# 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 Deep Video Analytics for Fisheries Management |
| Job Reference | 70978 |
| Tenure | Specified Term of 3 years (Full-time)  |
| Salary Range | AU$83,687 to AU$94,679 pa + up to 15.4% superannuation |
| Location(s) | Sydney, NSW |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian/New Zealand Citizens, Australian Permanent Residents and Australian temporary residents currently residing in Australia (visa sponsorship may be provided to eligible candidates). |
| Position reports to the | Team Leader |
| Client Focus – Internal | 50% |
| Client Focus – External | 50% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Dadong Wang via email at: dadong.wang@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 or call 1300 984 220. |

### 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; 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 join the Imaging and Computer Vision (ICV) Group at Data61, CSIRO’s data and digital specialist data sciences arm, to build innovative solutions for Australia. In this role, the Fellow will join an internationally recognised multidisciplinary team to develop innovative machine learning methods (deep learning) for the analysis of images and videos for species identification and automated catch counting for electronic monitoring of commercial fishing operations. The team is developing fish detection and species identification algorithms based on our collection of fish catch imagery, with the goal of implementing the software in an operational capacity. The Fellow will contribute to this goal with a strong background in computer vision, machine learning, quantitative analysis and programming.

### Duties and Key Result Areas:

* + Under the direction of senior research scientists, carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
	+ Develop machine learning workflow for fish detection and species identification using video footage, and supervising the preparation of training data.
	+ Deliver an error rate analysis of the fish detection and species recognition algorithms.
	+ Undertake regular reviews of relevant literature and patents.
	+ 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 as agreed with your supervisor.
	+ Contribute to the development of innovative concepts and ideas for further research.
	+ Make a contribution to the effective functioning of the research team and help deliver CSIRO’s organisational objectives and plans.
	+ Collaborate with members of a diverse project team and external partners to ensure research directions can lead to lasting impact in application domains.
	+ Identify opportunities that could potentially generate intellectual properties through research.
	+ Communicate effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
	+ 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 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 computer vision, machine learning, artificial intelligence, computer science, electrical engineering, statistics, data analytics, applied mathematics and other relevant disciplines.

*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 computer vision, machine learning, artificial intelligence, and the ability to understand and develop mathematically-founded machine learning algorithms and their implementation using deep learning platforms such as TensorFlow/TensorFlow Lite, PyTorch, Caffe etc.
2. Demonstrated experience in developing and evaluating machine learning models.
3. A sound history of publication in high-rank peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
4. The ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.
5. Proficiency in Python, C++ or equivalent.
6. 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.
7. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable:**

1. Experience with OpenCV and other computer vision packages.
2. Background in developing software on both Windows and Linux.
3. Previous experience in GPU accelerated computing with C and C++.
4. Experience implementing mobile applications.
5. Experience in developing embedded deep learning applications.
6. Knowledge of fisheries management issues.

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 $83,687. 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 is subject to the following conditions:

* 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.
* The successful candidate will be required to undertake a pre-employment medical examination prior to commencement.
* 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/

## **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. We expect our employees to demonstrate behaviours aligned to our values of:

• People First

• Further Together

• Making it Real

• Trusted

**About Data61:**

We solve the greatest challenges through innovative science and technology. To find out more visit us [online](https://www.data61.csiro.au/)!

**About ICV Group:**

Find out more about [the Imaging and Computer Vision Research Group](https://research.csiro.au/icv/).