# Position Description

## Postdoctoral Fellowship– CSOF4

The following information is for applicants

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| Advertised Job Title**:** | CSIRO Postdoctoral Fellowship in Machine Learning for Robotic Mobility |
| Job Reference: | 58909 |
| Salary: | AU $85k – AU $93k per annum, plus up to 15.4% superannuation |
| Tenure: | 3 year term (or part-time equivalent) |
| Location: | Queensland Centre for Advanced Technologies (QCAT)Pullenvale (Brisbane) Queensland |
| Relocation Assistance**:** | Will be provided to the successful candidate if required. |
| Applications Are Open To: | * All Candidates
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| Percentage of Client Focus - Internal: | 100% |
| Percentage of Client Focus - External: | 0% |
| Reports to the: | Dynamic Platforms Team Leader |
| Number of Direct Reports: | 0 |
| Name and Contact Details For Applicant Enquiries: | Dr Nicolas Hudson via email: Nicolas.Hudson@csiro.au (preferred) or telephone: +61 7 3327 4036  |
| Contact Details For Technical Issues: | Call 1300 984 220 or email csiro.online@csiro.au  |
| 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 |

## Role Overview:

**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 will help launch their careers, provide experience that will enhance their career prospects, and facilitate the recruitment and development of potential leaders for CSIRO.

Postdoctoral Fellows **are appointed for up to three years or part time equivalent** and will work closely with a leading Research Scientist or Engineer in their respective field. They carry out innovative, impactful research of strategic importance to CSIRO with the possibility of novel and important scientific outcomes. They present the findings in appropriate publications and at conferences.

The **CSIRO Postdoctoral Fellowship in Machine Learning for Robotic Mobility** will undertake research enabling mobile robots to traverse novel environments/terrains by learning quickly from experience, and to generalise that experience in extended missions. This may involve creating novel mappings from sensors to learned metric-spaces, and using a robot’s experience (e.g. hitting a rock) to generalize and avoid related situations (rocks or stumps in road). The Fellow will be expected to be hands on with legged and wheeled vehicles, develop new robotic behaviours, and work within larger teams developing these platforms. The Robotics and Autonomous Systems group is competing in the systems track of the DARPA SubT Challenge and it is expected that this Postdoctoral Fellow will contribute to this Challenge project.

## 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.
* Create novel software models and algorithms running on live demonstrations of autonomous ground vehicles (legged and wheeled) moving and learning in novel terrain.
* Undertake regular reviews of relevant literature and patents.
* Produce high quality scientific and/or engineering papers suitable for publication in top-ranked journals, for client reports and granting of patents.
* Prepare and submit manuscripts to flagship conferences and present those at conferences as agreed with your supervisor.
* Contribute to the development of innovative concepts and ideas for further research.
* Make contributions to the effective functioning of the research team and help deliver CSIRO’s organisational objectives and plans.
* Work collaboratively with colleagues within your team, the business unit and across CSIRO.
* Communicate effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* 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.
* Undertake an appropriate training and development program developed by CSIRO.
* Other duties as directed.

**CSIRO’s postdoctoral training program**is developed between the Postdoctoral Fellow and a CSIRO scientist or engineer. 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.

## Pre-requisites:

1. **Education/Qualifications:** A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as computer science, robotics, electrical, mechanical or mechatronic engineering.

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

1. **Communication:** High-level written and oral communication skills with the ability to represent the research team effectively internally and externally, including at national and international conferences.
2. **Behaviours:** A history of professional and respectful behaviours and attitudes in a collaborative environment.

## Essential Criteria:

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

1. A record of applying machine learning to perception or robotics problems, or published fundamental contributions in machine learning.
2. At least, a strong desire to work hands-on with robotic systems and gather data sets.
3. 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.
4. A record of science innovation and creativity, plus the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## Desirable Criteria:

1. Experience with C++, Python, Tensorflow.
2. Experience with legged systems (humanoids, quadrupeds, etc).
3. Experience with using Robot Operating System (ROS).

To be appointed as a 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 (AU $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/>

## About CSIRO:

We imagine. We collaborate. We innovate. To find out more visit us [online](http://www.csiro.au/)!

**About CSIRO Data61**

In today’s data-focused world, there’s no doubt that numbers count. [Data61](http://www.data61.csiro.au/) is the largest data innovation group in Australia, a connector that brings together technology innovators, businesses and universities to transform Australian industry and to help solve our greatest challenges. A CSIRO business, we are creating our data-driven future.

**Applications will remain open until filled.**