# Postdoctoral Fellowship – CSOF4

Role summary for potential applicants

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| [Advertised Job Title](#PositonTitle)**:** | Postdoctoral Fellowship in Modelling and Control of Legged Robots |
| [Reference Number](#SalaryRange)**:** | 49224 |
| [Classification](#SalaryRange)**:** | CSOF4 |
| [Salary Range](#SalaryRange): | AU $80,833 to AU $91,451 plus up to 15.4% superannuation |
| [Location](#Location)**:** | Pullenvale, Brisbane QLD |
| [Tenure](#Tenure): | Specified Term of 3 years (or part time equivalent) |
| [Relocation assistance](#Citizenship)**:** | Will be provided to the successful candidate if required. |
| [Applications are open to](#Citizenship): | * All Candidates
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| [Functional Area](#InternalFocus)**:** | Research Scientist / Engineer - Postdoc |
| [% Client Focus - Internal:](#InternalFocus) | 100% |
| [% Client Focus - External](#ExternalFocus): | 0% |
| [Reports to the](#ReportsTo): | Research Group Leader for Robotics |
| [Number of Direct Reports](#DirectReports): | 0 |

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| **Role Overview:** |
| **Postdoctoral Fellowships** at CSIRO provide research opportunities to scientists and engineers who have completed their doctorate and have less than three years prior relevant postdoctoral work experience. These fellowships help launch their careers, provide cutting-edge research experience that will enhance their career prospects, and also facilitate the recruitment and development of high-potential research leaders for CSIRO. Postdoctoral Fellows **are appointed for three years** and will work closely with a leading research scientist in their respective field. They are expected to carry out innovative, high-impact research on cutting-edge problems of strategic importance, focus on novel scientific outcomes, and present the results in leading journals and conferences. The role of the Postdoctoral Fellowship in Modelling and Control of Legged Robots is to work on new research projects in the area of Legged Robotics with substantial dynamics, with the objective of developing autonomous legged systems that are capable of traversing complex and challenging indoor and outdoor 3D environments. The postdoctoral fellow will focus on developing novel modelling, estimation, planning and control approaches for multi-legged/multi-limbed robots characterized by many degrees of freedom (DOFs), complex multibody dynamics, deformable structures, and uncertainties in sensing and actuation. The approaches will be tested and validated using various medium- and large-scale legged/limbed robotic platforms developed by the Robotics Research Group. The CSIRO Robotics Research Group, located in Brisbane, is part of the Cyberphysical Systems Research Program (CPS) of Data61, and is one of the leading applied robotics and autonomous systems research labs in the world. It has over 45 researchers and engineers, as well as many research interns, graduate students and visiting scientists. The Robotics Group has extensive laboratory facilities and research infrastructure, and has a broad spectrum of collaborations with other CSIRO research units, as well as many universities and research centres in Australia and abroad.  |

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| **Duties and Key Result Areas:** |
| * Conduct cutting-edge research in the area of multi-legged/multi-limbed robots characterized by many degrees of freedom (DOFs), complex multibody dynamics, and uncertainties in sensing and actuation.
* Develop, implement and test novel modelling, estimation, planning and control approaches for multi-legged/multi-limbed robots.
* Implement the methodologies developed on robotic platforms and evaluate them through extensive indoor and outdoor field trials.
* Communicate research findings through papers in leading peer-reviewed journals and presentations at top conferences in the field.
* Contribute to the development of new research concepts, research proposals and patents.
* Collaborate closely with other scientists and engineers in the Robotics Research Group and across CSIRO. Work with and/or supervise undergraduate and graduate students from collaborating universities.
* Contribute to the effective functioning of the research team and help deliver CSIRO’s organisational objectives and plans.
* Communicate effectively and respectfully with all staff, clients and stakeholders in the interests of outstanding science, ethical business practices, deep collaboration and enhancement of CSIRO’s reputation.
* Participate in appropriate training and development programs developed by CSIRO.
* Adhere to the spirit and practice of CSIRO’s Values, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
* Any other duties within the scope of this position that may arise from time-to-time, for which the incumbent holds the skills and abilities to perform.

A **Postdoctoral Training Program** is developed between the Postdoctoral Fellow and a CSIRO mentor. The program focuses on enhancing the Fellow’s capabilities to the level expected of an independent researcher and includes on-the-job and course-based development, including:* Discipline-specific training
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others
* Leadership training

For further information, please see:<http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships> |

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| **Selection Criteria:** |
| *Under CSIRO policy only those candidates who meet all essential criteria can be appointed.****Pre-Requisites:***1. **Education/Qualifications:** A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as robotics, mechatronics, electrical or mechanical engineering, computer science or engineering, applied physics, etc.

***Please note:*** *To be eligible for this role you must have* ***no more than 3 years*** *of prior relevant postdoctoral experience.*1. **Publications: A strong publication record in high-quality, peer reviewed journals and conferences.**
2. **Communication:** Evidence of strong oral and written communication skills, including the ability to present the results of scientific research at national and international conferences.
3. **Collaboration:** Evidence of the ability to work productively and constructively in a collaborative research environment.

