



PhD position available

School of History and Geography

Dublin City University

Background

The School of History and Geography at Dublin City University is a research active school with a vigorous faculty willing to supervise PhD students on topics in their areas of research expertise. The Insight Centre for Data Analytics (<http://www.insight-centre.org>) is a joint initiative between researchers at University College Dublin, NUI Galway, University College Cork, and Dublin City University, as well as other partner institutions. It brings together a critical mass of more than 350 researchers from Ireland's leading ICT centers to develop a new generation of data analytics technologies in a number of key application areas.

DCU is ranked as one of the top 100 universities under 50 as per Times Higher Education. The School of History and Geography is a new school in the Faculty of Humanities and Social Science whose staff possess a strong research track record in Irish and European History, the historical Geography of Ireland, social and physical Geography and geopolitics.

The Project

The primary objective of SMARTBOG is to develop an interdisciplinary approach to assess the impact of anthropogenic management of peatlands, through drainage and land use conversion, on carbon and greenhouse gas emissions. This project will utilise high-resolution hyperspectral and Copernicus Sentinel-2 satellite-based imagery to identify peatland land use and drainage extent and combine this information with land-atmosphere and fluvial C/GHG emission measurements to derive a habitat condition and peatland drainage map that can be aligned to a GHG emission factor. The key objectives of this project are to:

- Utilise high spatial and temporal resolution remote sensing data to produce a spatial assessment of peatland drainage status and habitat in Ireland.
- Develop techniques in object-based image analysis and automated machine learning algorithms to utilise earth observation data to detect change in the drainage/habitat of peatlands over time.
- Refine estimates of land-atmosphere and fluvial C/GHG emissions to inform peatland land use GHG reporting, reduce uncertainties in the determination of the NECB of peatland systems and develop land-based mitigation strategies.
- Develop capacity in the use of low cost IoT sensors to enhance the temporal and spatial resolution of data acquisition for key variables that validate remote sensing approaches, inform GHG measurements and contribute to "Laboratory Ireland".
- Provide a web-based interactive data visualization dashboard that provides the outputs of this work in an accessible format to support key stakeholders in policy development and decision making to enhance the sustainable management of peatland systems.

We are looking for a highly motivated PhD student to work on an interdisciplinary four-year project funded by the Environmental Protection Agency of Ireland investigating peatland land use and the spatial extent of peatland drains using remote sensing, GIS and machine learning. The PhD is an integral part of a larger project called Smart observations of management impacts on peatland function (<http://smartbog.com/>).

The PhD candidate is expected to: (i) work in collaboration with the Smartbog team; (ii) analyse high resolution satellite and aerial imagery, map vegetation indices across peatlands and integrate greenhouse gas data and (iii) develop a web-based interactive data visualization dashboard in collaboration with the team.

Consideration will be given to candidates possessing (i) excellent English oral and written communication skills, (ii) a GIS and remote sensing background with experience in a programming language (preferably Python), (iii) a masters in geospatial analysis, and (iv) fulfil the requirements to enrol in the PhD program at the Dublin City University.

	Essential	Desirable
Qualifications	<ul style="list-style-type: none"> • Candidates must have an honours Level 8 degree in geography or environmental science with GIS and Remote sensing. Or an honours Level 8 degree in a related discipline with a geospatial component. 	<ul style="list-style-type: none"> • A postgraduate degree in geography with remote sensing, GIS and coding experience. • A background in the environmental sciences with an emphasis on numeracy would be an advantage.
Skills	<ul style="list-style-type: none"> • Good communication and writing skills. • Familiarity with Geospatial software (including ArcGIS and Envi or similar). • Good time management skills. • Aptitude for multidisciplinary research approaches 	<ul style="list-style-type: none"> • Computer programming skills (preferably Python) and machine learning • Optical image processing • Field-based remote sensing
Knowledge	<ul style="list-style-type: none"> • Background in geospatial analysis 	<ul style="list-style-type: none"> • Familiarity with peatland environments
Behavioural Competencies	<ul style="list-style-type: none"> • Ability to work as part of a team, including collaboration with other disciplines • Strives for high quality of work and demonstrates commitment to the programme. • Ability to communicate effectively to enable knowledge and technology transfer. 	

The candidate will be embedded in the DCU School of History and Geography and will work very closely with the Insight centre for Data Analytics. The candidate will be an integral part of the interdisciplinary Smartbog team.

The position is available from March 2019 onwards and is funded for a period of four years. The funding package includes a tax-free stipend of €18,500 per annum plus EU Tuition fees of €4,905 per annum. Applications should include: (i) a Curriculum vitae; (ii) a letter of motivation and (iii) names/email addresses of three references and should be addressed to Dr. John Connolly (john.b.connolly@dcu.ie)

Successful candidates will be required to apply formally to be admitted as PhD students by the University. They may also need to show proficiency in the English language. DCU abides by the EU Code of Conduct for Research Integrity. All PhD students must attend the Research Integrity training programme which includes data protection and management training, as well as training around ethical considerations. The principle of equality is enshrined in the Universities Act 1997 and DCU is an Equal Opportunity Employer.