# Position Description

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

The following information is for applicants

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| Advertised Job Title**:** | CSIRO Postdoctoral Fellowship in Medical Image Registration |
| Job Reference: | 58968 |
| Relocation Assistance**:** | Will be provided to the successful candidate if required. |
| Applications Are Open To: | [ ]  Australian Citizens Only[ ]  Australian/New Zealand Citizens and Australian Permanent Residents Only* [x]  All Candidates
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| Percentage of Client Focus - Internal: | 70% |
| Percentage of Client Focus - External: | 30% |
| Reports to the: | Team Leader |
| Number of Direct Reports: | 0 |
| How to Apply: | Please apply online at [jobs.csiro.au](https://jobs.csiro.au/) and enter the requisition number**.** Internal applicants please apply via ‘Jobs Central’ through the ‘People Hub’ icon  |
| Contact details to discuss this position: | Dr Samantha Burnham via email: samantha.burnham@csiro.au |
| **If you have difficulty applying please contact:** | Call 1300 984 220 or email csiro.online@csiro.au  |

## Role Overview:

**CSIRO Early Research Career (CERC) Postdoctoral Fellowships** at CSIRO provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant postdoctoral work experience. These fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system.
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer-recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Postdoctoral Fellows **are appointed for three years or part time equivalent.**

The Postdoctoral Fellow will conduct research in new deep learning techniques for Medical Image Analysis. The fellow will develop technology for fast non rigid image registration of brain MRI and PET data using a deep learning framework.

The fellow will join a high performing collaboration (2 postdoctoral fellowships and 3 PhD students) to work on developing the next generation neuroimaging diagnosis using MRI. This large $4.8M project involves Australia’s premier research organisation the CSIRO, Queensland University of Technology, Maxwell+, a start-up developing AI for precision medicine, and I-MED, a large private radiology practice. The fellowship is based in Brisbane and will develop new deep learning technologies with the goal of predicting neurodegenerative diseases such as Alzheimer’s.

The CSIRO Health and Biosecurity and the CSIRO Data61 provide an outstanding environment with strong capability in machine learning applied to medical image analysis. The fellow will work with a large team of scientists and students (20+) benefiting from existing software platform and high performance computing infrastructure (GPU clusters and high end workstation). The project aims to collect clinical data and will also have access to existing data from some of the largest and world-leading clinical studies such as the Australian Imaging Biomarkers and Lifestyle study of ageing (more than 2000 individuals followed up for more than 10 years).

CSIRO staff are professional scientists with no teaching duty. We strive on innovation and work closely with all the Universities, supervising and hosting many graduate and post-graduate students. CSIRO offers unique opportunity to mesh within the Australian innovation ecosystem and fellow will be exposed to deep technology start-ups and innovative commercial companies. We encourage and support entrepreneurship.

## Duties and Key Result Areas:

* Under the direction of senior research scientists and engineers, CERC Postdoctoral Fellows:
	+ Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
	+ Recognise and exploit opportunities for innovation and the generation of new theoretical perspectives, and progress opportunities for the further development or creation of new lines of research.
	+ Utilise design thinking methodology to plan and prepare research proposals, and apply non-academic impact methodology to research projects.
	+ Carry out research investigations requiring originality, creativity and innovation.
	+ Record, manage, and analyse data/information using relevant domain data science techniques.
	+ Develop innovative concepts, theories, tools and techniques related to the analysis MRI and PET scans of the brain for the diagnosis of Neurodegeneration and ageing, with a focus on fast non-rigid registration.
	+ Harness the growing volume of publicly available data sources, as well as work on establishing proprietary datasets in collaboration with our partners.
	+ Prepare appropriate conference papers and represent CSIRO at leading national and international conferences and forums.
* Proactively undertake development to grow effective researcher capabilities to support career goals.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

**The CERC Postdoctoral Fellow learning and development program**is developed between the CERC Postdoctoral Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellows’ capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others

<http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships>

## CSIRO Competencies:

1. **Teamwork and Collaboration: Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.**
2. **Influence and Communication: Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.**
3. **Resource Management/Leadership: Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.**
4. **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
5. **Independence: Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).**
6. **Adaptability:** Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

## Selection Criteria:

*Under CSIRO policy only those who meet all selection criteria can be appointed.*

1. A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as Medical Image analysis or a related discipline area.

***Please note:*** *To be eligible for this role you must have* ***no more than 3 years (or part time equivalent)*** *of postdoctoral research experience.*

1. Ability to investigate issues of complex and ill-defined problems and develop appropriate responses by adapting/creating and testing alternative solutions.
2. Experience with deep learning using Convolutional Neural Networks.
3. Evidence of advanced programming skills and software design in languages relevant for medical image analysis research (e.g. C/C++, Python, MATLAB)***.***
4. **High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including publishing in peer reviewed journals and/or authorship of scientific papers, reports, and presenting at national and/or international conferences.**
5. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## Desirable Criteria:

1. A strong mathematical/analytical background, in areas related to image analysis.
2. Experience with GPU/Parallel Computing experience.
3. Demonstrated experience in non-rigid registration techniques.
4. Interest in entrepreneurship and bringing technology to market.
5. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
6. **The ability to work effectively as part of a multi-disciplinary, potentially regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.**

To be appointed as a CERC Postdoctoral Fellow within CSIRO, candidates are required to have **submitted** their PhD at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 *($82,450).* Upon CSIRO receiving written confirmation that the PhD has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

## Special Requirements:

Appointment to this role may be subject to conditions including security/national police/medical/character clearance requirements. Applicants who are not Australian Citizens or Permanent Residents may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).- <https://ielts.com.au/>

**Our value proposition**

We want CERC Postdoc Fellows to join our world class science, engineering and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia, but in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

CSIRO Early Research Career (CERC) Postdoctoral Fellow Experience Employee Value Proposition (EVP). Find out more! <https://www.csiro.au/en/careers/postdoctoral-fellowships>

## About CSIRO:

At CSIRO we solve the greatest challenges through innovative science and technology. See more [online](http://www.csiro.au/)!

Find out more about CSIRO [Health and Biosecurity](https://www.csiro.au/en/Research/BF)