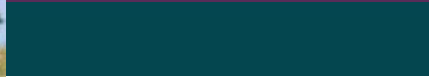
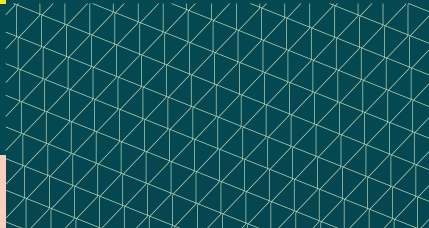
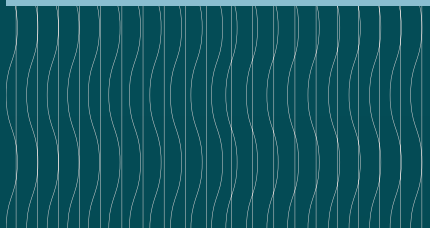


Translational Health Research Innovation preVention & Equity (THRIVE)



Ollscoil
Teicneolaíochta
an Atlantaigh

Atlantic
Technological
University



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TURISE is co-financed by the Government of Ireland and the European Union through the ERDF Southern, Eastern & Midland Regional Programme 2021-27 and the Northern & Western Regional Programme 2021-27



Rialtas na hÉireann
Government of Ireland



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Tionól Réigiúnach
Tuaiscirt & Iarthair
Northern & Western
Regional Assembly



Tionól Réigiúnach
an Deiscirt
Southern Regional
Assembly

HEA

AN tÚDARÁS um ARD-OIDEACHAS
HIGHER EDUCATION AUTHORITY



Translational Health Research Innovation preVention & Equity (THRIVE)

The Postgraduate Research Programme in Translational Health Research Innovation preVention & Equity offers 12 PhD research scholarships to commence in 2024. Each project will include an enterprise placement of minimum 12 weeks duration. Project awards will include:

- **A student stipend (usually tax-exempt) valued at €22,000 per annum**
- **Annual waivers of postgraduate tuition fee**
- **Extensive research training programme**
- **Support for travel, consumables and dissemination expenses**

The THRIVE Postgraduate Training Programme (PRTP) emerges as a pivotal initiative aligned with Ireland's strategic health priorities. Focusing on preventative strategies in health, THRIVE responds to priorities such as the Healthy Ireland Strategic Action Plan and the National Framework for Chronic Disease Management. By bridging academia and healthcare, THRIVE aims to shape university research agendas to encompass wellbeing research. This pioneering programme will deliver enhanced health and wellbeing research, knowledge development and regional enterprise support through our industry partners.

Chronic diseases pose significant challenges to Ireland's health system, exacerbated by an aging population. THRIVE seeks to alleviate this burden by fostering evidence-based strategies and industry collaboration. Graduates of the program will play pivotal roles in developing and

implementing preventative measures, targeting risk factors, and advancing early detection methods. Through rigorous academic research and innovative industry partnerships, THRIVE aims to develop contributions to knowledge and support innovation to help reduce incidence of diseases and improve health outcomes.

In essence, THRIVE represents a transformative force in Irish healthcare research and innovation, empowering future leaders to drive proactive, person-centric approaches to health and wellbeing. By integrating research, education, and preventative measures, THRIVE holds the potential to contribute to revolutionary healthcare delivery and ultimately enhance quality of life for all.

