

PhD Studentship in Computer Vision for Autonomous Vehicles

Applications are invited for a **PhD Studentship in Computer Vision for Autonomous Vehicles** in the Computer Vision Group at Maynooth University Department of Computer Science. The position is fully funded for 4 years through Lero – the Irish Software Research Centre (www.lero.ie) as part of a 4 year collaborative project with a Tier 1 supplier of automotive vision systems and includes a competitive stipend, PhD fees (EU level), a generous travel allowance, and funding for associated hardware and software (as part of the wider project).

The topic of the PhD is **robust data-association in multi-session and collaborative simultaneous localisation and mapping (SLAM)**. Solutions to this problem are particularly relevant in autonomous vehicle settings where algorithms are required to relate visual sensor data from repeated trajectories through the same environment across long time scales (e.g. months or years). These algorithms must therefore be robust to strongly varying lighting and weather conditions, and considerable variation in scene structure and appearance. Recent developments in deep learning are presenting compelling new approaches to addressing this problem. The aim of the PhD will be to investigate and develop new approaches that leverage and extend these results in the context of autonomous vehicles.

The student will be expected to work closely with members of the research team both at Maynooth University and at the commercial partner's site in Ireland, contributing new knowledge to the area and actively publishing their research results in leading computer vision, robotics, and/or intelligent vehicle system conferences and journals.

The successful candidate must have:

- a Bachelor's or Master's degree in Computer Science, Electronic Engineering, or a cognate discipline, with a final grade of 2.1H or higher (or equivalent)
- prior modules completed in a selection of the following topics: computer vision, robotics, AI/machine learning
- a strong mathematical background
- excellent software development and programming skills, with a strong capability in C++
- experience in working with Linux based systems
- excellent written and verbal communication skills

Experience in the following is also desirable:

- application of computer vision / robotics / machine learning to real-world problems (e.g. through previous projects, internships, etc.)
- python, OpenCV, the Robotics Operating System (ROS), Deep Learning Frameworks (e.g. pytorch, TensorFlow, etc.)

Applicants with previous research experience, and in particular, publications in any of the scientific areas mentioned above will be favoured in the recruitment process.

Applications including a cover letter, full CV, and contact details of two academic referees should be sent to Dr. John McDonald (John.McDonald@mu.ie) with the subject line “LERO PhD 08/18”.

Informal enquires welcome.

Applications deadline: 10th August 2018.

Start Date: Sept/Oct 2018.

The Computer Vision Group

Established in 2001, the Computer Vision Group at the Maynooth University is a research group within the Maynooth University Department of Computer Science (www.cs.nuim.ie), and is also part of the Maynooth University Hamilton Institute (www.hamilton.ie). The successful applicant will join an active group of researchers with a long track record in the fields of computer vision, robotics, and machine learning. With a strong focus on publication in top tier conferences and journals, the group has participated in a number of national and international research projects funded through Science Foundation Ireland (SFI), Enterprise Ireland (EI), the Irish Research Council (IRC), and the European Union.

Maynooth University

Maynooth University (www.maynoothuniversity.ie) is one of the four constituent universities of the National University of Ireland and in 2017 was placed in the global top 50 universities under 50 years old in the Times Higher Education World University Rankings. Formally established as an autonomous university in 1997, but tracing its origins to the foundation of the Royal College of St. Patrick in 1795, Maynooth University draws on a heritage of over 200 years' commitment to education and scholarship. It is located in the University town of Maynooth, 25km from the centre of Dublin, Ireland's capital city.

The University is a modern institution - dynamic, research-led, engaged, and grounded in the traditions of liberal education. With more than 11,000 students, Maynooth is Ireland's fastest-growing university, yet we retain a collegial campus culture that is central to our ability to bring significant interdisciplinary expertise to bear in tackling some of the most fundamental challenges facing society today

LERO

The position is co-funded by Lero, the Irish software research centre (www.lero.ie). Lero brings together leading software research teams from seven Irish Universities and Institutes of Technology in a coordinated centre of research excellence with a strong industry focus. Lero has raised the level and profile of Irish software research with such effect that it is now one of the best known and highly regarded software - related research centres in the world. Lero partners with a wide range of industry, state agencies, educational bodies and international collaborators to deliver on its twin goals of research excellence and social and economic relevance. The Centre is supported by a Research Centre grant from Science Foundation of Ireland (SFI), by other state grants, by industry contributions and by external funding (particularly the EU's research programmes). The centre has the proven capacity to attract and retain global research leaders and to make a substantial contribution both to software-related research and to the Irish economy.