



<b>Job title</b>	Research Software Engineer	<b>Job family and level</b>	Administrative, Professional and Managerial Level 4
<b>School / Department</b>	Digital Research Service	<b>Location</b>	Kings Meadow & University Park Campus

## Purpose of role

The role provides an opportunity for a Research Software Engineer (RSE) with demonstrable experience of both independent and team-based working to consolidate and further develop their technical, non-technical, and people-based skills within the Digital Research Service (DRS).

The role is especially suitable for RSEs with a background in scientific computing, ideally within the fields of astrophysics or gravitational waves, as well as machine-learning and Bayesian statistics.

	<b>Main responsibilities</b> (Primary accountabilities and responsibilities expected to fulfil the role)	<b>% time per year</b>
1	<p><b>Machine learning for gravitational wave astronomy</b></p> <ul style="list-style-type: none"> <li>Support, assist, and where appropriate, take the lead in defining, documenting, and successfully completing elements of the Deep Inference for Gravitational-wave Observations (Dingo) project.</li> <li>For research areas delegated to them, define requirements, tasks, timelines, milestones, priorities, and risks relating to successful completion.</li> <li>Design, maintain, test, and document software in Python.</li> <li>Contribute to implementing machine learning and gravitational wave analysis techniques.</li> <li>Support researchers in developing and using Dingo.</li> <li>Advocate and assist researchers to follow best practice in software development, version control, and related delivery methodologies.</li> </ul>	80%
2	<p><b>Promote the Service</b></p> <ul style="list-style-type: none"> <li>Be an ambassador for the Digital Research Service; promote an inclusive research culture and support cross-discipline knowledge exchange.</li> <li>Promote access to and the use of digital research capability across the University of Nottingham.</li> <li>Provide researchers with access to expertise and advice that contributes to improving research quality.</li> </ul>	5%

3	<p><b>Deliver Output</b></p> <ul style="list-style-type: none"> <li>▪ Support researchers by contributing to academic research papers, funding applications, horizon scanning, etc.</li> </ul>	5%
4	<p><b>Personal Development</b></p> <ul style="list-style-type: none"> <li>▪ Develop own skills and professional capabilities in line with the needs of the Service.</li> <li>▪ Maintain an awareness of technical developments, tools and ideas in research computing, including attending seminars, technical briefings, conferences and technical groups.</li> </ul>	5%
5	Any other duties appropriate to the grade and role of the person appointed.	5%

## Person specification

	Essential	Desirable
<b>Skills</b>	<ul style="list-style-type: none"> <li>▪ Experience of using Python or a similar high-level language, including use of ML frameworks such as PyTorch if applicable.</li> <li>▪ Experience in either high performance computing (HPC), distributed or shared memory systems, or GPU acceleration on a traditional on-prem HPC or Cloud-based infrastructure (e.g. Azure).</li> <li>▪ Experience of developing code for scientific modelling applications, or the analysis of scientific data.</li> <li>▪ Experience of implementing machine learning algorithms.</li> <li>▪ Experience managing a large (10,000+ lines) software project, including version control (git) and collaborating within major scientific collaborations.</li> <li>▪ Excellent oral and written communication skills, including the ability to communicate complex information with clarity.</li> <li>▪ Advanced analytical skills to analyse and illuminate data, interpret reports, evaluate and criticise texts and bring new insights.</li> <li>▪ Strong organisational, collaborative, and communication skills for disseminating results.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Understanding and experience of research in the academic sector.</li> <li>▪ A broad understanding of a mixture of HPC, shared memory and GPU technologies.</li> <li>▪ Experience in scientific computing for astrophysics or gravitational waves.</li> <li>▪ Knowledge of Bayesian statistics.</li> <li>▪ Knowledge of gravitational-wave astronomy.</li> </ul>
<b>Knowledge and experience</b>	<ul style="list-style-type: none"> <li>▪ Experience in data gathering and data aggregation in scenarios of high-volume numerical data.</li> <li>▪ Experience in the use of research methodologies and techniques.</li> <li>▪ Experience of developing new research approaches, models, techniques or methods.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Experience of working in a service-orientated group.</li> <li>▪ Experience of utilising machine learning techniques on real world data.</li> <li>▪ Research experience in an astrophysics context.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Experience of maintaining or contributing to a large software project, and your use of appropriate tooling to manage this.</li> </ul>	
<p><b>Qualifications, certification and training (relevant to role)</b></p>	<p>Postgraduate degree in a relevant branch of physics, astronomy, computer science, mathematics, or a closely related discipline.</p> <p style="text-align: center;"><b>OR</b></p> <p>Expert knowledge of gravitation or machine learning for science. This should include one or more of the following:</p> <ul style="list-style-type: none"> <li>~Gravitational-wave modelling (or equivalent data analyses)</li> <li>~Black hole physics</li> <li>~Mathematical or numerical relativity</li> <li>~Statistical inference</li> <li>~Deep learning</li> <li>-Software development best practices, including version control, and related delivery methodologies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge of gravitational waves, astrophysics, or Bayesian statistics</li> <li>▪ PhD or equivalent, in a relevant branch of computer science, physics, astronomy, mathematics, or a closely related discipline</li> </ul>



The University of Nottingham is focused on embedding equality, diversity and inclusion in all that we do. As part of this, we welcome a diverse population to join our work force and therefore encourage applicants from all communities, particularly those with protected characteristics under the Equality Act 2010.

## Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

- Valuing people** Is always equitable and fair and works with integrity. Proactively looks for ways to develop the team and is comfortable providing clarity by explaining the rationale behind decisions.
- Taking ownership** Is highly self-aware, looking for ways to improve, both taking on board and offering constructive feedback. Inspires others to take accountability for their own areas.
- Forward thinking** Driven to question the status quo and explore new ideas, supporting the team to "lead the way" in terms of know-how and learning.
- Professional pride** Sets the bar high with quality systems and control measures in place. Demands high standards of others identifying and addressing any gaps to enhance the overall performance.
- Always inclusive** Ensures accessibility to the wider community, actively encouraging inclusion and seeking to involve others. Ensures others always consider the wider context when sharing information making full use of networks and connections.

## Key relationships with others