Research Training Programme

Year 1

Induction

Research Project

Stakeholder Workshop

Structured Modules
& Seminar Series

Summer School

Year 2

Research Project

Enterprise Placement

RISE @ ATU Conference

Structured Modules
& Seminar Series

Summer School

Year 3

Research Project

Enterprise Placement

RISE @ ATU Conference

National and International
conferences

Summer School

Year 4

Research Project

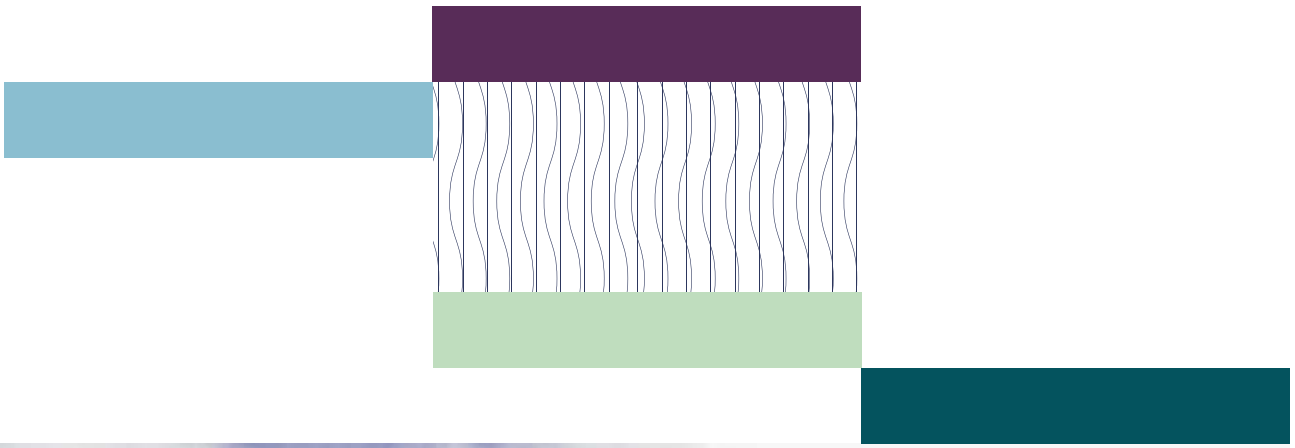
Enterprise Placement

RISE @ ATU Conference
and Doctoral Colloquium

National and International
conferences

Summer School





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01



Smart Kids, Healthy Lives: Integrating Technology to Combat Childhood Obesity in Ireland

Childhood obesity is a growing concern in Ireland and globally, with rising numbers of overweight and obese children projected for the future. Addressing this issue requires effective preventive measures, interventions, and policymaking. The multifaceted nature of the problem involves factors such as public health initiatives, lifestyle changes, socioeconomic conditions, and government policies. Physical activity levels directly impact obesity

rates in children, closely tied to their physical literacy, defined as the motivation, confidence, competence, knowledge, and understanding to engage in physical activities throughout life. Irish children exhibit lower physical literacy compared to international standards, measured through methods like fundamental movement skills screening. Existing measurement techniques are flawed due to expertise, cost, and time constraints. This research

proposes a novel solution using wearable technology, leveraging inertial sensor technology. This cost-effective and user-friendly approach aims to measure physical literacy in children, driving lifestyle changes and facilitating targeted early interventions globally to combat childhood obesity.

Lead supervisor

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02



Investigating the use of health coaching applications and emerging technology to develop novel strategies as mitigation for the growing impact of social media and online platforms on student well-being

This PhD study aims to investigate the increasing influence of social media platforms on student well-being while exploring the effectiveness of health coaching interventions integrated into electronic devices through emerging technology. The evolution of social media and the relentless exposure and opportunity to engage in these platforms has presented an unprecedented shift in social engagement paradigms. The study will evaluate mitigation strategies designed to promote healthier social media habits among students through the implementation of virtual

health coaching intervention, offering guidance on maintaining mental health, mindfulness, and promoting positive social media usage habits.

- The study will employ surveys, psychological scales, and qualitative interviews to gauge baseline well-being indicators and social media usage patterns,
- Introduce health coaching sessions integrated into the platforms, addressing stress management, digital well-being, and positive engagement practices,

- Collect data at intervals to measure changes in well-being indicators and social media behaviours among the intervention and control groups,
- Assess the impact of virtual health coaching technology on social media interaction and student wellbeing.

