Role profile

<table>
<thead>
<tr>
<th>Job title</th>
<th>Research Fellow ('Title will be 'Research Associate' where an appointment is made before PhD is completed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job family and level</td>
<td>Research and Teaching Level 4 (Appointment will be Level 4 career training grade where an appointment is made before PhD has been completed)</td>
</tr>
<tr>
<td>School/Department</td>
<td>School of Medicine, Mental Health &amp; Clinical Neurosciences</td>
</tr>
<tr>
<td>Location</td>
<td>Medical School, Queen’s Medical Centre, Nottingham</td>
</tr>
</tbody>
</table>

Purpose of role
The purpose of this role will be to conduct research in developing novel neuroimage analysis methods for brain connectivity phenotyping. The post is funded by the Neuro-Metrology programme, a 5-year European Research Council (ERC) Consolidator grant to Prof. Stam Sotiropoulos, which establishes measuring principles to objectively map the person-specific brain connectome. You will be part of a team working towards the following objectives: a) Develop integrative and multi-modal neural connectivity frameworks (based on diffusion and resting-state functional Magnetic Resonance Imaging (MRI)) that extract quantitative brain connectivity patterns, reflective of the individual brain organisation, b) Validate them using unique ultra-high field (10.5T) MRI and chemical tracing data in the non-human primate brain, c) Assess and ensure these novel connectivity mapping technologies are vendor-agnostic, harmonised and robust across different types of MRI scanners, d) Utilise them for capturing personalised dys-connectivity patterns in mental health disorders, as a means for subsequent targeted interventions.

You will join an established team, led by Prof Stam Sotiropoulos (https://spmic-uon.github.io/conilab), who have a track record in developing computational neuroimaging technologies for mapping the brain at a systems level. The team is a part of the Sir Peter Mansfield Imaging Centre (SPMIC) and the Precision Imaging Beacon of Excellence at the University of Nottingham. They have strong, long-standing collaborations with colleagues at the Wellcome Centre for Integrative Neuroimaging (WIN-FMRIB), University of Oxford, the Centre for Magnetic Resonance Research (CMRR), University of Minnesota and the Department of Psychiatry, Yale University. The programme will actively build upon these collaborations.

You will be expected to plan and conduct work using approaches or methodologies and techniques appropriate to the type of research, and will be responsible for writing up your work for publication. You will have the opportunity to use your initiative and creativity to identify areas for research, develop research methods and extend the team’s research portfolio.

<table>
<thead>
<tr>
<th>Main responsibilities</th>
<th>% time per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Responsibilities:</td>
<td>70%</td>
</tr>
<tr>
<td>▪ To manage, plan and conduct own research activity using recognised approaches, methodologies and techniques within the research area or by developing novel techniques where needed. To resolve</td>
<td></td>
</tr>
</tbody>
</table>
problems, in meeting research objectives and deadlines in collaboration with others.

- To identify opportunities and assist in writing bids for research grant applications. Prepare proposals and applications to both external and/or internal bodies for funding, contractual or accreditation purposes.

**Engagement, Communication and Continuation Responsibilities:**

- To write up research work for publication and/or contribute to the dissemination at national/international conferences, resulting in successful research outputs.
- To collaborate with academic colleagues on areas of shared interest for example collaborative or joint research projects

20%

**Teaching:**

- To supervise postgraduate and/or undergraduate student projects as appropriate.
- To make a contribution to teaching activities when appropriate.

10%

**Other:**

- Any duties as required in accordance with the nature and grade of the post.
- We recognise the importance of continuous professional development and therefore the importance of providing opportunities, structured support and encouragement to engage in professional development each year

N/A

### Person specification

<table>
<thead>
<tr>
<th>Skills</th>
<th>Essential</th>
<th>Desirable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High analytical ability to analyse and illuminate data, interpret reports, evaluate and criticise texts and bring new insights.</td>
<td>Parallel programming and/or High-performance computing skills using computing clusters.</td>
</tr>
<tr>
<td></td>
<td>Advanced Programming (C or C++ or Python or Matlab) and scripting (e.g. bash shell scripting).</td>
<td>Understanding of MR image acquisition physics or sources of distortions and relevant distortion correction approaches.</td>
</tr>
<tr>
<td></td>
<td>Excellent oral and written communication skills, including the ability to communicate with clarity on complex information. Publication track record commensurate to career stage.</td>
<td>Knowledge of Machine (or Deep) Learning.</td>
</tr>
<tr>
<td></td>
<td>Ability to organise own work independently.</td>
<td>Strong publication record in neuroimaging/brain connectivity methods development.</td>
</tr>
<tr>
<td></td>
<td>Ability to build relationships and collaborate with others, both internally and externally.</td>
<td>Experience of brain connectivity analysis or methods development for diffusion MRI/resting-state functional MRI.</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Knowledge and experience | ▪ Experience of MRI analysis and ideally of using imaging to tackle neuroscience questions.  
▪ Good understanding/knowledge of statistical modelling and signal/image processing.  
▪ Experience of software version control and repositories.  
▪ Experience of conducting scientific research, reporting results, preparing them for publication and presentations. | ▪ Use of FSL/SPM or other major packages for brain image analysis.  
▪ Experience of processing large datasets (using for instance computer clusters, processing pipelines).  
▪ Experience of using neuroimaging for applications in mental health.  
▪ Experience of standardising MRI data from scanners of different vendors. |
| Qualifications, certification and training (relevant to role) | ▪ PhD or equivalent in relevant computational domain, such as physics, engineering, neuroscience, computer science, applied mathematics, or the equivalent in professional qualifications and experience in research area OR near to completion of a PhD | ▪ PhD in computational neuroimaging/ human brain mapping/brain connectivity using diffusion/resting-state functional MRI. |
| Other | ▪ Willingness to adopt the [vision and values](#) of the School of Medicine | |

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.

The School of Medicine holds a Silver Athena SWAN award in recognition of our achievements in promoting and advancing these principles. Please see [http://www.nottingham.ac.uk/medicine/about/athena-swan.aspx](http://www.nottingham.ac.uk/medicine/about/athena-swan.aspx)
The University is a signatory of the Declaration on Research Assessment (DORA). As such we commit to focus on the scientific content of publications (where requested or provided as part of the recruitment and selection process) as a basis for review of quality, and consideration of value and impact of research conducted, rather than any proxy measures such as Journal Impact Factor.
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

```
Line manager

Role holder

Key stakeholder relationships

- Fellows in the same ERC Programme
- Colleagues (Extended research group, Centre, School)
- Students

Prof. of Computational Neuroimaging
Research Associate/Fellow
```