingdom feature in the book. The contributors to the book are also a diverse group and include academics, university leaders, administrators, community activists and a poet! The book will represent an important text for leaders of higher education, academics, administrators, members of community, researchers and professional practitioners.

For further information see <http://www.palgrave.com>



Enrico Dal Lago, *American Slavery, Atlantic Slavery, and beyond: The U.S. "Peculiar Institution" in International Perspective*, Paradigm Publishers, 2012.

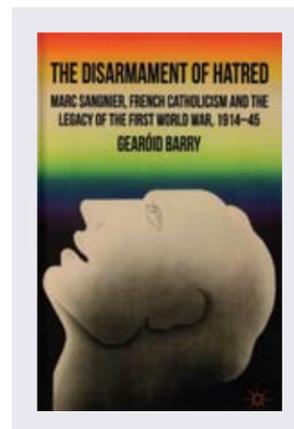
American Slavery, Atlantic Slavery, and Beyond provides an up-to-date summary of past and present views of American slavery in international perspective and suggests new directions for current and future comparative scholarship. It argues that we can better understand the nature and meaning of American slavery and antislavery if we place them clearly within a Euro-American context. Current scholarship on American slavery acknowledges the importance of the continental and Atlantic dimensions of the historical phenomenon, comparing it often with slavery in the Caribbean and Latin America. However, since the 1980s, a handful of studies has looked further and has compared American slavery with European forms of unfree and nominally free labour. Building on this innovative scholarship, Dal Lago treats the U.S. "peculiar institution" as part of both an Atlantic and a wider Euro-American world. He shows how the Euro-American context is no less crucial than the Atlantic one in understanding colonial slavery and the American Revolution in an age of global enlightenment, reformism, and revolutionary upheavals; the Cotton Kingdom's heyday in a world of systems of unfree labour; and the making of radical Abolitionism and the occurrence of the American Civil War at a time when nationalist ideologies and nation-building movements were widespread.



The Disarmament of Hatred, Gearóid Barry

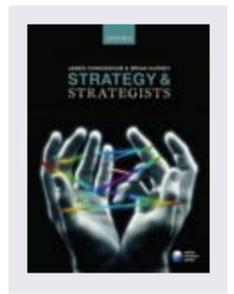
Documenting an audacious Franco-German movement for moral disarmament, instigated in 1921 by war veteran and French Catholic politician Marc Sangnier, this transnational study examines the European resonance of Sangnier's Peace Congresses in the interwar period. Advocating the 'disarmament of hatred', this movement – with its staged reconciliation and crossing of borders - aroused both hope and hostility in the aftermath of the First World War. Mining a variety of sources, both known and new, this book considers the Peace Congresses' surprising appeal and its political ecumenism (embracing Quakers, secularists, socialists and the pope) while reconfiguring the transnational histories of youth movements, women's peace activism and Christian Democracy. Examining also the excruciating new choices between peace and appeasement in the France and Europe of the 1930s, this story casts new light on key questions in European history in the era of two World Wars.

Author Gearóid Barry is a lecturer in Modern European History at NUI Galway and his current project looks at pacifism in the Euro-American world in transnational context.



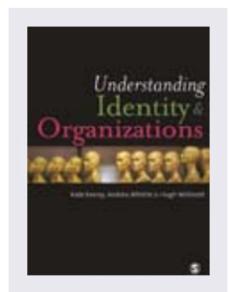
Strategy and Strategists, James Cunningham, Whitaker Institute, NUI Galway and Brian Harney, Dublin City University

Strategy and Strategists (2012), published by Oxford University Press, provides an illuminating exploration of strategy and its implications for business. Adopting a critical and reflective approach, the book guides the reader through the complexities of strategy, clearly presenting the conflicting viewpoints and arguments within the strategy field. The book included 25 readings from classic seminal pieces to contemporary contributions, practitioner reflections, case studies and features to encourage critical reflection, including discussion questions, 'implications for strategy practice', and 'spotlight' features to highlight topical issues.



Understanding Identity and Organizations, Kate Kenny, School of Political Science and Sociology and Whitaker Institute, National University of Ireland, Galway, Ireland, Andrea Whittle, Cardiff University, UK, Hugh Willmott, Cardiff Business School, University of Cardiff, UK

An understanding of identity is essential for a complete understanding of life in today's workplaces. This book offers insights into why people, groups and organizations behave the way they do. The authors describe, for example, work identities that are considered dirty, deviant and degrading, and how identity 'management' can be used as a form of control in contemporary organizations. Complex theoretical concepts are made accessible by using lively examples from popular culture, covering topics such as unemployment, globalisation and online identities.



New Hardiman Scholars Arrive



24 new PhD students have been awarded Hardiman Research Scholarships. The Hardiman Research Scholarships offer opportunities for suitably qualified individuals to pursue a structured postgraduate degree by research.

Structured PhD programmes, while retaining the focus on the advancement of knowledge through original research of traditional programmes, also provide professional development modules in subject-specific and transferable skills.

The prestigious Hardiman Research Scholarship scheme was first launched in NUI Galway in 2011 to support outstanding PhD students whose research focuses on the five key areas of research in which the University offers leading expertise. Named in honour of James Hardiman, who was appointed the University's first Librarian in 1849, the scholarship

programme aims to produce highly focused PhD graduates from a pool of national and international candidates.

In a joint initiative Cancer Care West and the Galway University Foundation have donated €1 million to provide ten fully funded scholarships. The Cancer Care West Hardiman scholars will perform translational and clinical research in the area of Cancer Biology, Therapeutics and all aspects of oncology at NUI Galway and the associated University Hospital Galway.