# backgroundData 61 and CSIRO logo Postdoctoral Fellowship – CSOF4

Role summary for potential applicants

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| Advertised Job Title**:** | FSP Postdoctoral Fellowship - analytics on wireless embedded devices |
| Reference Number**:** | 42865 |
| Classification**:** | CSOF4 |
| Salary Range: | AU $78K to AU $88K plus up to 15.4% superannuation |
| Location**:** | Queensland Centre for Advanced Technologies – Pullenvale, QLD |
| Tenure: | Specified Term of 3 years |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | All Candidates |
| Functional Area**:** | Research Scientist / Engineer - Postdoc |
| Number of Direct Reports: | 0 |
| Reports to the: | Project Leader – Physiological Sensing for Marine Environments |

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| **Role Overview:** |
| **Postdoctoral Fellowships** at CSIRO provide opportunities to scientists and engineers, who have completed their doctorate and have less than three years relevant postdoctoral work experience. These fellowships will help launch their careers, provide experience that will enhance their career prospects, and facilitate the recruitment and development of potential leaders for CSIRO.  Postdoctoral Fellows **are appointed for up to three years** and will work closely with a leading Research Scientist or Engineer in their respective field. They carry out innovative, impactful research of strategic importance to CSIRO with the possibility of novel and important scientific outcomes. They present the findings in appropriate publications and at conferences.  The Postdoctoral Fellowship is part of the CSIRO Active Integrated Matter Future Science Platform (AIM FSP). The Future Science Platforms are a major new CSIRO initiative and are multi-year investments in frontier science and the AIM FSP pursues innovation on the boundary of smart materials, robotics, sensing, and autonomy. The Postdoctoral Fellowship will provide the opportunity to pursue high-impact research in a use-inspired, multidisciplinary environment, joining a cohort of early-career researchers and engineers who will combine their individual disciplinary contributions into mission-focussed R&D.’  This Postdoctoral Fellowship project will develop energy efficient data analytics and machine learning algorithms for distributed embedded systems. The postdoc will develop classifiers for small Internet of Things (IoT) devices, distributed machine learning algorithms that can overcome limitations of individual IoT devices, and algorithms that can augment limited on-board computational resources through calculations on a backend server or GPU cluster. In collaboration with an interdisciplinary research team, the postdoc will apply algorithms for tracking animal species in remote environments, in-situ measurements of physiology, health, and behaviour of animals, and indirect inference and monitoring of stressors, diseases, and physiological anomalies in natural ecosystems. The main application area is to improve CSIRO’s monitoring capability in marine environments, however, the fellow will have an opportunity to apply the algorithms in several exciting environments, such as working with elephants in Africa, jaguars in the Amazon rainforest, and water buffalos in north Queensland. |

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| **Duties and Key Result Areas:** |
| * Under the direction of senior research scientists, carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes. * Develop methods and underlying IoT technology to characterize biodiversity and health of coral reefs based on monitoring of physiological data from individual marine species (fish, molluscs, reptiles, mammals) * Develop signal processing algorithms for physiological sensors (ECG, heartrate, glucose level), motion sensors (acceleration, orientation, depth), and environmental sensors (temperature) attached to marine species * In collaboration with our marine scientists, develop classifiers for extracting higher-order information from sensor time-series data, such as animal health, stress, and energetics. * Undertake regular reviews of relevant literature and patents. * Produce high quality scientific and/or engineering papers suitable for publication in quality journals, for client reports and granting of patents. * Prepare appropriate conference papers and present those at conferences as agreed with your supervisor. * Contribute to the development of innovative concepts and ideas for further research. * Make a contribution to the effective functioning of the research team and help deliver CSIRO’s organisational objectives and plans. * Work collaboratively with colleagues within your team, the business unit and across CSIRO. * Communicate 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 Values, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals. * Undertake an appropriate training and development program developed by CSIRO. * Other duties as directed.   ***CSIRO’s postdoctoral training program***is developed between the Postdoctoral Fellow and a CSIRO scientist. The program will focus on enhancing the Fellows’ capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:   * Discipline-specific techniques and protocols * Professional growth * Project management * Communication and influencing skills * Working and collaborating with others   <http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships> |

