



## CANDIDATE INFORMATION PACK

*The Discovery Programme, Centre for Archaeology and Innovation Ireland is committed to a policy of equal opportunity.*

# Project Archaeologist

## TII ALS Machine Learning Project / ARIADNEplus Project

### (Revised January 2022)

The Discovery Programme: Centre for Archaeology Innovation Ireland is seeking to fill the post of Project Archaeologist, with two funded research projects (TII ALS Machine Learning Project / ARIADNEplus).

<b>Nature of Employment:</b>	This is a fixed-term and fixed-purpose full time post, for a period of eighteen months
<b>Salary:</b>	Starting between €33,149.00 and €39,272.00 per annum (pro rata) (Point 1 – Point 4 Archaeologist Scale 65175, with annual increments on that scale on satisfactory performance in post), subject to experience and agreement.
<b>Current Location:</b>	Merchants House, Merchants Quay, D08 K3KD, Ireland. Company Reg. No. (CRO): 243328 Reg. Charity No. (RCN): 20036973 Charity Revenue No. (CHY): 12549.
<b>Reporting to:</b>	Chief Executive Officer or their nominee
<b>Expected employment start date:</b>	Preferably no later than Tuesday 03 May 2022

## General

The Discovery Programme (a company limited by guarantee) is a publicly funded institution for advanced research in the archaeology of the island of Ireland. It engages in archaeological and related research, to benefit the community by deepening our understanding of Ireland's past. Other significant objectives are to communicate the results of that research to scholars and the general public, and to promote the introduction of new technologies and techniques into Irish archaeology.

The mission of the Discovery Programme is to enhance the understanding of Ireland's past through archaeological and related research, establish research programmes, promote this research and the appreciation of Ireland's archaeological heritage and to co-operate with other all-island and international archaeological bodies. We are working to support the research community, providing research leadership and supporting strategic policy development and evidence-based decision-making.

## Project Background

### TII Lidar Machine Learning Project

Aerial laser scanning (ALS) and other remote prospection techniques are very important in the context of archaeological site identification, research, management, and mitigation strategies. These are particularly important in the context of landscape-scale research projects and landscape-scale development or land-use change. The ability to utilise ALS together with complementary remote sensing data as part of pre-planning studies can greatly avoid potentially unknown archaeological sites. Employing the use of ALS during Phase 2 route selection planning could potentially identify these new sites thus adding to our understanding of Ireland's past whilst reducing the potential for costly and damaging archaeological excavations.

The objective of the project is to develop a user-friendly software tool that can be used to facilitate rapid, cost-effective, archaeological examination of areas in the process of selecting a preferred route through the analysis of ALS derived topographic data. The project will test and develop a machine learning model (MLM) and associated QGIS plugin which will have the potential to identify archaeological sites and monuments and develop training and support material which will enable it to be used within TII projects.

### ARIADNEplus

ARIADNEplus (<https://ariadne-infrastructure.eu/>) is the continuation of ARIADNE, a research project in archaeology funded by the European Commission that started in 2013 and lasted until 2017. ARIADNE aimed at the integration of European archaeological repositories. It created a searchable catalogue of datasets including unpublished reports, images, maps, databases and other kinds of archaeological information accessible on line.

Within the project several pilots are to be developed which are exemplary applications of the ARIADNEplus services to specific archaeological research questions, aiming at:

- Defining the innovative methods enabled by ARIADNEplus services for archaeological research communities
- Testing the services and innovative methods in pilots on real use cases

- Demonstrating the advantages of using ARIADNEplus to the archaeological user communities
- Showcasing the ARIADNEplus data and services for building applications for professionals, heritage managers and the public at large.

The pilot the candidate will be participating in is the ARIADNEplus service for a Historic Environment Spatial Data Infrastructure. The pilot will test and explore the potential for publishing, sharing and reusing archaeological geospatial datasets within a Spatial Data Infrastructures (SDIs) framework particularly archaeological remote sensing data and explore releasing the full potential of the data to the wider research community.

## Role and Responsibilities

The key activities in respect of the post of Project Archaeologist are set out in detail at Appendix 1 of this document.

