



Post Specification

Post Title:	Research Fellow in Deep Neural Networks for Medical Imaging
Post Status:	Specific Purpose Contract, Full-Time for 2 years
Research Group / Department / School:	Cusack Lab, Trinity College Institute of Neuroscience, Trinity College Dublin, the University of Dublin
Location:	Trinity College Institute of Neuroscience, Trinity College Dublin, the University of Dublin College Green, Dublin 2, Ireland
Reports to:	Prof. Rhodri Cusack
Salary:	Appointment will be made on Experienced Post-Doctoral Research Scale at a point in line with Government Pay Policy [€50,540 to €54,965 per annum], appointment will be made no higher than point 2 [€51,961]
Hours of Work:	39 hours per week
Closing Date:	12 Noon (GMT), 22 April 2024

Please note that Garda vetting will be sought in respect of individuals who come under consideration for a post.

Post Summary

Brain development in infants and its disruption by preterm birth or perinatal injury, can be measured with functional MRI (fMRI). Unfortunately, infants move in the scanner and half the images are discarded, precluding clinical application. In recent years, deep neural networks (DNNs) have led to breakthroughs in artificial intelligence and are finding growing application in biomedical imaging. DNNs have considerable potential to correct head motion in fMRI, as they can learn complex mappings, and exploit knowledge of brain structure. The postdoctoral researchers will develop DNNs to motion correct fMRI data.

Benefits include a pension contribution and PRSI social insurance.

These posts will be for two years but there may arise the opportunity to extend them.

Standard Duties and Responsibilities of the Post

- training deep neural networks to motion correct corrupted neuroimaging data
- evaluating performance of training regimes and network architectures with respect to a baseline of current motion correction methods
- develop novel motion correction algorithms that will be of value to the infant neuroimaging community and neuroimaging more broadly
- writing and submitting manuscripts to present the developed algorithms
- presenting your work at national and international seminars and meetings
- contributing to the growth of the methodological and intellectual expertise of the team

Funding Information

This position is fully funded by the SFI Award 22/FFP-A/11050

Person Specification

Qualifications

- a PhD in physics, engineering, neuroscience, computer science, or a relevant field

Knowledge & Experience

- Candidates must have expertise in at least one of the two following areas and must be willing to develop skills in the other:
 - design and optimisation of deep neural networks
 - neuroimaging with fMRI
- Candidates must have a strong level of expertise in programming in python or another language

Skills & Competencies

- strong critical thinking and good judgement
- excellent organisation and time management
- the ability to find, read, critique and synthesize complex bodies of literature
- the ability to generate strong scientific hypotheses and to design experiments to test them
- the ability to work thoroughly through tasks until they are completed, even if they turn out to be more difficult than you first expect
- the ability to write clearly and concisely
- enthusiasm and aptitude to acquire expertise in diverse areas of the project
- enthusiasm and aptitude to share expertise with other team members
- enthusiasm for communication with a broader audience
- a desire to develop your transversal and cross-sectoral skills

Application Procedure

Applicants should submit a full Curriculum Vitae to include the names and contact details of 2 referees (including email addresses), to:-

Applicants should submit the following documentation to admin@cusacklab.org with the subject line "DNN for MRI Postdoc 2024":

- full curriculum vitae including a list of publications
- statement of research interest outlining current experience and plans for the future, not exceeding 2 pages

- names and email addresses of two referees
- links to any relevant code repositories, preprints, media articles, blogs, or other supporting media

Excellent candidates from outside of the EU will also be considered.

Selection will begin in April 2024.

If you have any query please contact Tamrin Holloway, admin@cusacklab.org

Further Information for Applicants

Lab website	www.cusacklab.org
Trinity College Institute of Neuroscience	www.tcd.ie/neuroscience
URL Link to Area	www.tcd.ie
URL Link to Human Resources	https://www.tcd.ie/hr/
URL Link to Area	www.tcd.ie
URL Link to Human Resources	https://www.tcd.ie/hr/

GARDA CLEARANCE:

Police vetting will be sought in respect of individuals who come under consideration for a post.