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| **Selection Criteria:** |
| *Under CSIRO policy only those 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 Computer Science or Electrical Engineering.   ***Please note:*** *To be eligible for this role you must have* ***no more than 3 years*** *of relevant postdoctoral experience.*   1. **Communication: High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including at national and international conferences.** 2. **Publications: A record of publications in quality, peer reviewed journals.** 3. **Behaviours:** A history of professional and respectful behaviours and attitudes in a collaborative environment.   ***Essential Criteria:***   1. Demonstrated experience in working with resource constrained devices (e.g., ARM Cortex architecture), energy and resource optimized algorithm design, networked systems. 2. Knowledge of time-series signal processing, statistical data analysis, and sensor fusion. 3. Demonstrated scientific track record in machine learning, including feature selection, model complexity control and dimensionality reduction, and model performance and error analysis. 4. **The ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.** 5. A record of science innovation and creativity, plus the ability & willingness to incorporate novel ideas and approaches into scientific investigations.   **Desirable Criteria:**   1. Experience with machine learning or predictive analytics on resource constrained platforms. 2. Experience with deep neural network techniques, including implementation on GPU clusters. 3. Familiarity with analysis of animal/human data/time series.   **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:   1. **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. 2. **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. 3. **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. 4. **Ownership of Results:** We jointly hold ourselves accountable for our actions. We do this via trust and commitment. 5. **People and their Differences**: We embrace the creativity that comes from the diversity of our people. 6. **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. 7. **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.   To be appointed as a Postdoctoral Fellow within CSIRO, candidates are required to have **submitted** their PhD at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 ($78,479).Upon CSIRO receiving written confirmation that the PhD has been awarded (within a 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 [csiro-careers@csiro.au](mailto:csiro-careers@csiro.au). Please provide enough information relevant to this position and the essential criteria to enable the selection panel to determine your suitability, and upload your CV/resume and cover letter as one document. If your application proceeds to the next stage you may be asked to provide additional information. Applicants who do not provide the information when requested may not be considered.  If you experience difficulties applying online call 1300 301 509 and someone will be able to assist you. Outside business hours please email: [csiro-careers@csiro.au](mailto: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 Brano Kusyvia email: brano.kusy@data61.csiro.au or phone: +61 7 33274023  Please do not email your application directly to Dr. Kusy. 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).  **About Future Science Platforms (FSPs)**  FSPs are a major new CSIRO initiative and are multi-year investments in frontier science that will reinvent and create new industries for Australia. The Active Integrated Matter Future Science Platform called AIM is combining materials, robotics, processing and sensing technologies and autonomous science to lead ground-breaking advances at the interface of big data, advanced autonomous systems, and materials science. These inventions and advances will drive the i-manufacturing or manufacturing 4.0 revolution and put early adopter industries ahead of the competition.  Find out more: [www.research.csiro.au/aim](http://www.research.csiro.au/aim)  And links to current projects:  coral reefs: <https://research.csiro.au/dss/coral-reef-monitoring-response/>  amazon: <https://research.csiro.au/dss/amazon-rainforest-biodiversity-monitoring/>​  **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>  **Data61** is Australia’s digital powerhouse, formed by the recent integration of NICTA and CSIRO’s Digital Productivity business unit. We bring a multidisciplinary approach with design thinking, creativity, and behavioural economics to solve complex business problems, digital transformation and early stage commercialisation of data-centric solutions.  Data61 is a CSIRO entity, Australia’s preeminent scientific organisation. Being part of CSIRO gives us access to deep domain expertise across all of the industry sectors most likely to be disrupted over next 5-20 years.  Data61 focuses on every aspect of data research and development, from data capture [via sensor technology and robotics] to data consumption; communications and networking; infrastructure; hardware and software; cybersecurity; data statistics, modeling and analytics; decision sciences; behavioural economics and cognitive sciences—across every major industry sector.  Find out more – visit our [website](http://www.data61.csiro.au)  **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. |