



## **JOB DESCRIPTION**

**Web/App Developer for Astronomical Software  
Analyst Programmer  
Centre for Astrophysics and Relativity (CfAR)  
11 Month Fixed Term Contract**

### **Dublin City University**

Dublin City University (DCU) is a leading innovative European University. It is proud to be one of the world's leading Young Universities and is among the world's top 2% globally. DCU is known as Ireland's University of Impact, with a mission to 'transform lives and societies' and focuses on addressing global challenges in collaboration with key national and international partners and stakeholders.

DCU has over 20,000 students in five faculties spread across three academic campuses in the Glasnevin-Drumcondra area of North Dublin. Thanks to its innovative approach to teaching and learning, the University offers a 'transformative student experience' that helps to develop highly sought-after graduates. DCU is currently No. 1 in Ireland for Graduate Employment Rate, and for graduate income (CSO).

DCU is a research-intensive University and is home to a number of SFI-funded Research Centres. The University participates in a range of European and international research partnerships. DCU is also the leading Irish university in the area of technology transfer as reflected by licensing of intellectual property.

As a 'People First' institution, DCU is committed to Equality, Diversity and Inclusion - a University that helps staff and students to thrive. The University is a leader in terms of its work to increase access to education, and is placed in the world's Top 10 for reducing inequalities in the Times Higher Education Impact Rankings.

### **Overview of the department**

CfAR is a research centre in Dublin City University focused on research in astrophysics and relativity. Consisting of researchers from the Schools of Mathematical Sciences and Physical Sciences, it forms a coherent grouping with the aim of creating an environment for productive discourse and research as well as education of advanced undergraduate and graduate students who are pursuing their studies in the areas of interest of the centre.

### **Role Profile**

This role arises as part of a National Open Research Forum (NORF) strand II project under the supervision of Dr. Oisín Creaner entitled "Star Guide: showing citizen scientists the best view of

exoplanets.” This project is intended to support citizen scientists by making it easier for them to participate in ExoClock and Exoplanet Watch – ESA and NASA projects respectively to observe exoplanet transits with small, privately owned telescopes.

Dr. Creaner is an interdisciplinary scientist who focusses on the application of high-performance computing to astrophysical data analytics challenges. His research has focussed on observational astronomy across the spectrum from radio to visible to high-energy particle astronomy. At DCU, he plans to develop optimised strategies for the observation of exoplanets, for observers from citizen science projects such as Exoplanet Watch to ground-based high-performance observatories to satellites.

### **Duties and Responsibilities**

The duties and responsibilities of the position include, but are not restricted to, the following:

The successful candidate will design and develop a web service or application which will allow observers to select targets and reference stars that they need to observe. This will require full-stack development including:

- Front End designed with user experience in mind. The requirements for this design will be elicited through consultation with existing community groups and technical requirements.
- Backend that connects to external astronomical databases (Gaia, exoplanet.eu, etc) and extracts relevant information. It must then process that data and allow the user to select a suitable field of view to observe.
- Modification of existing software: Previous software has been developed to select reference stars in a batch process, known as the Locus Algorithm. This will need to be recast for interactive processes.

The successful candidate will also be expected to document the software system they develop at several levels:

- User documentation: how-to guides, instructional videos, troubleshooting etc such that inexperienced users can make use of the system.
- Developer documentation: design diagrams, use-case diagrams, entity relationships etc such that the software can be maintained past the end of this project.
- Scientific publication: publication in refereed journals, presentations at conferences to communicate this result to the scientific community.
- Outreach events: This project will be launched to the public in a public outreach event which will include domain and technique talks.

The role will involve international travel to at least one international conference/meeting and the candidate will be expected to participate fully in that event.

## **Qualifications and Experience**

### **Essential:**

- A primary degree (NFQ Level 7) or equivalent relevant experience in Physics, Software Development, or another related field.
- Two years relevant experience.

### **Desirable:**

- PhD or equivalent experience in a relevant field.
- Experience in full-stack web development, amateur astronomy, citizen science projects, academic software development, user experience design or human computer interactions and scientific public engagement and outreach.