In addition to those key activities, the post-holders will also be required to:

- 1 To assist in the progression and delivery of the two outlined projects within time and budgetary constraints
- 2 Provide archaeological expertise, knowledge, and specialist input into both projects
- 3 Process geospatial survey data of sites gathered using a variety of methods including geophysical surveys, aerial photography and lidar technology.
- 4 Provide archaeological interpretation of monument sites within geophysical surveys, aerial and lidar derived surveys.
- 5 Organise, catalogue, archive and publish through web services geospatial datasets for the historic environment.
- 6 Provide expert archaeological testing and performance analysis of developed archaeological tools for the analysis of lidar data and the sharing of archaeological geospatial data.
- 7 Assist in the creation of training material to enable the use of any tools developed by the wider archaeological community
- 8 To assist in the production and publication of project reports
- 9 To assist in the generation of publicity materials and publish articles associated with the projects' research.
- 10 To provide training, educational talks and presentations associated with the projects.
- 11 Assist in facilitating effective communication between the Discovery Programme team, other project partners and external partners.
- 12 Liaise with external bodies regarding potential reuse and exchange of data.
- 13 Represent the projects, including attending and presenting at conferences, workshops and other events.

The Discovery Programme operates a Performance Management Development System that outlines key objectives and personal development for staff, and as a means of recording performance across the annual reporting cycle.

## The Person

The Discovery Programme is seeking an individual who is highly motivated, focused upon results while at the same time respecting and following instruction and processes that relate to their work.

- Excellent written and verbal communication skills.
- Excellent practical skills in the application of geospatial data within archaeology, specifically remote sensing data (lidar, geophysical, aerial photography)
- Strong organisation and time management skills.
- Sound academic and professional knowledge of archaeology, especially:
  - archaeology found on the island of Ireland
  - application of geospatial data to the archaeological prospection and surveying of monuments in Ireland and the wider world.
- Demonstration of successful archaeological project completion.
- Accuracy and attention to detail essential.
- Strong interpersonal skills and ability to work well with others.
- Ability to prioritise work load.
- Flexibility and adaptability in the context of remote working arrangements.

## Application and Selection Process

Candidates will be required to demonstrate through their application that they:

- fulfil the key criteria identified for this post, including qualifications and experience;
- that they have the key competencies required for this post;
- have the ability to successfully undertake the duties outlined for this post.

### Stage 1 – submission of applications and preliminary review

Applications must be received prior to the closing date and time stated, that is **12 noon on 21<sup>st</sup> February 2022**

All applicants will receive email confirmation that their application has been received. Applications received after the stated deadline will not proceed to preliminary review. All valid applications will be subject to a preliminary review by an Assessment Panel. Incomplete applications received will not be considered further. Applicants who have submitted incomplete applications will be notified of such.

### Stage 2 – evaluation of applications

Completed applications will be evaluated by the Assessment Panel. A successful candidate **may** be appointed on the basis of their written application. Where one or more candidates appear suitable for the post the Assessment Panel will call these for interview.

All applicants will be notified of the outcome of Stage 2.

### Stage 3 – call to interview

The invitation to interview is not to be taken as implying that the Assessment Panel is satisfied that such a person fulfils all of the requirements for the post.

The Assessment Panel will seek to give a minimum of two weeks' notice of the date and time of interview for any candidate called to interview. Arrangements for interviews will depend upon government guidelines and the wider COVID-19 restrictions in place at that time. Any in-person interviews will be held in central Dublin. However, it may be necessary for the interviews to be held remotely via Zoom.

Please note that the Discovery Programme will not be responsible for refunding any expenses incurred by candidates incurred as part of the interview process. Reschedule requests may only be considered under exceptional circumstances as deemed acceptable by the Assessment Panel (such as bereavement, or illness that would otherwise prevent the candidate from attending the workplace). Please note that supporting information from the candidate may be required where such a reschedule request is made. Only one reschedule request will normally be considered. Rescheduled dates will normally be within two weeks of the original scheduled date.

Shortlisting for interview may be conducted using the criteria set out in this information pack.

