Two Year Science Foundation Ireland
Fully Funded Research Masters (MRes) opportunity in

Collaborative Robotics, Geocomputation & Machine Learning

Department of Computer Science &
National Centre for Geocomputation
Maynooth University, Ireland

This is an opportunity for a **two year fully funded Research Masters**, with a dynamic supervisory team based in the Dept of Computer Science and National Centre for Geocomputation at Maynooth University (MU). The successful candidate will work on an exciting **collaborative robotics project** focused on **drones and unmanned ground vehicles** (UGVs).

Open position	A Research Masters Studentship in Collaborative Robotics focused on drones and unmanned ground vehicles (UGVs)
Location	The successful candidate will be allocated a desk in the National Centre for Geocomputation, Iontas Building, Maynooth University.
Duration	2 Years
Funding / Stipend	The position is funded for 2 years, including a monthly stipend and a travel budget to present at agreed international conferences, workshops and seminars. The studentship will cover fees and a stipend of € 18,500 per annum.
Contact	Prof. Tim McCarthy (tim.mccarthy@mu.ie) & Prof. John McDonald, Dept of Computer Science (john.mcdonald@mu.ie)
Closing Date	**12th August 2022**

Background
This is a Science Foundation Ireland research centre, 'LERO' funded MRes scholarship, part of a collaborative LERO project between Maynooth University and the University of Limerick. The successful candidate will work with MU Principal Investigators (PIs) Professors Tim McCarthy & John McDonald and their research teams with access to >€1million of the most advanced research infrastructure including: Robotic platforms, Sensor technologies and Computational resources. Both PIs are leading the MU collaborative robotics project which deals with drone and UGVs capturing multimodal optical, LiDAR data and using machine learning and geospatial analysis in order to develop novel methodologies for automated real-world scene understanding, navigation, mapping and tasking.

About the Project
Robots are gradually appearing in almost all areas of our everyday lives including Food Production, Healthcare, Transportation, Energy and Infrastructure. Examples include autonomous vehicles, crop-harvesting machines, drones carrying-out defect inspection over critical infrastructure and hospital robots. This transition is underpinned by the enhanced autonomous capabilities resulting from rapid progress in robust perception, AI, machine learning, and planning and control, in conjunction with open robotic frameworks.

This MRes project will explore how aerial and ground based robotic platforms can:

(i)   capture data over a site of interest and using the latest machine learning algorithms and geocomputational modelling, reconstruct a *digital twin* of the area of interest,

(ii) exploit data from both drone and UGV sensors to operate collaboratively in order to carry out navigation and mapping tasks.

Research Masters Studentship

This MRes will enable the successful candidate to apply their creativity and knowledge to design and develop collaborative robotic architectures, providing them with the critical insight and practical skills to achieve this, in areas such as aerial and ground-based robots, multimodal sensor technologies, ML processors and geospatial analysis.

The position is funded for 2 years, including fees, a monthly stipend and a travel budget to present the research outputs at agreed international conferences, workshops and seminars. The studentship will cover fees and a stipend of €18,500 per annum. The successful candidate will be enrolled on the Research Masters programme in the Department of Computer Science at Maynooth University and will be supervised by Profs. Tim McCarthy and John McDonald for the duration of their programme.

Duties and Responsibilities

1. Undertake postgraduate research in the area of the research project as outlined.
2. Work closely with the academic supervisors to ensure that the progress of the individual project is in line with objectives.
3. Work effectively within a team environment.
4. Attend and participate in training events and supervisory meetings.
5. Prepare progress reports.
6. Present and publish research outputs to both academic and non-academic audiences.
7. Attend and participate in agreed academic and non-academic conferences, events and seminars.

Qualifications, Expected Skills and Competencies

1. Applicants must hold a primary degree in Computer Science, Electronic Engineering or equivalent with a grade of 2.1H or higher.
2. Strong software development skills in areas such as mobile robotics (including ROS), computer vision and AI frameworks.
3. Highly proficient English language skills.
4. Excellent written and verbal communication, including presentation skills.
5. Excellent organisational skills, attention to detail and the ability to meet deadlines.
6. Ability to think logically, create solutions and make informed decisions.
7. Willingness to work collaboratively in a research environment.
8. A strong commitment to their own continuous professional development.

Application Process / Additional Information

Applications must be sent by e-mail to Prof. Tim McCarthy (tim.mccarthy@mu.ie) and Prof. John McDonald (john.mcdonald@mu.ie). Early applications are strongly encouraged.

Applications should include:
1. A cover letter explaining the applicant's motivation and interest in the project topic. Please include any relevant background and/or experience.
2. A Curriculum Vitae which includes the applicant's educational qualifications and any scientific publications and/or achievements.
3. Academic transcripts.
4. Two academic references.

Informal enquiries concerning the advertised position, accompanied by a CV and motivation letter, can be made to Prof. Tim McCarthy (tim.mccarthy@mu.ie) and Prof. John McDonald (john.mcdonald@mu.ie)

Applications will close at 5pm (GMT) **12th August 2022.** The received applications will be reviewed following the application deadline and the shortlisted candidates invited to interview.