PLEASE NOTE: Applicants will be required to complete and return a Garda vetting form should they come under consideration for appointment. In some cases they may be requested to complete the form on the day of interview. This form will be forwarded to An Garda Síochána (Irish Police) for security checks on all Irish addresses at which they have resided. An Garda Síochána will make enquiries with the Police Service of Northern Ireland with respect to addresses in Northern Ireland. If an applicant is not successful in obtaining the post for whatever reason, this information will be destroyed. If an applicant, therefore, subsequently comes under consideration for another position, they will be required to supply this information again.

While applicants must complete information in relation to all addresses at which they have resided, the vetting is only done on addresses on the island of Ireland.

If an applicant has resided / studied in countries outside of Ireland for a period of 6 months or more, it is mandatory for them to furnish a Police Criminal Records Check/ Police Certificate from those countries stating that they have no convictions recorded against them while residing there. Applicants will need to provide a separate Police Criminal Records Check/ Police Certificate for each country in which they have resided. The Police Criminal Records Check/ Police Certificate must be dated after the date the applicant left the relevant country. Applicants should provide documentation in the English and/or Irish language. Translations must be provided by a registered translation company/institute in the Republic of Ireland; all costs will be borne by the applicant. Only original version documents will be accepted.

Applicants should be aware that any information obtained in the Garda Vetting process can be made available to the employing area.

It is the responsibility of the applicant to seek security clearances in a timely fashion as they can take some time. No applicant will be appointed without this information being provided and being in order.

The following websites may be of assistance in this regard:

www.disclosurescotland.co.uk

www.psni.police.uk

This website provides information on obtaining a national police clearance certificate for Australia

www.afp.gov.au

This website provides information on obtaining police clearance in New Zealand.

www.courts.govt.nz

For other countries not listed above applicants may find it helpful to contact the relevant embassies who could provide information on seeking Police Clearance. Original Police Clearance documentation should be forwarded to Human Resources where it will be copied and the original returned to the applicant by post. **Any cost incurred in this process will be borne by the Applicant.**

Trinity College Dublin, the University of Dublin

Trinity is Ireland's leading university and is ranked 108th in the world (QS World University Rankings 2020). Founded in 1592, the University is steeped in history with a reputation for excellence in education, research and innovation.

Located on an iconic campus in the heart of Dublin's city centre, Trinity has 18,000 undergraduate and postgraduate students across our three faculties – Arts, Humanities, and Social Sciences; Engineering, Mathematics and Science; and Health Sciences.

Trinity is ranked as the 17th most international university in the world (Times Higher Education Rankings 2020) and has students and staff from over 120 countries.

The pursuit of excellence through research and scholarship is at the heart of a Trinity education, and our researchers have an outstanding publication record and strong record of grant success. Trinity has developed 19 broad-based multidisciplinary research themes that cut across disciplines and facilitate world-leading research and collaboration within the University and with colleagues around the world. Trinity is also home to 5 leading flagship research institutes:

- Trinity Biomedical Sciences Institute (TBSI)
- Trinity College Institute of Neuroscience (TCIN)
- Trinity Translational Medical Institute (TTMI)
- Trinity Long Room Hub Arts and Humanities Research Institute (TLRH)
- Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN)

Trinity is the top-ranked European university for producing entrepreneurs for the past five successive years and Europe's only representative in the world's top-50 universities (Pitchbook Universities Report).

Trinity is home to the famous Old Library and to the historic Book of Kells as well as other internationally significant holdings in manuscripts, maps and early printed material. The Trinity Library is a legal deposit library, granting the University the right to claim a copy of

every book published in Ireland and the UK. At present, the Library's holdings span approximately 6.5 million printed items, 400,000 e-books and 150,000 e-journals.