Lead Supervisor

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03



Evaluation of Nutrition interventions to improve sleep and health

Sleep is vital to maintain physical and mental health, recovery, and performance. Sleep also has a restorative effect on the immune system and the endocrine system. Sleep requirements differ across the lifespan but for sleep to have a restorative effect on the body, it must be of adequate duration, timing, and quality. Sleep disturbance and sleep deprivation can have negative health consequences, and both are

implicated in inflammatory disease and all-cause mortality. Sleep health is characterised by five key dimensions:

1. Sleep duration: total amount of sleep per 24 hours
2. Sleep continuity or efficiency: ease of falling asleep and returning to sleep
3. Timing: placement of sleep within the 24-hour day

4. Alertness/sleepiness: ability to maintain

5. Satisfaction/quality: subjective assessment of 'good, or 'poor' sleep

Lead Supervisor

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04



Communicating benefits of population vaccination and screening programmes for optimal uptake and improved longevity in areas with regional disparities

Objectives of Public Health strategies include the control and/or eradication of communicable diseases, early detection of disease onset and monitoring of adherence and associated outcomes to national programmes. Despite the robust and extensive evidence base around the effectiveness and societal impact of national vaccination and screening programmes, uptake varies across a range of factors and the levels are sub-optimal. This results in level of disease prevalence, delayed diagnosis

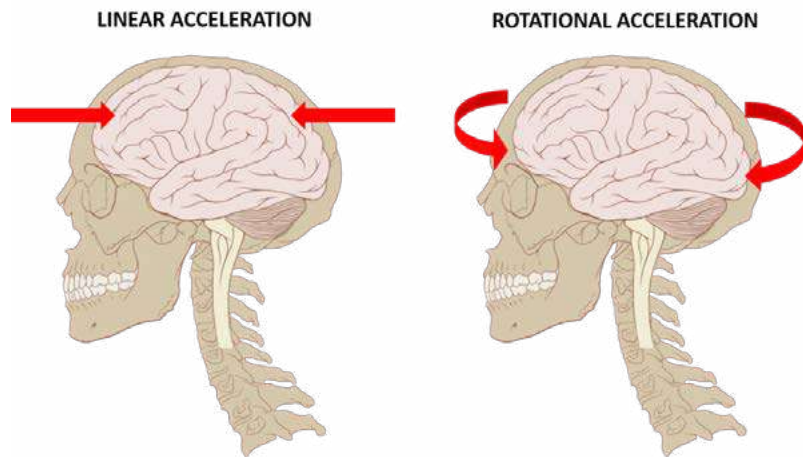
and early mortality that has an economic and societal burden and could have been prevented. In 2024, we have seen a significant increase in Measles across Europe, particularly in the UK. Uptake rates in Ireland remain at just under 90%, lower than the WHO recommended uptake needed of 95%. Similarly, a HSE report highlighted the perception of the importance of childhood vaccination decline of 6% from 91.5% to 85.5% in 2022. Screening programme uptake across Breast, Cervical and

Colorectal vary with education levels, socio-economic status and region of residence identified as drivers of low adherence. The aim of this research project is to identify drivers of vaccine hesitancy and reluctance to partake in screening programmes in order to develop combative communication strategies to improve uptake.

Lead Supervisor

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05



Cerebral Harmony: Integrating Science, Sports, and Engineering to study gender inclusive Brain Biomechanics for Brain Health and Healthy Ageing

Brain injury can lead to a number of cognitive disorders which may have long term implications for brain health. Our pioneering project delves into the intricate realm of brain biomechanics, specifically focusing on the distinctive impact of forces on male and female subjects. By utilizing cutting edge technology, we will extract profound insights from diverse patients, constructing detailed 3D models from their brain scans. Preliminary data have been generated revealing the varied repercussions of forces on the brain. These models will be integrated into

specialized software, allowing us to meticulously examine the effects of forces such as rotational acceleration, principal stress, strain, shear, and deformation on the brain. This detail will improve medical technologies to identify the impact of force on the brain and also inform therapies to support brain health and healthy aging.

Lead Supervisor

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06



Investigate the effects of spending time in natural environments compared with urban environments on cognition, wellbeing, and brain activity

Most of us feel better after a walk in the fresh air, either by the sea or through a forest. Spending time in nature can also help to clear the head and regain focus and concentration. This project will investigate the effects of spending time in different natural environments (blue-ocean; green-countryside) compared with urban environments on cognition, wellbeing, and brain activity. Moreover, with the enterprise partner, Your Wellbeing Warrior, we will compare the effects of engaging in wellbeing activities such as yoga and mindfulness

meditation while outdoors in nature compared to indoors. Psychological tests will evaluate the beneficial effects of spending time in nature on different aspects of cognition including memory, attention, learning, decision making, and problem solving, and we also plan to record brain activity to detect effects on neural information processing.

