# Position Details

*Software Engineer*

## Research Projects – CSOF4/CSOF5

The following information is for applicants

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| Advertised Job Title**:** | Software Engineer |
| Job Reference: | 61281 |
| 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: | 100% |
| Percentage of Client Focus - External: | 0% |
| Reports to the: | Project Leader – Challenge PrE02: Navigating the optimal path towards Australia’s future energy system |
| Number of Direct Reports: | 0 |
| Name and Contact Details For Applicant Enquiries: | Dr Edwin Bonilla – email: Edwin.Bonilla@data61.csiro.au |
| Contact Details For Applying: | Call 1300 984 220 or email 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’ in SAP (click ‘Recruitment’)  |

## Role Overview

Research Projects staff in CSIRO collaborate 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. Research Projects staff may be involved in providing consulting services, science management and/or industry liaison.

In collaboration with researchers at the ANU and CSIRO Energy, the software engineer will be working on the project “Navigating the optimal path towards Australia’s future energy system”. This is a research project (100%) and the engineer will work closely with the project leader and collaborators in order to develop well-calibrated probabilistic models for renewable energy (and particularly solar and wind) at different temporal and spatial resolutions. The position will also interact with AI planning and energy scientists so that the output of the developed probabilistic models can be used by a transition planning model to assess viability of future grid configurations and to build the foundation for more comprehensive and robust economic modelling for Australia’s energy future.

The ability to learn fast, contribute ideas, and produce high-quality code will be crucial to success in this role. As a member of Data61’s Machine Learning Research Group (MLRG), the engineer will work in a highly stimulating environment and will benefit from a strong expertise in areas such as probabilistic modelling and inference, statistical machine learning and information geometry.

## Duties and Key Result Areas:

* Investigate probabilistic models for renewable energy (solar and wind) at different temporal and spatial resolutions.
* Develop methods for scalable, robust and well-calibrated inference in these models.
* Implement these methods efficiently in Python and TensorFlow.
* Perform evaluation of the developed software to demonstrate its competitiveness and fitness for purpose. Taking responsibility for functionality, performance and robustness.
* Write scientific reports on the items above, with the potential of targeting a publication at an international venue.
* Have the ability to think creatively, prototype new ideas and see them through to production.
* Maintain high ethical and performance standards.
* 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.

**At CSOF 5 level:**

* Work with project team members and others across Data61 and provide guidance and expertise to ensure that project goals and Data61’s goals are achieved.

## Competencies:

1. **Teamwork and Collaboration:** Demonstrates initiative, actively contributing as a team member. Supports team decisions and keeps other team members up to date about individual actions. Shares all relevant and useful information. Pitches in and helps other team members when necessary.
2. **Influence and Communication:** Communicates basic facts in a courteous manner including posing appropriate questions to gain factual information.
3. **Resource Management/Leadership:** Provides instruction and assists other staff to complete allocated tasks and activities.
4. **Judgement and Problem Solving:** Selects appropriate solutions to clearly defined problems using readily available information. Alternatives are limited and prescribed or apparent.
5. **Independence:** Accepts personal responsibility for doing the job well. Looks for opportunities to improve the way things are done and makes recommendations accordingly.
6. **Adaptability:**Accepts the need for change to work routines or technology.

**Additional competencies at CSOF 5 level:**

1. **Resource Management/Leadership:** Gives feedback for development purposes and provides support and direction for improvement.
2. **Independence:** Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.

## Essential Criteria:

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

1. Completed (or working towards) a PhD in Computer Science or in a related scientific or engineering discipline.
2. Familiarity with machine learning concepts and methods (e.g. generalization, overfitting, optimization, regression) and the ability to understand and implement mathematically-founded machine learning algorithms.
3. Demonstrable experience developing in Python.
4. Experience in using a variety of software development tools and frameworks for testing, version control and issue tracking.

**At CSOF 5 level:**

1. Proven experience mentoring and developing the capabilities of junior colleagues and providing detailed feedback to them to ensure that projects were delivered at a high level.

## Desirable Criteria:

1. Solid knowledge of machine learning and the ability to develop new mathematically-founded machine learning algorithms.
2. Knowledge of probabilistic modelling and approximate Bayesian inference (such as variational inference and Markov Chain Monte Carlo).
3. Demonstrable previous research output such as publications in conferences and / or journals.
4. Experience with spatio-temporal modelling.
5. Experience developing in TensorFlow.
6. Strong oral and written communication skills.

## About CSIRO:

We imagine. We collaborate. We innovate. To find out more visit us [online](http://www.csiro.au/)!

Find out more about CSIRO [Data61](https://www.data61.csiro.au/)