#### Stage 4 – interview

Where interviews are held the Assessment Panel will use a competency-based approach using the Public Appointments Service Civil Service Competency Models for reference. These can be accessed online at: [https://publicjobs.ie/documents/PAS\\_CS\\_Competency\\_Models\\_2017.pdf](https://publicjobs.ie/documents/PAS_CS_Competency_Models_2017.pdf)

In addition to the professional competencies and qualifications set out at *Essential Criteria* below, candidates' attention is drawn in particular to the competencies outlined for Executive Officer and Administrative Officer posts.

Further detail around core competencies are provided below.

Candidates called to interview will be scored against a common matrix and placed in order of merit (highest-scoring first). Candidates will be expected to meet a minimum score threshold of 60% overall, and to achieve at least 50% of the marks available for each competency tested at interview.

#### Stage 5 – notification of outcome of Stage 4

All candidates called to interview will be notified of the outcome. Notification will be to advise whether or not they have passed the interview. Where a candidate has not passed the interview they will receive feedback from the Assessment Panel.

The successful candidate will normally be the person who has scored highest at interview. However, prior to any offer of appointment the Discovery Programme will make all such enquiries that are deemed necessary (e.g. health, character, employer references and security checks). The successful candidate will not be appointed to the post unless they:

- Agree to undertake the duties outlines and accept the conditions under which the duties are or may be required to be performed;
- Are fully competent and available to undertake, and fully capable of undertaking, the duties attached to the post.

In the event that a second round of interviews is required, candidates may be required to make a presentation as part of that interview. Where a presentation is required candidates will be informed of the presentation topic when interview times are being assigned.

## Stage 6 – appointment

Once all necessary checks have been completed, an offer of employment will be made to the successful candidate.

The successful candidate will be expected to take up employment with the Discovery Programme no later than **Tuesday 03 May 2022**.

Details of candidates who have passed the interview will be retained on an order of merit list for one year as suitable for appointment, and may be offered employment by the Discovery Programme should any similar vacancy arise in that time. This is without prejudice to any other recruitment undertaken by the Discovery Programme while any such list exists.

The principal Conditions of Service are outlined at Appendix 4.

## Selection Criteria

Applicants should note that they should clearly set out in their application how they satisfy the criteria outlined below. For guidance, applicants should be aware of the following definitions of essential and desirable:

**Essential Criteria** – requirements without which a candidate would not be able to undertake the full remit of the role. Applicants who have not clearly demonstrated in their application that they possess the essential requirements will normally be rejected at Stage 2 of the selection process outlined above.

**Desirable Criteria** – requirements which would be useful for the candidate to hold and which are highly relevant to the post. These criteria will be considered for short-listing candidates when more than one applicant meets the essential requirements.

**Further Desirable Criteria** – requirements which would be useful for the candidate to hold, and which may be used in order that the competition may be progressed in a timely manner should a significant number of candidates meet the first shortlisting criteria.

### Essential Criteria:

Applicants must, by the closing date for applications, have:

- EC1 At least an honours degree (Irish National Framework of Qualifications Level 8) in archaeology (level 6 qualification (Bachelor Degree) as recognized by the European Qualifications Framework\*) in archaeology or a closely related\* discipline to archaeology:

**AND**, in addition to EC1:

- EC2 At least two years' professional research and fieldwork experience\*\* gained within the last 10 years, to include both of the areas of essential experience outlined at Table 1 below.

\*It is for the applicant to demonstrate that their qualification is in a discipline closely related to archaeology, and that any further qualification held is industry-recognised in the Ireland or the

United Kingdom. If you believe your qualification is relevant or equivalent to the one required, the onus is on you to provide the panel with details of modules studied and relevancy to the post so that a well-informed decision can be made.