Lead Supervisor

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07



Management of Menstrual Cycle Symptomology for Quality of Life and Health

Fluctuations in sex hormones throughout the menstrual cycle are associated with myriad menstrual cycle symptoms (MCS), with 90% of women experiencing MCS at some point in the menstrual cycle. Symptoms include menstrual cramps, lower back pain, mood disturbance, lethargy and fatigue, which can negatively impact quality of life and health. In addition, MCS can be a barrier to participation in physical activity, which is an important determinant of physical and mental

health. This project aims to elucidate causes of MCS and consequences for quality of life (QoL) and health, and to identify and evaluate strategies to manage MCS. Research will be informed by the current scientific evidence-base and the enterprise partner's unique survey database of more than 3,700 women. The research findings will make a significant contribution to the existing body of knowledge on menstrual cycle and health, informing preventative care and management of MCS to

ameliorate the negative impact on QoL and health. The research will enable the enterprise partner to drive new product innovation and business growth, and in doing so, promote QoL and health for women.

Lead Supervisor

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08



Virtual Reality (VR) for the promotion of psychological and physiological benefit for older people

This PhD application relates to the assessment of the psychological and physiological benefits of immersion in virtual environments and builds on research conducted at the ATU, Donegal. The developed VR environment has attracted significant attention from physicians in gerontology and palliative care in addition to carers in care homes. With older patients, the infirm or those in palliative care, age-related or illness-related concerns can include physical distress, pain, discomfort,

psychological distress, medical uncertainty and anxiety, which is dependent, to some extent, upon the patient's level of independence (for example, functional capacity (the ability to perform normal daily tasks) and cognitive acuity (the ability to think clearly, reason and remember). A core aim of this research is to permit older people, infirm patients and those in palliative care to experience the outdoors by means of virtual reality. There is significant research that suggests a strong link between

nature, the outdoors environments and wellbeing. A second aim of this research is to present VR in a manner that promotes dignity preservation, this is equally applicable to palliative care and older people.

Lead Supervisor

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09



Utilising AI and GPS data to determine forces for subconcussive impacts on injury risk exposure in contact and collision sports to inform strategies for brain injury management and recovery

In contact and collision sports, the integration of Artificial Intelligence (AI) and Global Positioning System (GPS) technologies allows us to understand the subtle, and yet impactful forces exerted during subconcussive impacts in contact and collision sports. AI can assist in modelling the brain and assist in processing the vast amounts of data collected by GPS sensors worn by athletes. These sensors track the players' movements with precision, providing a comprehensive picture of their interactions on the field of play. RISE@ATU Postgraduate Researcher

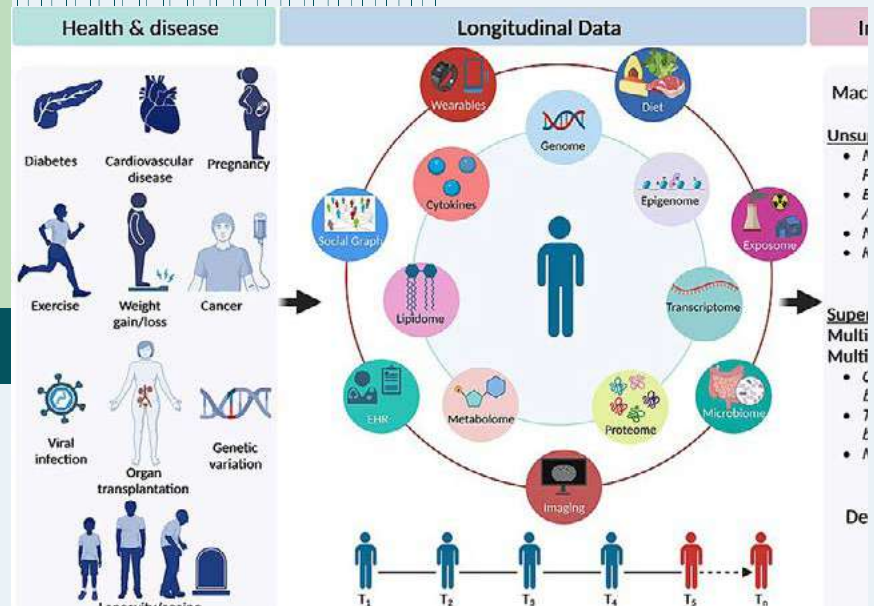
Training Programme: Application Form Page 32 By deciphering patterns and correlations within this data, AI algorithms can identify and quantify the forces involved in subconcussive impacts, and measure those impacts below the threshold of causing knock out blows causing concussion. The PRTP project could allow those involved in sport (i.e., amateur, and professional) to gauge and monitor injury risk exposure more accurately. Coaches and medical staff can then tailor training programs, implement preventive measures,

