# Position Details

## Research Scientist/Engineer- CSOF6/7

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| The following information is for applicants |
| Advertised Job Title | Senior/Principal Research Scientist – Cybernetics Group |
| Job Reference | 63152 |
| Tenure | Indefinite |
| Salary Range | \* CSOF6 AU$113,338k - AU$132,811k plus up to 15.4% superannuation\* CSOF7 AU$136,437 - AU$150,956k plus up to 15.4% superannuation\*NB: This position is offered across two levels, the appointment level will be determined by the qualifications, skills and relevant experience of the successful candidate |
| Location(s) | Marsfield [NSW], Pullenvale [QLD] |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates |
| Position reports to the | Team Leader |
| Client Focus – Internal | 50% |
| Client Focus – External | 50% |
| Enquire about this job | Contact Wei Ni via email at wei.ni@data61.csiro.au *Please do not email your application directly to Wei Ni. 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. |

### Role Overview

The role of Senior/Principal Research Scientist – Cybernetics Group 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 Senior/Principal Research Scientist will sit within the Cybernetics Group in the CPS Program. The Cybernetics Group tackles major challenges in data collection and information extraction and transmission from complex environments, under constrained conditions and with limited resources. In this role you will lead individual research efforts and contribute to the acquisition and execution of external projects. The Research Scientist will have a strong background, including publications at top-tier venues, in more than one of the specific research areas i.e.:

* Signal processing for RF localisation, tracking and environment mapping, and the inference and contextualisation on individual and group behaviour, and trust.
* Signal processing techniques for micro and biomedical sensing systems, and human-machine interface optimisation, and/or inference from sensory data to assist medical diagnosis.
* Miniaturisation techniques for sensing/actuator systems and platforms that incorporate high-performing battery, telemetry, sensors, actuators and data management solutions, and/or design and implementation of associated ASICs.
* Signal processing techniques for broad bandwidth space communication and sensing systems, such as signal capture and fast track, and system architecture design.

The role of the Senior/Principal Research Scientist is to provide scientific leadership, to play a lead role in securing project funds, and to develop and pursue research agendas within the context of our vision to investigate the use of novel systems, methodologies, techniques for the creation of reliable and long-lasting data acquisition and communication systems.

### Duties and Key Result Areas:

* Conduct independent scientific investigations, propose new research activities, develop research proposals, and carry out associated tasks.
* Undertake feasibility studies, demonstrating a considerable degree of originality, creativity and innovation in solving problems and introducing new directions and approaches.
* Lead research projects, including the negotiation of resource requirements and pursue research to advance the state of the art in the broad fields of signal processing algorithms and techniques, hardware architecture, and embedded software engineering.
* Act as a trusted advisor, utilising knowledge of client’s business and understanding of their underlying needs.
* Lead and supervise staff to ensure that experiments are established in accordance with the research design and are completed within the agree timeframes and budget.
* Within broad guidelines, use professional expertise, knowledge of other disciplines and research experience/achievement to formulate, develop and complete an approved research program with general direction as to the aims of their activities.
* Produce research publications in high-impact journals and conferences.
* 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.
* Communicate research results to clients and the scientific community through oral and written reports, which may include the preparation of documents for patent applications.
* 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.
* 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.

**For an appointment at the higher salary level (CSOF7), duties will also include:**

* Work effectively as a leader of multi-disciplinary research taskforces, to undertake independent scientific investigations and carry out associated tasks and contribute to management of the research group in coordination with other senior researchers.
* Anticipate industry and/or community needs and market direction through client liaison/networking and identify and adapt quickly to changes.
* Provide advice to policy makers and inform and transfer knowledge to non-scientific audiences.
* Coach and provide on-the-job training to technical staff and students.

## **Required Competencies 6:**

* **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.

**Additional competencies at CSOF 7 level:**

* **Teamwork and Collaboration:** Creates and fosters an environment in which there is a high level of cooperation within and between teams. Facilitates positive team relationships to build interactions across Business Units and the organisation.
* **Resource Management / Leadership:** Provides leadership that fosters an environment that encourages new ideas and provides support for the development of emerging skills. Creates trust by displaying consistency, understanding, integrity and patience. Plans, seeks, allocates and monitors resources to achieve outcomes.
* **Judgement and Problem Solving:** Resolves major conceptual scientific, technical, commercial or management problems, which have a significant impact upon the field of research, professional function, the Business Unit or the Organisation. Situations faced have little or no precedent and require original concepts and approaches.
* **Adaptability:** Is flexible in response to external change or when faced with external constraints. Identifies and promotes the opportunities arising as a result of change.

