# Position Description

## Research Scientist/Engineer – CSOF5/6

The following information is for applicants

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| Advertised Job Title**:** | Research Scientist/Senior Research Scientist in Formal Verification |
| Job Reference: | 59418 |
| Relocation Assistance**:** | Will be provided to the successful candidate if required. |
| Applications Are Open To: | All Candidates |
| Percentage of Client Focus - Internal: | 50% |
| Percentage of Client Focus - External: | 50% |
| Reports to the: | Senior /Principal Research Scientist |
| Number of Direct Reports: | 0 |
| Name and Contact Details For Applicant Enquiries  | Dr June Andronick Email: June.Andronick@data61.csiro.au  |
| Contact Details For Applying | Call 1300 984 220 or email careers.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:

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.

Within Trustworthy Systems, we aspire to world leading research excellence, underpinned by a long-term vision and driven by practical results and deployment.

The role of the Research Scientist/Senior Research Scientist in Formal Verification 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 for fundamentally transforming the safety and security of computer systems for the better.

## Duties and Key Result Areas:

* Pursue research to advance the state of the art in lowering the cost and time for producing high-performance, formally verified software.
* Produce high quality scientific and/or engineering papers suitable for publication in high quality international conferences and journals.
* Work effectively as part of a multi-disciplinary research team, to undertake independent scientific investigations and carry out associated tasks under the guidance of more senior Research Scientists/Engineers.
* Assist in leading research projects
* Provide coaching and on-the-job training to technical staff and students.
* 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 plans and policies, Diversity initiatives and Zero Harm goals.
* Other duties as directed.

**For appointment at the higher salary level (CSOF6), duties will also include:**

* Lead research projects, including the negotiation of resource requirements.
* Supervise research students

## 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: Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.**
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.

## Selection Criteria:

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

1. A doctorate in Computer Science in a relevant area such as Interactive Theorem Proving, Formal Methods, Programming Languages, Systems, or Security.
2. Excellent written and oral communication skills including the ability to publish research results, prepare reports and present the results of scientific investigations at international conferences and stakeholder meetings, evidenced by a solid record of publication in quality, peer reviewed conference proceedings and/or journals.
3. Experience in interactive theorem proving with tools such as Isabelle/HOL, HOL4, Coq, or PVS.
4. Alignment with the Trustworthy Systems group’s research activities in formal verification of real systems.
5. A record of science innovation and creativity plus the ability & willingness to incorporate novel ideas and approaches into scientific investigations.
6. University graduate or some postdoctoral experience in a university and/or commercial research laboratory.

***Additional Essential Criteria for CSOF6 Appointment***

1. Demonstrated experience in project research leadership.
2. Demonstrated experience in research student supervision.

## Desirable Criteria:

1. Multiple years of experience with theorem proving in higher-order logic, such as using Isabelle/HOL, HOL4 or HOL Light.
2. Programming experience, ideally in functional languages such as ML/Haskell.
3. Experience with large-scale verification projects such as seL4 or CakeML.
4. Experience with systems programming, e.g., C, assembly, operating system implementation.
5. A track record of publications and/or other research activities advancing the art of system verification.

## 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/)!

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