and make strategic decisions to minimize the cumulative impact on players' health. In essence, using a combination of AI and GPS in sports science empowers practitioners to quantify player dynamics, therefore fostering a safer environment where athletes can thrive while minimizing the long-term risks associated with repetitive subconcussive impacts.

Lead Supervisor

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10



Comparison of machine learning and classical statistics in predicting health outcomes in a lifestyle modification programme for obesity, and development of a user-friendly predictive application for patients

Obesity is increasing, both in Ireland and world-wide, with associated negative personal and financial impacts. Various factors are known to increase the likelihood of developing obesity at a population level, however, there is large variance in how individuals react to those factors or how the factors work in combination. Lifestyle modification programs aimed at changing diet and exercise behaviours are used both in the prevention and treatment of obesity. Participation and evaluation of these diet and exercise programmes

generate large volumes of data on participants' behaviours, lifestyles and resultant clinical outcomes. Data generated from such interventions is typically evaluated using traditional statistical approaches. However, more detailed more in-depth analysis of these large datasets is possible using the advanced technological capacity of machine learning techniques. The resulting insights can potentially uncover previously unidentified trends and may be used to help people with obesity better understand and manage the lifestyle factors

influencing obesity. The project will be carried out in two phases: 1. Different ML techniques will be used to analyse the data to determine key features; 2. The development and evaluation of a smart-phone application to enable users to track and alter the features identified in phase one.

Lead Supervisor

Dr Kevin Cradock
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11



Understanding associations between metabolic risk factors and social exclusion among older adults in the age of digitalisation

The overarching aim of this study is to explore the associations between metabolic risk factors (e.g. high blood pressure, excess abdominal weight) and social exclusion of older adults on the margins of society. We will investigate if digitalisation and technological interventions (e.g. smart phones, wearable and connected medical devices) can mitigate against or compound the metabolic risk factors for people experiencing social exclusion. The separation of individuals and groups from mainstream society, or social exclusion, is multi-dimensional and encompasses loneliness, isolation,

