# 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 Trustworthy Machine Learning for Multimodal Systems |
| Job Reference | 91529 |
| Tenure | Specified Term of 3 years Full-time  |
| Salary Range | AU$92,624 – AU$101,459 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Sydney, NSW |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates |
| Position reports to the | Senior Research Scientist |
| Client Focus – Internal | 0% |
| Client Focus – External | 100% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Jason Xue via email at jason.xue@data61.csiro.au*Please do not email your application directly to Jason Xue. Applications received via this method will not be considered* |
| 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 or call 1300 984 220. |

**Acknowledgement of Country**

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the areas 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 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.
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

The CERC Fellow will be **appointed for three years**, contribute to research and prototype development, and will be at the forefront of novel and world class research in distributed systems and AI security and privacy, leading to reputed international publications in major cybersecurity conferences. The CERC Fellow will collaborate with other Data61 researchers and will be expected to interact with clients and deliver client projects.

The role will contribute to Data61’s vision of driving the development and adoption of Artificial Intelligence in Australia, with a specific digital technology focus on AI and Cyber Security. The Autonomous and Application Security (AAS) team of the Distributed Systems Security group leads and delivers research projects with the vision of protecting society, government and industry from highly advanced malicious cyber actors using machine intelligence. The role will develop robust machine learning (ML) techniques that empower organisations and people against sophisticated cyber-attacks.

The fast pace of digital transformation has been producing cyber systems and applications at increased complexity and scales. Cyber users with low cybersecurity maturity levels are no match for competent and cooperating malicious actors. Hence, the role will deliver research projects and activities with three primary focus areas:

1. developing novel methods relevant to the trustworthy machine learning for multimodal in sensitive applications,
2. developing robust machine intelligence to make cybersecurity decisions when faced with complex security problems, and
3. developing defences such as differential privacy to mitigate privacy inference attacks in sensitive applications.

The CERC Fellow will collaborate in developing a stream of research and development that contributes to high-quality articles acceptable to high-rank conferences (IEEE S&P, ACM CCS, NDSS, USENIX Security, ICLR, NeurIPS, ICML, CVPR, or similar) and high impact journals (IEEE Transactions on Information Forensics and Security, IEEE Transactions on Dependable and Secure Computing, or similar).

Data61 envisions a vibrant and globally competitive Australian cyber security industry with greater resilience to cyber threats in business, to enhance confidence in the digital economy by bringing together exceptional people from research and industry. Data61 is building a network with industries, academic and government communities, both nationally and internationally. Data61 provides a good supporting environment for commercialising research results and building innovation through start-ups and active community engagement. The CERC Fellow will have an opportunity to collaborate with Data61 partners within the Australian and international cyber security ecosystem and address the challenging problems in cyber security.

### Duties and Key Result Areas:

Under the supervision of senior research scientists and engineers, the CERC Fellow will:

* Carry out innovative, impactful cyber security research of strategic importance to CSIRO Data61 that will, where possible, lead to novel and important scientific outcomes.
* Actively participate in strategic and external R&D projects by undertaking project specific research, implementing software, and communicating with internal and external partners.
* Help build strategic relationship with Data61 industry and academic partners.
* Interact with clients in a professional manner and deliver client reports on time.
* Attract PhD students and supervise them independently within the Data61 scholarship programme.
* Work collaboratively with colleagues within the team, Data61 and across CSIRO.
* Produce high quality scientific and/or engineering papers suitable for publication in quality journals, for client reports and granting of patents.
* Prepare appropriate conference papers and present those at conferences.
* Contribute to the effective functioning of the research team and help deliver CSIRO Data61’s organisational objectives and plans.
* Undertake feasibility studies, demonstrating a considerable degree of originality, creativity and innovation in solving problems and introducing new directions and approaches.
* Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Work collaboratively as part of a multi-disciplinary, often regionally dispersed research team, and business unit to carry out tasks in support of CSIRO’s scientific objectives.
* 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.

## **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). The doctorate must be in a relevant discipline area, such as distributed system security or AI security and privacy.

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

1. Demonstrated experience in in conducting research activities in robustness of artificial intelligence, trustworthy machine learning, differential privacy, and having the ability to undertake research in trust and privacy.
2. Proven ability to conduct high-quality research, development and implementation in AI and Cyber Security with publications in the top tier security conferences IEEE S&P, ACM CCS, NDSS, USENIX Security, or similar level conferences in AI/CV domains.
3. 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.
4. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.
5. The ability to work effectively as part of a research team, plus the motivation and discipline to carry out autonomous research.

## **Desirable:**

1. Knowledge of trustworthy machine learning, differential privacy, and robustness of AI systems.
2. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
3. **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 Fellow within CSIRO, candidates are required to have **submitted** their doctoral thesis 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 ($89,680). 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 provision of a national police check as well as other security/medical/character clearance 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, 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 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.

Find out more about our CSIRO Early Research Career (CERC) Fellow Experience Employee Value Proposition (EVP) [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/)!

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* 1. People First
	2. Further Together
	3. Making it Real
	4. Trusted