# backgroundData 61 and CSIRO logoResearch Scientist/Engineer – CSOF6

Role summary for potential applicants

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| Advertised Job Title**:** | Senior Research Scientist in Machine Learning |
| Reference Number**:** | 57008 |
| Classification**:** | CSOF6 |
| Salary Range: | AU $109k to AU $128k plus up to 15.4% superannuation |
| Location**:** | Canberra, ACT  |
| Tenure: | Specified term of 2 years |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | All Candidates |
| Functional Area**:** | Research Scientist/Engineer |
| Number of Direct Reports: | 0 |
| Reports to the: | Research Group Leader – Machine Learning |

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| **Role Overview:** |
| The Senior Research Scientist role will help discover the next generation of machine learning algorithms. The machine learning group is currently performing novel research on deep learning on large scale graphs using tensor and kernel methods. The Senior Research Scientist will contribute and collaborate with the wider research community by publishing papers in top machine learning forums, as well as to contribute to the technological direction of real world projects and find solutions to some of the most challenging technical problems.Data61 is the largest data innovation group in Australia. We are unrivalled in our intellectual capital and our network with the global technology marketplace. The combined group will bring together approximately 600 research staff working in digital technologies to create benefit for Australia. Data61 will continue to develop Australia’s future leaders with its strong 300+ PhD student program in collaboration with our best universities across Australia. |

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| **Duties and Key Result Areas:** |
| * Incorporate novel approaches to scientific investigations by adapting and/or developing original concepts and ideas for new, existing and further research. Introduce new directions and approaches.
* Drive applied research within machine learning with the aim of scoping and developing new techniques and algorithms for machine learning on graphs.
* Lead small research projects and assist with elements of larger projects including the negotiation of resource requirements.
* Perform innovative and impactful research within the following areas: machine learning, tensor algebra, graph algorithms, kernel methods, deep learning using highly structured data, manifold and spectral learning, computer vision.
* Collaborate with research and engineering teams to solve machine learning problems on graphs. Such as:
	+ Supervised and unsupervised learning on large heterogeneous graphs and hypergraphs.
	+ Solving pattern matching problems on dynamic graphs and hypergraphs using tensors.
	+ Approximation algorithms for spectral graph learning on huge graphs
	+ Real-time processing for updating graph-based models (e.g. manifolds)
* Be a senior thought leader that interacts across a number of science domains ensuring the continued connection of research endeavours elsewhere within Data61 and CSIRO.
* Produce high quality scientific and/or engineering papers suitable for publication in top ranked venues (journals, conferences).
* Work collaboratively and honestly with other teams as well as with commercial, government and/or industry bodies, actively sourcing and maintaining national/ international research collaborations to ensure recognition and funding of research priorities, and identify upcoming trends for future research.
* Adhering to the spirit and practice of CSIRO’s Values, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals.
* Other duties as directed.
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| **Selection Criteria:** |
| *Under CSIRO policy only those who meet all essential criteria can be appointed****Pre-Requisites:*** 1. **Education/Qualifications:** PhD degree in a scientific or technical discipline such as Computer Science, Applied Mathematics or equivalent research experience*.*
2. **Publications: An extensive record of quality publications in high impact, peer reviewed journals or conferences, such as NIPS, CVPR, ICIP, ICML, ICLR, etc.**
3. **Behaviours:** A history of professional and respectful behaviours and attitudes in a collaborative environment.
4. **Adaptability:** The ability to effectively manage a number of competing priorities simultaneously, and carry out non-routine tasks independently. Also, the willingness to discover and tackle new problems as they come

***Essential Criteria:***1. Established reputation and credibility in two or more of the following areas with evidence of effective science leadership or equivalent sector industry experience: machine learning, tensor algebra, tensor processing, kernel methods, deep learning using highly structured data, manifold and spectral learning, computer vision
2. Strong written and oral communication skills including a demonstrated ability to articulate research results to clients, prepare reports and present the results of scientific investigations to stakeholders and at conferences.
3. Demonstrated experience working within both industry and academic research and delivering on a research agenda.
4. Ability to implement and prototype readable code using one or more of the following languages: MatLab, Python, C/C++, R.
5. Strong technical proficiency in manipulating the relevant concepts and formulating and addressing the relevant problems.
6. Extensive experience solving problems using quantitative approaches on real-world data.
7. Ability to collaborate and grow with a multi-disciplinary, regionally dispersed research and engineering team.
8. An outstanding record of science innovation and creativity plus the ability to apply well developed research skills to scientific investigations of significant consequence.

**CSIRO Values:**As Australia’s Innovation Catalyst, CSIRO has strategic actions underpinned by behaviours aligned to Excellent science, Inclusion, trust & respect, Health, safety & environment and Deliver on commitments.  In your application and at interview you will need to demonstrate alignment with these behaviours.In Data61, our leaders will be expected to demonstrate the following 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.***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 [www.csiro.au/careers](http://www.csiro.au/careers). You will need to upload your cover letter and resume/CV as one document. Please provide sufficient relevant information to enable the selection panel to assess your suitability. Should your application proceeds to the next step, you may be asked to provide additional information.If you experience difficulties applying online call 1300 984 220 and someone will be able to assist you. Outside business hours please email: csiro.careers@csiro.au**Referees**: If you do not already have the names and contact details of two previous supervisors or academic/ professional referees included in your resume/CV please add these before uploading your CV.**Contact:** If after reading the selection documentation you require further information please contact: Dr Richard Nock via email: Richard.Nock@data61.csiro.au or phone: +612 9490 5639Dr Alex Collins via email Alex.Collins@data61.csiro.au or phone +612 9490 5963Please do not email your application directly to Dr Nock or Dr Collins. Applications received via this method will not be considered.**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.** **Find out more here!:** <https://www.csiro.au/en/Careers/A-great-place-to-work/Work-life-balance>**CSIRO Data61** In today’s data-focused world, there’s no doubt that numbers count. [Data61](http://www.data61.csiro.au/) are 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.**Our commitment to you**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. We emphasise an individual’s growth and development which is supported by interacting and learning from world leading scientists and engineers, who provide the opportunity to challenge, transform and innovate new ideas. CSIRO’s Data61 is committed to sourcing the brightest and best talent to become part of the Data61 family, which contributes to creating Australia’s data driven future. Find out more – visit our [website](http://www.data61.csiro.au)  |