With over 120,000 alumni, Trinity's tradition of independent intellectual inquiry has produced some of the world's finest, most original minds including the writers Oscar Wilde and Samuel Beckett (Nobel laureates), the mathematician William Rowan Hamilton and the physicist Ernest Walton (Nobel laureate), the political thinker Edmund Burke, and the former President of Ireland Mary Robinson. This tradition finds expression today in a campus culture of scholarship, innovation, creativity, entrepreneurship and dedication to societal reform.

Rankings

Trinity is the top ranked university in Ireland and ranked 108th in the world (QS World University Rankings 2020). Trinity ranks in the top 50 in the world on 6 subjects and in the top 100 in 20 subjects (QS World University Rankings by Subject 2019). Full details are available at: www.tcd.ie/research/about/rankings.

The Selection Process in Trinity

The Selection Committee (Interview Panel) may include members of the Academic and Administrative community together with External Assessor(s) who are expert in the area. Applications will be acknowledged by email. If you do not receive confirmation of receipt within 1 day of submitting your application online, please contact the named Recruitment Partner on the job specification immediately and prior to the closing date/time.

Given the degree of co-ordination and planning to have a Selection Committee available on the specified date, the University regrets that it may not be in a position to offer alternate selection dates. Where candidates are unavailable, reserves may be drawn from a shortlist. Outcomes of interviews are notified in writing to candidates and are issued no later than 5 working days following the selection day.

In some instances the Selection Committee may avail of telephone or video conferencing. The University's selection methods may consist of any or all of the following: Interviews, Presentations, Psychometric Testing, References and Situational Exercises.

It is the policy of the University to conduct pre-employment medical screening/full pre-employment medicals. Information supplied by candidates in their application (Cover Letter and CV) will be used to shortlist for interview.

Applications from non-EEA citizens are welcomed. However, eligibility is determined by the Department of Business, Enterprise and Innovation and further information on the Highly Skills Eligible Occupations List is set out in Schedule 3 of the Regulations <https://dbei.gov.ie/en/What-We-Do/Workplace-and-Skills/Employment-Permits/Employment-Permit-Eligibility/Highly-Skilled-Eligible-Occupations-List/> and the Ineligible Categories of Employment are set out in Schedule 4 of the Regulations <https://dbei.gov.ie/en/What-We-Do/Workplace-and-Skills/Employment-Permits/Employment-Permit-Eligibility/Ineligible-Categories-of-Employment/> . Non-EEA candidates should note that the onus is on them to secure a visa to travel to Ireland prior to interview. Non-EEA candidates should also be aware that even if successful at interview, an appointment to the post is contingent on the securing of an employment permit.

Equal Opportunities Policy

Trinity is an equal opportunities employer and is committed to employment policies, procedures and practices which do not discriminate on grounds such as gender, civil status, family status, age, disability, race, religious belief, sexual orientation or membership of the travelling community. On that basis we encourage and welcome talented people from all backgrounds to join our staff community. Trinity's Diversity Statement can be viewed in full at <https://www.tcd.ie/diversity-inclusion/diversity-statement>.

Pension Entitlements

This is a pensionable position and the provisions of the Public Service Superannuation (Miscellaneous Provisions) Act 2004 will apply in relation to retirement age for pension purposes. Details of the relevant Pension Scheme will be provided to the successful applicant.

Applicants should note that they will be required to complete a Pre-Employment Declaration to confirm whether or not they have previously availed of an Irish Public Service Scheme of incentivised early retirement or enhanced redundancy payment. Applicants will also be required to declare any entitlements to a Public Service pension benefit (in payment or preserved) from any other Irish Public Service employment.

Applicants formerly employed by the Irish Public Service that may previously have availed of an Irish Public Service Scheme of Incentivised early retirement or enhanced redundancy payment should ensure that they are not precluded from re-engagement in the Irish Public Service under the terms of such Schemes. Such queries should be directed to an applicant's former Irish Public Service Employer in the first instance.



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CHAMPIONS**