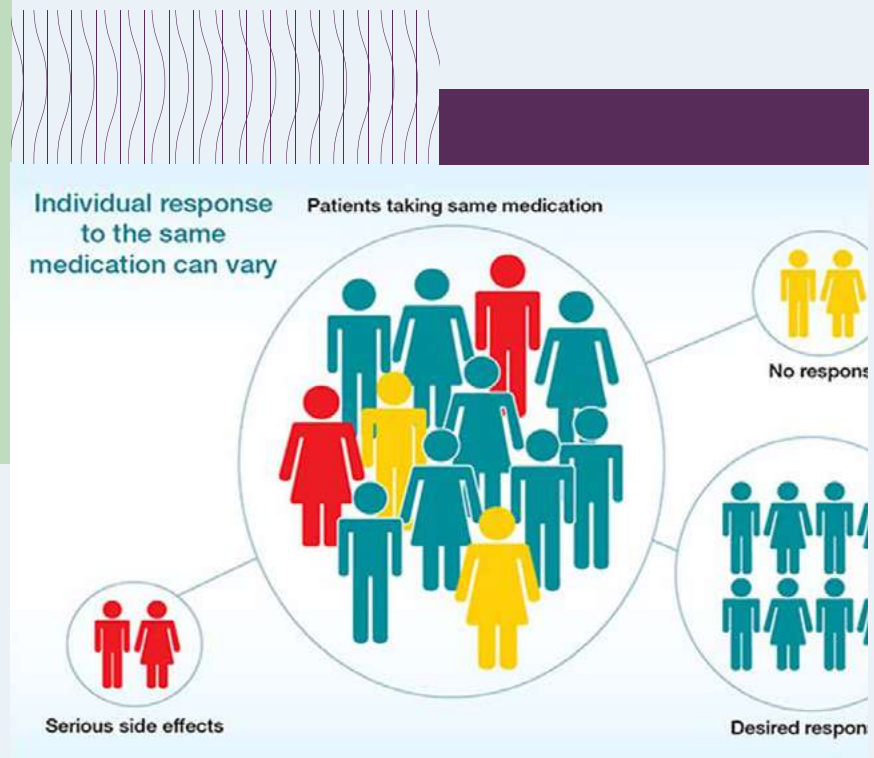
civic participation or lack thereof and decreased mobility. Loneliness, in particular, is the public health crisis of our age and a key theme in current social policy debates. So much so that in 2018 a Loneliness Taskforce was established to coordinating a response to the epidemic of loneliness and social isolation in Ireland. The likelihood of experiencing loneliness increases with age and the problem is compounded for those on the periphery of society. This is hugely challenging given the effect of loneliness on mental and physical health. Identifying wearable and connected health and fitness

devices that simultaneously impact metabolic risk factors and multi-dimensional social exclusion could potentially improve the health and wellbeing of various groups of older people while delivering cost-savings.

Lead Supervisor

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12



The Value of Pharmacogenomic testing in primary care for the prevention on inappropriate prescribing in polypharmacy populations and the wider societal and economic impacts

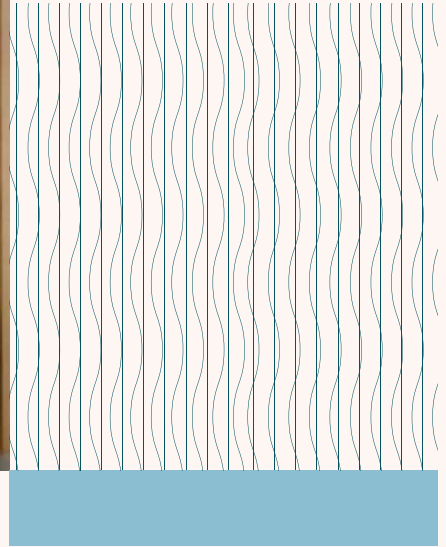
In the Republic of Ireland (RoI) the budget allocated for health has increased by 80% over the last decade. This is due to increasing demands on healthcare as the population is living longer and innovation in pharmacologic therapies and medical devices have resulted in higher costs of care. Polypharmacy occurs when an individual is on more than five prescribed medications for different indications coinciding with potentially inappropriate prescribing (PIP), thus, areas where innovative practices may improve prescribing, reduce waste, reduce spending and ultimately

enhances healthrelated quality of life (HRQoL). Pharmacogenomics-informed prescribing has been evidenced to potentially improve efficacy and reduce adverse drug reactions, a leading cause of global mortality. For example, an estimated 42% of codeine prescriptions require adjustment based on pharmacogenomic data with approximately 2% of the population are at significant risk of codeine overdose because of a pharmacogenomic variant. Clinical guidelines on dose adjustments/ alternative therapies are established based on pharmacogenomic

metabolising status. The STOPP criteria is a useful screening tool for older persons prescribing but are best used in conjunction with clinical assessment and discretion, such adoption is varied across the RoI. This project aims to examine the value of pharmacogenomic testing in primary care for the prevention of PIP.

Lead Supervisor

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Requirements / Qualifications

A minimum of 2.1 honours degree
(Level 8) in a relevant discipline.

Project Duration:
48 months (PhD)

Applications:

Application Form / Terms and
Conditions can be obtained on the
website: www.atu.ie/TU-RISE

The closing date for receipt
of applications is 5pm, (GMT)
Monday 29th April, 2024.

Applicants will be called for an online
interview (shortlisting may apply).

Funding Statement

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and the Northern & Western
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