# Position Details

## Research Scientist/Engineer- CSOF6

|  |  |
| --- | --- |
| The following information is for applicants | |
| Advertised Job Title | Senior Research Scientist in Field Robotics |
| Job Reference | 69622 |
| Tenure | Indefinite |
| Salary Range | AU$113,338 to AU $132,811 pa (pro-rata for part-time) + up to 15.4% superannuation |
| Location(s) | Pullenvale, QLD |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * Australian/New Zealand Citizens and Australian Permanent Residents * Australian temporary residents currently residing in Australia (visa sponsorship may be provided to eligible candidates) |
| Position reports to the | Team Leader |
| Client Focus – Internal | 70% |
| Client Focus – External | 30% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Dr Pavan Sikka via email at [Pavan.Sikka@csiro.au](mailto:Pavan.Sikka@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. |

### Role Overview

The role of Research Scientist Staff in CSIRO is to conduct innovative research leading to scientific achievements that are aligned with CSIRO’s strategies. You may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. You will have the opportunity to build and maintain networks, play a lead role in securing project funds, provide scientific leadership and pursue new ideas and approaches that create new concepts.

The Robotics and Autonomous Systems Group at CSIRO has a track record for developing and deploying autonomous systems in the field. We are seeking to appoint a highly motivated Senior Research Scientist to undertake research in multi-agent autonomy for field robots. The successful candidate will directly contribute to multiple projects undertaken by the CSIRO. One such project is CSIRO’s participation in the current DARPA Subterranean Challenge where a heterogenous team of robots perform autonomous multi-agent exploration and artefact detection in a GPS denied, communications degraded large scale subterranean environment. CSIRO leads one of the seven teams funded by DARPA to compete in this challenge globally. The successful candidate will be joining a team of world-class researchers and engineers solving real-world problems and delivering impactful solutions based at CSIRO’s Queensland Centre for Advanced Technologies (QCAT) with extensive research, development and testing facilities.

To be successful in this role you will be enthusiastic about leading and making hands-on contributions to solving research challenges in multi-agent autonomy, including global navigation, multi-robot task allocation and human-robot collaboration. Under limited direction, the Senior Research Scientist will assist in the planning and preparation of research proposals and carry out research investigations, requiring originality, creativity and innovation.

CSIRO staff are professional scientists with no teaching duty. We strive on innovation and work closely with all the Universities, supervising and hosting many graduate and post-graduate students. CSIRO offers unique opportunity to mesh within the Australian innovation ecosystem and staff are exposed to deep technology start-ups and innovative commercial companies. We encourage and support entrepreneurship. This is a great opportunity to work with other innovative researchers in a leading government organisation which is engaged in world class scientific research projects, and offers excellent career development and professional support. CSIRO is strongly committed to Diversity and offers Flexible Working Arrangements. You will have a unique opportunity to translate your research into practice with impact on both Australian and international programmes.

### Duties and Key Result Areas:

* Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
* Produce high quality scientific and/or engineering papers suitable for publication in quality journals and for presentation at national and international conferences.
* Develop and maintain innovative autonomy algorithms for field robotics, such as global navigation, multi-robot task allocation, human-robot collaboration.
* Work in the field, locally and internationally with autonomous large and medium scale robots
* Incorporate novel approaches to scientific investigations by adapting and/or developing original concepts and ideas for new, existing and further research
* Draw on professional expertise, knowledge of other disciplines and research experience, recognise opportunities for innovation and generate new theoretical perspectives by pursuing new ideas/approaches and networking with scientific colleagues across a range of disciplines
* 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 plans and policies, Diversity initiatives and Zero Harm 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:** Identifies critical stakeholders and influences them via an influential third party, for example through an established network, to gain support for sometimes contentious proposals/ideas.
* **Resource Management/Leadership:** Sets up and maintains effective and efficient work teams and manages performance and resources, to achieve objectives. Chooses appropriate management strategies and communication styles to maintain high levels of motivation and productivity. Gives feedback for development purposes and provides support and direction for improvement.
* **Judgement and Problem Solving:** Anticipates and manages problems in ambiguous situations. Develops and selects an appropriate course of action and provides for contingencies. Evaluates, interprets and integrates complex bodies of information and draws logical conclusions, synthesises proposals and defends options with reasoned arguments.
* **Independence:** Assesses the risk and opportunity of identified strategies, options and actions. Overcomes problems and setbacks in achieving goals. Invariably includes consideration of value-added future impact on bottom line when determining the optimal and efficient use of resources.
* **Adaptability:**Demonstrates flexibility in thinking and adapts to, and manages, the increasing rate of organisational change by adjusting strategies, goal and priorities.

## **Selection Criteria**

#### Essential

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

1. A doctorate in a relevant discipline, such as Electrical, Electronic, Mechanical or Control Engineering, Robotics Engineering or Computer Science plus relevant postdoctoral research experience.
2. A record of publications in leading, peer reviewed journals and conferences relevant to robotics.
3. Proven ability to work independently and as part of a team to prototype research ideas and develop them into demonstration and/or proof of concept systems.
4. High level of expertise in applied mathematics, such as linear algebra, optimisation, control and planning theory.

## **Desirable:**

1. Knowledge and experience with high level autonomy for multiple agents, including global navigation, and multi-agent task allocation incorporating human-robot teams.
2. Knowledge and experience in decentralised optimisation and graph-based optimisation and planning, and its application to multi-agent robotics.
3. Knowledge and experience working with the Robot Operating System (ROS).
4. Evidence of advanced scientific programming skills and software design in languages relevant for robotics research (e.g. C++, Python, MATLAB).
5. Experience with field deployments outside of laboratory or controlled environments.

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.

## **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