# Position Details

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

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| The following information is for applicants | |
| Advertised Job Title | CSIRO Postdoctoral Fellowship in Graph Representation Learning |
| Job Reference | 75541 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$89,926 to AU$98,504 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Brisbane, QLD |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All candidates |
| Position reports to the | Project Leader |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Peyman Moghadam, [peyman.moghadam@csiro.au](mailto:peyman.moghadam@csiro.au) |
| How to apply | Apply online at <https://jobs.csiro.au/>  Internal applicants, please apply via **Jobs Central**  If you experience difficulties when applying, please email [careers.online@csiro.au](mailto:careers.online@csiro.au) or call 1300 984 220. |

### Acknowledgement of Country

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the area that we live and work on across Australia. We acknowledge their continuing connection to their culture and pay our respects to their Elders past and present. View our [vision towards reconciliation](https://www.csiro.au/en/about/Indigenous-engagement/Reconciliation-Action-Plan).

### Role Overview

**CSIRO Early Research Career (CERC) Postdoctoral Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years of 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 CSIRO Data61 and Agriculture and Food business units are recently established a new 3-year shared strategy project to develop digital/data transformation for agriculture. As a member of this multidisciplinary team, you will work with CSIRO scientists, engineers and collaborate with national and international university partners to develop new machine learning and artificial intelligence methods that have general applicability.

The postdoctoral researcher will work closely with leading machine learning and data analytics scientists in the Data61 and the Agriculture and Food business unit, developing fundamental and transformative algorithms for graph representation learning. Your research will focus on machine learning algorithms that combine multiple data sources with domain knowledge and constraints to capture dynamic interactions between multiple actors and predict probability of outcomes given all the variables. The successful candidate will work within national and international settings and as part of a diverse multidisciplinary team.

### Duties and Key Result Areas:

Under the direction of senior research scientists and engineers in CSIRO, the successful candidate will:

* + Develop generalised methods for graph representation learning.
  + Implement these methods efficiently using programming tools such as TensorFlow and PyTorch on high-performance computing systems.
  + Publish results in relevant international scientific venues (high-level journals and conferences).
  + Evaluate the developed software to demonstrate its competitiveness and fitness for purpose, taking responsibility for functionality, performance, and robustness.
  + Interpret and present research findings in artificial intelligence and machine learning to research scientists and practitioners from a wide range of other scientific areas.
  + 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 to further develop or create new lines of research.
  + Collaborate with members of a diverse project team and external partners to ensure research directions can lead to lasting impact in application domains.
  + Communicate effectively and respectfully with all staff, clients, and suppliers in the interests of good business practise collaboration and enhancement of CSIRO's reputation.
  + Adhere to the spirit and practice of CSIRO's Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Other duties as directed.

[**The CERC Postdoctoral Fellow learning and development program**](http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships)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

## **Required Competencies:**

* **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.
* **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.
* **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.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
* **Independence:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
* **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**

#### Essential

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

1. A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as machine learning, artificial intelligence, computer vision, computer science, statistics, data analytics, applied mathematics or applied physics.

*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. Solid knowledge of machine learning, artificial intelligence and statistics, and the ability to understand and develop mathematically-founded machine learning algorithms and their development in toolkits such as TensorFlow or PyTorch.
2. A sound history of publication in peer-reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
3. The ability to work effectively as part of a multidisciplinary, regionally dispersed research team, plus the motivation and discipline to carry out independent research.
4. Knowledge of Python, C++ or equivalent.
5. High-level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.
6. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable:**

1. Experience in one or more of the following: deep neural networks including graph neural networks; reinforcement learning and Bayesian learning
2. Demonstrated experience in deploying machine learning algorithms for large multiscale data sets.
3. Good experience with high-dimensional, multimodal data.
4. Good experience using high-performance computing clusters and source code versioning systems such as Git.

To be appointed to this CERC Postdoctoral Fellowship position within CSIRO, candidates will be expected to commence employment by mid 2022. Candidates are also 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 ($87,068). 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

* The successful candidate will be asked to obtain and provide evidence of a National Police Check or equivalent. Please note that people with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, including 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 also 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 [here](https://www.csiro.au/en/careers/postdoctoral-fellowships)!

## **About CSIRO:**

We solve the greatest challenges through innovative science and technology. To find out more visit us [online](http://www.csiro.au/)!

**About Data61:**

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