# Position Description

## Research Projects – CSOF3

The following information is for applicants

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| Advertised Job Title**:** | Software Engineer – Computer Vision |
| Job Reference: | 59892 |
| Relocation Assistance**:** | Will be provided to the successful candidate if required. |
| Applications Are Open To: | Australian/New Zealand Citizens and Australian Permanent Residents Only |
| Percentage of Client Focus - Internal: | 20% |
| Percentage of Client Focus - External: | 80% |
| Reports to the: | Team Leader |
| Number of Direct Reports: | 0 |
| Name and Contact Details For Applicant Enquiries: | Marc Elmouttie via email: [Marc.elmouttie@csiro.au](mailto:Marc.elmouttie@csiro.au)  *Please do not email your application to Marc Elmouttie. Applications received via this method will not be considered by the selection panel.* |
| Contact Details For Applying: | Call 1300 984 220 or email [careers.online@csiro.au](mailto: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:

Research Projects staff in CSIRO collaborates in scientific and technological activities with other research staff usually by assisting with detailed planning, undertaking or assisting with experimental, observational or technology development work, and in carrying out the more practical aspects of the work.

The CSIRO Mining Geoscience Team develops technologies for mining and other industries to improve safety and productivity. The team has a proven track record and is a leading provider of software and hardware to mining professionals such as geologists, geotechnical and blast engineers and surveyors. We pioneered the use of photogrammetric systems for rockmass characterisation and slope stability assessment, geophysical logging and microseismic monitoring for the Australian mining industry. The team have also developed sensing technologies that are now being utilised in the medical and aeronautical industries. Our success has led to long term and ongoing commercial partnerships with leading technology providers. The work is underpinned by many years of experience with both 2D and 3D imaging systems, geophysical sensing and imaging technologies. We have successfully patented and commercialised innovative sensor and analytics systems.

The team is part of the Coal Mining Research Programme in CSIRO Energy. The programme consists of over 60 researchers and engineers specialising in the automation, processing, numerical modelling, sensing and other domains for applications in the mining industry.

## Duties and Key Result Areas:

* Design and implement computer vision-based algorithms for mining, manufacturing and other applications.
* Deliver production level code with supporting unit tests.
* Contribute to collecting data in the field, annotating and cleaning data.
* Deploy developed technologies, and in demonstrating these technologies in the field.
* Experimenting with new technologies and communicating the results.
* Respond courteously and efficiently to client requests, maintaining clear communication regarding mutual expectations and monitoring client satisfaction.
* Under technical direction, select the appropriate methods to perform standard analyses and be able to undertake technical tasks associated with trials, tests, measurement, reviews and investigations including associated calculations and analysis.
* Oversee the activities of less experienced staff and provide on-the-job training, as required.
* Design equipment and adapt techniques to meet special circumstances and client needs or undertake modifications to methods or equipment requiring limited innovation.
* Provide instruction on, and assistance to staff with activities pertaining to the immediate work area and responsibilities, as required.
* Look for opportunities to develop original experimental methods/equipment/software/concepts/ ideas in support of existing and further research.
* 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.
* Work collaboratively as part of a multi-disciplinary, often regionally dispersed research team, and business unit to carry out tasks in support of CSIRO scientific objectives.
* 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.

## CSIRO Competencies:

1. **Teamwork and Collaboration: Proactively seeks and considers the ideas and opinions of others from within and outside the team to help form decisions, plans or actions.**
2. **Influence and Communication: Puts forward ideas by presenting factual information supported by data, definitions, examples, illustrations or other aids, which will assist in conveying meaning.**
3. **Resource Management/Leadership: Provides instruction and assists other staff to complete allocated tasks and activities.**
4. **Judgement and Problem Solving:** Identifies and considers the implications of a range of available alternatives in order to select the most appropriate response to problems of a familiar or recurring nature.
5. **Independence: Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).**
6. **Adaptability:** Willingness to change ideas or perceptions based on new information, contrary evidence or other people's points of view. Prepared to try out different approaches.

## Selection Criteria:

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

***Essential Criteria:***

* A Bachelor/Master’s degree in a scientific, mathematics or engineering discipline with significant component of formal training in software engineering, or equivalent commercial experience in software engineering.
* Demonstrated expertise in designing, developing and implementing computer vision software,
* 2+ years programming experience, ideally in C++ or C#
* The ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, and carry out tasks under general direction from Scientific Researchers
* The ability & willingness to contribute novel ideas and approaches in support of scientific investigations

***Desirable Criteria:***

**We love code examples. If you have anything that we can look at, such as open source (e.g. on Github or BitBucket), we would appreciate if you mentioned it in your application.**

* Experience with OpenCV and Point Cloud Library (PCL)
* Experience with Matlab and Matlab Image Processing and Computer Vision Toolboxes
* Experience with CUDA or OpenCL programming
* Demonstrated experience in producing decoupled and testable software (including version control, issue tracking, test automation, etc.)
* Experience with field-testing of IT systems, including user studies, field experiments, analysis of field trial data, and debugging.

## 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/>

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Find out more about CSIRO [Energy](https://www.csiro.au/en/Research/EF)