\*\*Types of experience may be combined to achieve the required five years

### Essential Experience (Table 1)

1. Demonstrable experience of participating within an archaeological project where the application of geospatial and remote sensing technologies were a major and integral part to the project (that is, projects lasting for more than six months)
2. Demonstrable experience of working with Remote Sensing and GIS (ideally ArcGIS, and/or QGIS) including lidar, geophysical and aerial survey data

### Desirable Criteria/Shortlisting Criteria

Where shortlisting of candidates is required, applicants should, in addition to meeting the Essential Criteria set out above, have:

SC1 A Masters Degree (National Framework for Qualifications Level 9; European Qualifications Framework Level 7) in archaeology or a discipline closely related\* to archaeology or related discipline

**OR**

SC2 At least an honours degree (Irish National Framework of Qualifications Level 6 or 7) in remote sensing or geomatics (level 6 qualification (Bachelor Degree) as recognized by the European Qualifications Framework):

**OR**

SC3 At least three years post-graduate professional research and fieldwork experience\*\* gained within the last 15 years to include both of the areas of essential experience outlined at Table 1 above

\*It is for the applicant to demonstrate that their qualification is in a discipline closely related to archaeology, and that any further qualification held is industry-recognised in the Ireland or the United Kingdom. If you believe your qualification is relevant or equivalent to the one required, the onus is on you to provide the panel with details of modules studied and relevancy to the post so that a well-informed decision can be made.

\*\*Types of experience may be combined to achieve the required five years

### Further Desirable Criteria/Shortlisting Criteria

Where further shortlisting is required, SC3 will be used in addition to SC1 or SC2, that is, a higher qualification standard **and** length of experience will be required.,

### Eligibility to compete and certain restrictions on eligibility

In addition, the successful candidate must be permitted to work in Ireland and must, by the date of any job offer, be:

- (a)** A citizen of the UK or the European Economic Area. The EEA consists of the Member States of the European Union, Iceland, Liechtenstein and Norway; **or**
- (b)** A citizen of Switzerland pursuant to the agreement between the EU and Switzerland on the free movement of persons; **or**
- (c)** A non-EEA citizen who is a spouse or child of an EEA or Swiss citizen and has a stamp 4 visa; **or**
- (d)** A person awarded international protection under the International Protection Act 2015 or any family member entitled to remain in the State as a result of family reunification and has a stamp 4 visa **or**
- (e)** A non-EEA citizen who is a parent of a dependent child who is a citizen of, and resident in, an EEA member state or Switzerland and has a stamp 4 visa

## How to Apply

Applications must be made by submitting an email, with the title of the position entered into the subject field of the email, to [info@discoveryprogramme.ie](mailto:info@discoveryprogramme.ie)

Attached to that email, applicants must include Application Form COM\_2021\_001 (Revised), along with:

- A short cover letter / personal statement, no more than 500 words 12pt single spaced text, outlining why you wish to be considered for this post and why you believe your skills, experience and values meet the requirements of the position.
- A comprehensive CV, detailed as relevant to the position but to be no more than three pages in length. The first page of the CV should include a summary biography.  
**NB: Please ensure that your CV does not include any personal information that is not relevant to the post being applied for.**
- Completion of the information fields set out on the application form

Please note:

- You should ensure that you provide evidence of your experience in your application form, giving length of experience, examples and dates as required
- It is not sufficient to simply list your duties and responsibilities
- The Assessment Panel will not make assumptions from the title of an applicant's post or the organisation where they are employed as to the skills and experience gained
- If you do not provide sufficient detail the Assessment Panel will reject your application

Certified proof of qualifications and eligibility to work in Ireland will be sought prior to interviews, and **should not** be included with your application.

## Effective date of appointment

It is envisaged that the successful applicant will take up the role no later than Tuesday **03 May 2022**.

## Privacy notice (GDPR)

In accordance with the General Data Protection Regulations (GDPR) any personal information which you provide to us will be treated in confidence and in accordance with the Data Protection Acts 1988-2018. Documentation (digital and hard copy) relating to unsuccessful applications other than those that may be retained on a short list will be

destroyed after six months from closing date of applications. For those on the short list this data will be destroyed after one year after completion of interviews.

## Appendix 1 Additional Project Background

### TII ALS Machine Learning Project

The project is a 2 year funded project under the TII Research Call in 2021 and is being led by the Discovery Programme in partnership with Remote Sensing Centre, Research Centre of the Slovenian Academy of Sciences and Arts (ZRC SAZU) (<https://iaps.zrc-sazu.si/en>) and Bias Variance Labs (<https://www.bvlabs.ai/>).

