# Postdoctoral Fellowship – CSOF4

Role summary for potential applicants

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| Advertised Job Title**:** | Postdoctoral Fellowship in Applied Machine Learning for Sensor Data Analytics in Aquaculture |
| Reference Number**:** | 29505 |
| Classification**:** | CSOF4 |
| Salary Range: | AU $78K to AU $88K plus up to 15.4% superannuation |
| Location**:** | St Lucia and Bribie Island, QLD |
| Tenure: | Specified Term of 3 years |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | Australian Citizens Only  Australian Citizens and Permanent Residents Only   * All Candidates |
| Functional Area**:** | Research Scientist / Engineer - Postdoc |
| % Client Focus - Internal: | 90% |
| % Client Focus - External: | 10% |
| Reports to the: | Team Leader |
| Number of Direct Reports: | 0 |

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| **Role Overview:** |
| Future Science Platforms (FSPs) are a major new CSIRO initiative. FSPs are multi-year investments in frontier science that will reinvent and create new industries for Australia. Digiscape is the FSP that is creating next-generation decision tools to transform the agriculture and land management sector. To achieve this aim, Digiscape will bring to bear cutting edge climate science; new sources of locally and remotely sensed data; informatics for agro-ecosystems; rigorous analysis of uncertainties; and innovation in both the ICT and social dimensions of systems integration. The successful candidate for this position will therefore join a cohort of early-career researchers and engineers who will combine their individual disciplinary contributions into mission-focussed R&D.  As part of Digiscape we are seeking a highly motivated PhD graduate with a passion to transform pond based aquaculture through an enhanced understanding of pond system dynamics. The successful applicant will apply machine learning at the interface between production system science and sensor technology.  Postdoctoral Fellowshipsat 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. |

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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. * Plan, manage, and evaluate field experimentation. This includes deploying sensors within research and commercial aquaculture ponds, data collection and analysis. * Development and implementation of machine learning algorithms based on sensor data streams * Incorporation of machine learning algorithms into decision support tools to drive improvements in aquaculture pond management. * Undertake regular reviews of relevant sensor technology, literature and patents. * Produce high quality scientific 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 in the Bribie Island aquaculture team (QLD), Data61 (TAS) and wider 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 machine learning, data mining, sensor data analytics***.*   ***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. **A sound understanding of machine learning algorithms, signal processing, time series data analytics and forecasting methods.** 2. **Experience working with sensor data analytics and development of software prototypes.** 3. **Demonstrated ability to develop software tools in one or more of MATLAB, C++, Python, or Java.** 4. **Demonstrated ability to plan, manage, and evaluate field experimentation.** 5. **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.** 6. **A record of science innovation and creativity, plus the ability and willingness to incorporate novel ideas and approaches into scientific investigations.**   **Desirable Criteria:**   1. Basic knowledge of key water quality parameters within open pond aquaculture systems such as prawns / shrimp. 2. Experience with the deployment and maintenance of sensors in an agriculture production setting. 3. Experience developing decision support systems driven by analytics.   **CSIRO is a values based organisation. You will need to demonstrate behaviours aligned to our values of:**   * Integrity of Excellent Science * Trust & Respect * Creative Spirit * Delivering on Commitments * Health, Safety & Sustainability   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 [www.csiro.au/careers](http://www.csiro.au/careers). You may be asked to provide additional information (online) relevant to the selection criteria. If so, then responding will enhance your application so please take the time to provide relevant succinct answers. Applicants who do not provide the information when requested may not be considered.  If you experience difficulties applying online call 1300 984 220 and someone will be able to assist you. Outside business hours please email: [careers.online@csiro.au](mailto:careers.online@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 Ashfaqur Rahmanvia email: ashfaqur.rahman@csiro.au or phone: +61362375649  Please do not email your application directly to Dr Rahman. Applications received via this method will not be considered.  **About CSIRO**  At CSIRO, we do the extraordinary every day. We innovate for tomorrow and help improve today – for our customers, all Australians and the world.  Our innovations contribute billions of dollars to the Australian economy every year. As the largest patent holder in the nation, our vast wealth of intellectual property has led to more than 150 spin-off companies.  With more than 5,000 experts and a burning desire to get things done, we are Australia’s catalyst for innovation.  CSIRO. We imagine. We collaborate. We innovate.  Find out more! [www.csiro.au](http://www.csiro.au).  **About 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.  Find out more! <http://www.data61.csiro.au/>  **What CSIRO offers you**  Pond based aquaculture is a rapidly growing sector worldwide, where solutions to drive production efficiency are highly sought after. The successful applicant will work in a multi-disciplinary team comprising aquaculture systems experts, sensor technology scientists, software engineers and data analysts. This offers a compelling opportunity to build a wide range of relevant expertise and experience. CSIRO has a pond research facility at the Bribie Island Research Center, where the Postdoctoral Fellow will be active in sensor deployment and the acquisition of data streams describing system dynamics. Further, engagement with Hobart based CSIRO scientists offers the opportunity to excel in aspects of machine learning and sensor technologies. |