## **Selection Criteria**

#### Essential

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

1. **Education/Qualifications:** A doctorate or equivalent research experience in a relevant discipline area, such as Electronics Engineering, and mixed academic and industrial research leadership experience
2. Solid technical expertise in at least two of the following specific research areas.
	1. Signal processing algorithm design and implementation in RF tracking systems, including array signal processing, time-of-arrival extraction, beamforming, belief propagation, convex optimisation, deep reinforcement learning, and their implementations in edge computing platforms;
	2. Architecture design and implementation of micro sensing systems, including platform design and miniaturisation, operating systems services and network stacks for embedded devices, low-power operation for energy harvesting systems, deep learning, and applications building on those technologies;
	3. Architecture design and signal processing techniques for space communications and space situational awareness, including front-end and baseband architecture, design and implementation, signal detection and fast capture in extremely low signal-to-noise region, high-speed communication, and angle-of-arrival estimation.
3. A record of science innovation and creativity plus the ability & willingness to incorporate novel ideas and approaches into scientific investigations.
4. Demonstrated ability to work effectively as part of a research team, supervise junior researchers and students, and carry out independent individual research, to achieve organisational goals.
5. Strong written and oral communication skills including the ability to publish research results, prepare reports and present the results of scientific investigations at national and international conferences and stakeholder meetings.
6. **A strong track-record of publications in quality, peer reviewed journals to demonstrate national research standing, e.g., IEEE Journal on Selected Areas in Communications, IEEE Transactions on Communications, IEEE Transactions on Signal Processing, etc.**
7. **A history of professional and respectful behaviours and attitudes in a collaborative environment.**

**For an appointment at the higher (CSOF7) salary level, as well as satisfying the Essential Criteria listed above, you must also have:**

1. Demonstrated successes in proposing, securing, leading, executing and delivering industrial or government funded research projects
2. **An excellent track-record of publications in quality, peer reviewed journals to demonstrate international research standing, e.g., IEEE Journal on Selected Areas in Communications, IEEE Journal on Selected Topics in Signal Processing, IEEE Communications Magazine, IEEE Wireless Communications Magazine, etc.**
3. **International recognition in radio and/or biomedical signal processing, evidenced by editorship and invited talks for high-impact journals and conferences**
4. **Evidence of successful research supervision (e.g., PhD, postdoc, etc.)**

**Desirable Criteria:**

1. Track record of design, implementation, and deployment of communication, sensing and tracking systems (preferably in industry context)
2. In-depth knowledge on federated learning, transfer learning, online learning, hidden Markov chain, multi-timescale Markov decision process, and partially observable Markov decision process.
3. Proven applications of your research, e.g., in terms of industry / community uptake of research prototypes / intellectual property or commercialization of technology.
4. Established collaborations (e.g., as evidenced by joint publications) with top researchers in the respective field.

**As Australia’s Innovation Catalyst, CSIRO has strategic actions underpinned by behaviours aligned to**:

* Excellent science
* Inclusion, trust & respect
* Health, safety & environment
* Delivery on commitments.

**In your application and at interviews you will need to demonstrate alignment with these behaviours.**

***Data61 Values:***

**Great Impact**: We focus our valuable resources on areas where we can lead globally and have large impact for Australia, to aid our future prosperity and independence.

**Mastery**: We are fearless, curious and we improve every day. We strive to excel in research, technology and business, and to work with the best in the world.

**Co-Creation of Value**: Everything we do involves co-creation with our network: team, customers and partners. Generously empowering their success is central to our success.

**Ownership of Results**: We jointly hold ourselves accountable for our actions. We do this via trust and commitment.

**People and their Differences**: We embrace the creativity that comes from the diversity of our people.

**Agility and Flexibility**: We view the changing world as an opportunity. This requires agility and flexibility in everything we do; everything changes, except our constant desire to adapt.

**Tell it Straight, with Respect:**We say what we mean, mean what we say, and do not mislead, obfuscate or spin. We're direct and always respectful.

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/)!

Find out more about CSIRO [Data61](https://www.data61.csiro.au/)