# Research Scientist/Engineer – CSOF5

Role summary for potential applicants

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| Advertised Job Title**:** | Research Scientist – Medical Image Analysis |
| Reference Number**:** | 57865 |
| Classification**:** | CSOF5 |
| Salary Range: | AU$95K to AU$103K plus up to 15.4% superannuation |
| Location**:** | Brisbane (Herston), QLD |
| Tenure: | Indefinite |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | * All Candidates |
| Functional Area**:** | Research Scientist |
| % Client Focus - Internal: | 50% |
| % Client Focus - External: | 50% |
| Reports to the: | Research Team Leader |
| Number of Direct Reports: | 0 |

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| **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.  The Research Scientist – Medical Image Analysis will undertake medical image analysis research and software development, and will contribute to multiple projects undertaken by the CSIRO, and in collaboration with other academic and commercial partners.  The role will primarily work on an MRI based hip intervention and planning system in collaboration with researchers from the University of Queensland, Siemens Healthcare and the CSIRO. This project will use the multi-tissue 3D imaging capabilities of magnetic resonance (MR) for non-invasive objective assessments of hip joint biomechanics, morphology and biochemistry in patients.  The Research Scientist’s role in this project will include:   * The development of patient specific kinematic models that accurately simulate in-vivo hip joint motion. * Optimization of MR workflows to extract patient specific anatomical and biochemical information of the hip. * Assisting with the development of patient specific kinematic models that accurately simulate hip joint motion and providing an interface to state of the art biomechanical software. * Developing artificial intelligence and ‘Big Data’ approach to efficiently retrieve, comparing and utilizing reference population data from healthy and pathological joints. * Assisting with the development of prototype software for distribution to Siemens’ key clinical partners on their Frontier platform. * Assisting with the running of a clinical study using MR HIPS for assessment of patients with diagnosed femoral acetabulum impingement and/or labral damage in the hip joint.   The Research Scientist will work as part of the AEHRC Medical Image Analysis Team, currently comprising six staff and as many students, within the Biomedical Informatics Group, e-Health Program within the Health and Biosecurity Business Unit  This role offers the opportunity to work with other innovative researchers in a leading government organisation which is engaged in world class scientific research projects, and offers excellent career development and professional support. Furthermore, it is a unique opportunity to translate research into practice with impact on both Australian and international e-Health programmes. |

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| **Duties and Key Result Areas:** |
| * Develop novel algorithms and software to support the development of the MRI based hip intervention and planning system. * Assist in building CSIRO’s research reputation for integrated and multi-disciplinary science through networking, presentation at conferences, social media, scientific publications, and outreach initiatives (mailing list, website). * Develop novel algorithms for medical image quality assurance, registration, segmentation, and for the generation and validation of medical imaging data. * Develop high quality software for the Siemens Frontier, MILXview and MILXCloud platform in the areas of medical image registration, segmentation and image analysis, using C++ language, python, scripts and other appropriate software languages. * Publish results in leading clinical and technical journals and present research to both technical and non-technical audiences at national and international conferences. * Grow and maintain scientific citizenship, and collaborations with international and local partners. * Investigates underlying issues of complex and ill-defined problems and develops appropriate responses by adapting/creating and testing alternative solutions. * Supervise and mentor junior researchers and students. * Incorporate novel approaches to scientific investigations by adapting and/or developing original concepts and ideas for new, existing and further research. * Communicate effectively and respectfully in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation. * Work effectively as part of a multi-disciplinary, often regionally dispersed research team, to undertake independent scientific investigations and carry out associated tasks under the guidance of more senior Research Scientists/Engineers. * Under the guidance of Senior Research Scientists/ Engineers, work collaboratively and honestly with internal and external colleagues, clients and partners to help define and satisfy objectives for small to medium research projects. * Adhere 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:***   * **Education/Qualifications:** A doctorate and research experience in a relevant discipline area, such as medical imaging, image processing, engineering or equivalent field with a background in statistical analysis of clinical studies. * **Communication:** 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. * **Publications: A solid record of publication in quality, peer reviewed journals.** * **Collaboration: A history of professional and respectful behaviours and attitudes in a collaborative environment.**   ***Essential Criteria:***   1. Demonstrated experience with medical image acquisition, analytics (image segmentation and registration, tissue classification and related techniques), research innovation and biomarkers used in musculoskeletal imaging. 2. Demonstrated competency in research applied to clinical environments, including experience in analyzing and publishing results from clinical trial data and management of clinical imaging studies. 3. Ability and willingness to incorporate novel ideas and approaches into scientific investigationsand design of clinical decision support systems for musculoskeletal radiology and orthopaedics. 4. Proven ability to work independently and as part of a team to prototype research ideas and develop them into demonstration and/or proof of concept systems. 5. Demonstrated experience of advanced programming skills (e.g., C++, Python) and software design and development processes/environments (including MS Visual Studio, gcc, make, CMake, git) and experience in driving the delivery of informatics solutions to industrial and clinical environments/collaborators. 6. Competency in management of cross-functional and distributed project teams, excellent communication skills.   **Desirable Criteria:**   1. Experience with ITK, VTK and the GDCM libraries. 2. Experience implementing advanced analytics approaches (machine learning, analyses of big imaging datasets, etc.). 3. Experience with musculoskeletal magnetic resonance imaging data at high-field (7T).   **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 interview you will need to demonstrate alignment with these behaviours.**  ***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 <https://jobs.csiro.au/> and enter requisition number **57865**. Internal applicants please apply via ‘Jobs Central’ in SAP (click ‘Recruitment’).  Please load your CV and cover letter (Maximum 2MB). You may also be required to respond to some screening questions.  If you experience difficulties applying online call 1300 984 220 for assistance. Outside Australian business hours please email: [careers.online@csiro.au](mailto:careers.online@csiro.au).  **Referees**: Please provide contact details of two previous supervisor or academic/professional referees in your resume/CV.  **Contact:** If after reading the position details above you require more information please contact:  Jason Dowlingvia email: jason.dowling@csiro.au or phone: +61 7 3253 3634  Please do not email your application directly to Jason Dowling.Applications received via this method may not be considered by the selection panel.  **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. Talk to us about how this role could be flexible for you.  Find out more! [CSIRO Balance](https://www.csiro.au/en/Careers/A-great-place-to-work/Work-life-balance)  At **CSIRO** **Health and Biosecurity** we are working with our partners and assembling strong multidisciplinary research teams to tackle major national and international health and biosecurity challenges. In doing so we're protecting the health of our farming sector, environment, people, and our way of life. We have a total of 4 research programs across the business unit.  Find out more at: <http://www.csiro.au/en/Research/BF> |