***Essential Criteria:***1. Strong demonstrated theoretical and applied experience in two or more of the following key research areas: optimal control; modelling, estimation, planning and control of systems with significant dynamics and multiple DOFs; multi-body dynamics; robust and stochastic control; multi-legged and/or multi-limbed robot control.
2. Demonstrated experience in developing and applying advanced estimation, planning, decision and control methods in real robot systems.
3. Significant knowledge and experience in developing software systems for robotic platforms.
4. **The ability to carry out independent research as well as to work effectively as part of a multi-disciplinary research team.**
5. A record of research innovation and creativity, plus the ability and willingness to incorporate novel ideas and approaches into scientific investigations.

**Desirable Criteria:**1. Experience in modelling and control of flexible and/or deformable robotic systems and/or experience in advanced motion planning methods for high-DOF robotic systems.
2. Experience in field trials of robotic systems.
3. Experience in the design of novel robotic mechanisms and systems.

**CSIRO is a values-based organisation. You will need to demonstrate behaviours aligned to our values of:*** Integrity of Excellent Science
* Trust & Respect
* Creative Spirit
* Delivering on Commitments
* Health, Safety & Sustainability

To be appointed as a Postdoctoral Fellow within CSIRO, candidates are required to either have completed their PhD, or at the very least to have **submitted** their PhD thesis at the time of commencement of employment. If a candidate has submitted their thesis, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1.Upon CSIRO receiving written confirmation that the PhD has been awarded (within a maximum 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.***Other special requirements:****Appointment to this role may be subject to conditions including security/medical/character clearance requirements. Applicants who are not Australian Citizens or Permanent Residents may be required to undergo additional security clearance processes; which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test):*[*http://www.ielts.org/default.aspx*](http://www.ielts.org/default.aspx) |

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| **Other Information:** |
| **How to Apply**Please apply for this position online at <https://jobs.csiro.au/> and enter requisition number **49224**. Internal applicants please apply via ‘Jobs Central’ in SAP (click ‘Recruitment’) Please load your CV (Maximum 2MB). You may also be required to respond to some screening questions.  Where text responses are required, to avoid being timed out of the system we recommend that you prepare your responses off line and paste them into the appropriate spot prior to submitting your application.If you experience difficulties applying online call 1300 984 220 for assistance. Outside Australian business hours please email: csiro-careers@csiro.au. **Referees**: Please provide contact details of two previous supervisor or academic/professional referees in your resume/CV. We will ask your permission before making contact. **Contact:** If after reading the position details above you require more information please contact: Dr Alberto Elfesvia email: Alberto.Elfes@csiro.au or phone: 61 7 3327 4355Please do not email your application directly to Dr. Elfes. Applications received via this method may not be considered by the selection panel.**About CSIRO**Australia is founding its future on science and innovation. Its national science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation. Find out more! [www.csiro.au](http://www.csiro.au). We work flexibly at CSIRO, offering a range of options for how, when and where you work. Talk to us about how this role could be flexible for you. Find out more! [CSIRO Balance](https://www.csiro.au/en/Careers/A-great-place-to-work/Work-life-balance) **About CSIRO’s Data61 Business Unit** Data61 is the largest data innovation group in Australia. Bringing together CSIRO’s Digital Productivity team and National ICT Australia (NICTA), Data61 is unrivalled in its intellectual capital and global technology marketplace network connections.Data61 is CSIRO’s digital technologies research division, with over 550 staff. Find out more at <https://www.data61.csiro.au>.**About the Robotics Group of CSIRO**The CSIRO Robotics Research Group, located in Brisbane, is part of the Cyberphysical Systems Research Program (CPS) of Data61, and is one of the leading applied robotics and autonomous systems labs in the world. Current research focus areas include 3D SLAM, multi-modal perception, situational awareness; highly autonomous field robots (including wheeled, legged, aerial, and aquatic robots); and robot solutions for a broad range of application domains, including agriculture, mining, energy, biodiversity and biosecurity, environmental research and monitoring, advanced manufacturing, cultural heritage and online learning, and many others. The solutions developed provide scientific, social, economic and environmental benefits through cutting-edge science, deeper understanding of natural and built environments, increased productivity and human safety, and augmentation of human capabilities. The Robotics Group has over 45 researchers and engineers, as well as many research interns, graduate students and visiting scientists. It has extensive laboratory facilities and research infrastructure, including high-end 3D printers and machine shops. The Robotics Group collaborates closely with other research groups in CSIRO, including Sensor Networks, Wireless Systems, Materials Science, and many others. It also has a broad spectrum of collaborations with many universities and research centres in Australia and abroad. The Robotics Group is a platinum sponsor of ICRA 2018, which will be held in Brisbane.  **About Brisbane**Brisbane is the capital city of Queensland, Australia. It is a world-class city and has a pleasant subtropical climate. Brisbane is also the gateway to a host of prime destinations: famous beaches and resorts, rainforest hideaways, islands, the Great Barrier Reef, prized world heritage areas and the Australian Outback are all at the doorstep.   |