The research project aims to develop a user-friendly software tool capable of automatically detecting archaeological features from LiDAR data using machine learning, specifically deep learning algorithms. This will include the development of a 'trained' machine learning model that can automatically detect three classes of earthwork monuments from LiDAR data. The software tool will initially be designed for TII staff and to archaeological consultants appointed to TII projects and subsequently be made more widely available as free and opensource software to provide opportunities for future collaboration and development.

The project builds upon several factors including:

- The Discovery Programme's experience of the use of lidar data within archaeology and cultural heritage research specifically on archaeological landscapes
- ZRC SAZU's lidar visualisation methodologies and the development of the Relief Visualisation Toolkit (RVT)
- BVLabs & ZRC SAZU machine learning methods and the AiTLAS Project (Artificial Intelligence Toolbox for Earth Observation).

### ARIADNEplus Project (<https://ariadne-infrastructure.eu/>)

The ARIADNEplus project is a four year extension of the previous EU Funded ARIADNE Integrating Activity, which successfully integrated archaeological data infrastructures in Europe, indexing in its registry about 2,000,000 datasets. ARIADNEplus builds on the ARIADNE results, extending and supporting the research community that the previous project created and further developing the relationships with key stakeholders such as the most important European archaeological associations, researchers, heritage professionals, national heritage agencies and so on. The new enlarged partnership of ARIADNEplus covers all of Europe. It now includes leaders in different archaeological domains like palaeoanthropology, bioarchaeology and environmental archaeology as well as other sectors of archaeological sciences, including all periods of human presence from the appearance of hominids to present times.

The technology underlying the project is state-of-art. The ARIADNEplus data infrastructure is embedded in a cloud that will offer the availability of Virtual Research Environments where data-based archaeological research may be carried out. The project is developing a Linked Data approach to data discovery. Innovative services is being made available to users, such as visualization, annotation, text mining and geo-temporal data management. Innovative pilots are being developed to test and demonstrate the innovation potential of the ARIADNEplus approach.

**Appendix 2 Key Competencies**

<b>Management and Teamwork</b>
<p>Create, maintain and enhance effective working relationships  Encourages and supports new and more effective ways of working  Encourages, listens to and acts on feedback from the team to make improvements  Actively shares information, knowledge and expertise to help the team meet its objectives</p>
<b>Technical Analysis and Decision Making</b>
<p>Is skilled in geospatial data analysis and an understating how spatial data algorithms operate.  Is proficient in geospatial data management and process with specific emphasis of remote sensing data and the geospatial historic environment data.  Understands the importance of an maintain data processing routines, GIS workflows and other associated metadata  Quickly gets up to speed in a complex situation, rapidly absorbing all relevant information/data (written and oral)  Is resourceful and creative, generating original approaches when solving problems and making decisions</p>
<b>Delivery of Results</b>
<p>Assumes personal responsibility for and delivers on agreed objectives/goals  Manages and progresses multiple work strands and activities successfully  Accurately estimates time parameters for projects and manages own time efficiently, anticipating obstacles and making contingencies to manage these  Is logical and pragmatic in approach, delivering the best possible results with the resources available  Maintains a strong focus of delivery of agreed outcomes at all times  Ensures all outputs are delivered to a high standard and in an efficient manner  Uses resources effectively</p>
<b>Interpersonal and Communication Skills</b>
<p>Communicates in a fluent, logical, clear, concise and convincing manner, verbally and in writing  Is able to listen effectively and develop a two-way dialogue quickly  Effectively influences others to take action  Builds and maintains contact with colleagues and stakeholders to assist in performing role  Works to establish mutual understanding to allow for collaborative working  Collaborates and supports colleagues to achieve organizational goals</p>
<b>Specialist and Technical Knowledge, Skills and Self Development</b>
<p>Clearly understanding the role, objectives and targets, and how they fit into the work of the Discovery Programme  Has significant expertise in their field that is recognised and utilised by colleagues  Is proactive in keeping up to date on issues and key developments that may impact upon their own work area and that of the Discovery Programme</p>
<b>Drive and Commitment to the Discovery Programme's Code of Conduct</b>
<p>Consistently strives to perform at a high level  Demonstrates high levels of initiative, taking ownership for projects within the management and organizational parameters of the Discovery Programme  Is trustworthy, upholding highest standards of honesty, professionalism, ethics and integrity</p>

### **Appendix 3 Interview Guidance for Applicants**

If you are called to interview, the Assessment Panel will want to give you the opportunity to further demonstrate your suitability for the post. Interviews can be stressful – even for the Assessment Panel – and you should be assured that you will be treated with professionalism, courtesy and understanding. Interviews will have time limits, and the Assessment Panel will guide you if you are coming close to the time limit for one section or another. But take your time, listen carefully to the question, and if you need the question to be repeated just ask!

If this is your first experience of a competence-based interview, bear in mind that it does not require you to:

- Talk through previous jobs or appointments from start to finish;
- Provide generalised information as to your background and experience; or
- Provide information that is not specifically relevant to the competence the question is designed to test.

A competence-based interview does however require you to:

- Focus exclusively, in your responses, on your ability to fulfil the competences required for effective performance in the role; and
- Provide specific examples of your experience in relation to the required competence areas.

In preparation for the interview you may wish to think about having a clear structure for each of your examples, such as:

- Situation – briefly outline the situation;
- Task – what was your objective, what were you trying to achieve;
- Action – what did you actually do, what was your unique contribution;
- Result – what happened, what was the outcome, what did you learn.

The panel will ask you to provide specific examples from your past experience in relation to each of the competences. You should therefore come to the interview prepared to discuss in detail a range of examples which best illustrate your skills and abilities in each competence area outlined at Appendix 2 above. You may draw examples from any area of your work / life experiences.

## Appendix 4 Principal Conditions of Service

<b>Nature of Employment:</b>	This is a fixed-term and fixed-purpose full time post, up to a maximum of 18 months
<b>Salary:</b>	Starting between €33,149.00 and €39,272.00 per annum (pro rata) (Point 1 – Point 4 Archaeologist Scale 65175, with annual increments on that scale on satisfactory performance in post), subject to experience and agreement.
<b>Place of Work:</b>	Merchants House, Merchants Quay, D08 K3KD, Ireland. <b>NB:</b> see note below
<b>Reporting to:</b>	Technology Manager
<b>Hours of Work and Rest:</b>	As provided for under the Organisation of Working Time Act 1997 Normal hours of work are full time, 37.5 hours per week, Monday to Friday, excluding lunch breaks, normally to be worked as agreed between the hours of 08:00 and 18:00. The Discovery Programme operates a flexi-time policy. From time to time the post holder will be expected to work outside normal working hours subject to the limits set down in the working time regulations.
<b>Holidays:</b>	In addition to usual public holidays the annual leave entitlement is 23 days per calendar year
<b>Pension:</b>	The Discovery Programme (Employer) Pension contribution is on a matching basis from 1% up to a maximum of 5% of salary; the employee may make a greater contribution to their salary, with employer contribution capped at 5%.
<b>Other Information:</b>	While this is primarily an office-based post, applicants should note that from time to time field visits to sites of archaeological interest or research may be required. This may include visits to institutions, located in centres of population, as well as sites located in the countryside, mountain tops and foreshore, including sites in various states or repair or disrepair, subject to archaeological excavation and/or in conservation or construction phases. Travelling and subsistence expenses are paid according to the rates set by the Discovery Programme.

**NB: Place of Work** - Remote working arrangements are currently operating due to restrictions under the COVID-19 pandemic; flexible working arrangements will be considered, including a blend of office-based and remote working as COVID-19 measures permit. The post holder will normally be expected to spend at least 50% of their time in office-based activity. From time to time the post holder will be required to work at different locations to facilitate meetings and engagement with stakeholders.

Please note, successful candidates may request blended working arrangements, this will be considered on a case by case basis in line with the business needs of the organisation, and in accordance with the Discovery Programme's Staff handbook. The Discovery Programme

reserves the right, at its discretion, to change working arrangements on any future date.