



# Position Description

|                            |                                                    |
|----------------------------|----------------------------------------------------|
| <b>College / Division:</b> | College of Engineering & Computer Science          |
| <b>School / Centre:</b>    | Research School of Computer Science                |
| <b>Department / Unit:</b>  |                                                    |
| <b>Position Title:</b>     | Postdoctoral Fellow in Knowledge Graph Engineering |
| <b>Classification:</b>     | Academic Level B                                   |
| <b>Position No:</b>        |                                                    |
| <b>Responsible to:</b>     | Dr Armin Haller                                    |

## PURPOSE STATEMENT:

The ANU College of Engineering and Computer Science is dedicated to contributing to The Australian National University's reputation for excellence in research and research-led education. The College is at the leading edge within numerous fields, including logic, algorithms and data, signal processing, artificial intelligence, computer vision and robotics, computational mechanics, materials, fabrication, big software systems, renewable energy, networked systems and quantum cybernetics.

The Research School of Engineering brings together the best and brightest researchers, scholars and fosters a vibrant culture that prepares our students for a career in a field central to progress in nearly all aspects of life in the 21<sup>st</sup> century.

The purpose of this appointment is to

- Strengthen the Research School of Computer Science as an internationally centre of excellence in Knowledge Graph Engineering and Knowledge Discovery;
- contribute to the objectives of an externally funded project with the Department of Finance on "An ontology framework for government information by building a system to store, automatically classify and later retrieve government records that are expressed in a Linked Data representation; and
- assist in writing project reports and research papers

## KEY ACCOUNTABILITY AREAS:

### Position Dimension & Relationships:

The position is located within the Research School of Computer Science, a close-knit research and teaching community, made up of high performing academic and professional staff, students and visitors sharing a deep commitment to transforming the future of engineering for the next generation. The appointee is accountable to the Project leader, Dr Armin Haller, and the Director of the Research School. The appointee will liaise with relevant professional and academics staff members within the Research School of Computer Science and the ANU as well as establishing relationships with the wider research community to enhance cross-disciplinary collaborations.

As an academic member of the Research School of Computer Science the appointee will be required to contribute to the overall intellectual life of the School, College and University. This includes contribution to research, education and outreach agendas of the School both nationally and internationally in a manner that is appropriate to the level of appointment.

The appointee is expected to undertake independent research activities that are aligned with the School's strategic priorities that emphasise relevant and translational research.

## Role Statement:

In their role as ANU academic level B in the Research School of Computer Science the appointee will be expected to:

1. Undertake independent research in the area of Knowledge Graph Engineering and graph-based machine learning with a view to publishing original and innovative results in refereed journals, present research at academic seminars and at international conferences, and collaborate with other researchers at a national and/or international level.
2. Collaborate with the project team during the design phase of the project by participating and leading design thinking workshops
3. Following advice from the project partners and own initiative, seek out and obtain data that can be used for the project purposes
4. Reuse and extend where necessary an existing ontology for record storage developed in a pilot project
5. Establish the infrastructure to generate metadata as controlled-access linked data and to store the actual record in a NoSQL database with a binding mechanism between the two
6. Characterise user, preferences, past behaviour, spatial and temporal context and develop or refine existing machine learning algorithms in combination with OWL-Miner to mine and predict ontology graph pattern for record annotation
7. Assist in the preparation of research outputs, including scientific papers, reports and presentations
8. Actively seek and secure external funding including the preparation and submission of research proposals to external funding bodies.
9. Assist with supervision of research students.
10. Supervise less senior academic staff and research support staff in your research area.
11. Actively contribute to all aspects of the operation of the School.
12. Assist in outreach activities including to prospective students, research institutes, industry, government, the media and the general public.
13. Maintain high academic standards in all education, research and administration endeavours.
14. Take responsibility for their own workplace health and safety and not wilfully place at risk the health and safety of another person in the workplace.
15. Other duties as required consistent with the classification level of the position.

**SELECTION CRITERIA:**

1. A PhD in Computer Science or a related area, with a track record of independent research in the field of the Semantic Web, Ontology Engineering, Knowledge Graphs and/or graph-based machine learning as evidenced by publications in peer-reviewed journals and conferences, a record of developing and maintaining collaborations and by other measures such as awards, invitations to give talks at leading conferences etc.
2. Evidence of the ability to articulate and prosecute innovative research in the field of Knowledge Graph Engineering and a vision for the activities they will undertake at the ANU.
3. Demonstrated software engineering skills (e.g. through software published on Github or similar) with a sound knowledge of the Web technology stack. Experience in a variety of Web programming or scripting language including but not limited to Java, C++ and Python and knowledge and experience with triple stores, content negotiation, the linked data platform protocol, SPARQL, XML, Turtle, SHACL/ShEx.
4. Sound knowledge of data modelling using the Web Ontology Language.
5. Demonstrated experience in data analysis and machine learning or knowledge extraction.
6. Experience in designing, implementation and testing research prototype software.
7. Demonstrated effective interpersonal skills and verbal and written communication skills, including the ability to draft standard research papers, and an ability to consult and liaise effectively with a wide range of people from different disciplines.
8. Proven organisational skills and attention to detail, with a demonstrated ability to prioritise own workload and to work effectively both independently and as part of a team, meeting competing deadlines and delivering high-quality outcomes.
9. An ability and commitment to win bids for competitive external funding to support individual and collaborative research activities.
10. The ability to supervise and graduate high quality PhD/Masters research students
11. Excellent oral and written English language skills and a demonstrated ability to communicate and interact effectively with a variety of staff and students in a cross-disciplinary academic environment and to foster respectful and productive working relationships with staff, students and colleagues at all levels.
12. A demonstrated high-level understanding of equal opportunity principles and a commitment to the application of these policies in a University context.

**Supervisor Signature:****Date:**

Printed Name:

**Uni ID:****References:**[General Staff Classification Descriptors](#)[Academic Minimum Standards](#)**Pre-Employment Work Environment Report**

Please note the Pre-Employment Work Environment Report form must be completed by the supervisor of the advertised position and provided electronically and separately, as it needs to be uploaded into ANU Recruit system and available for applicants to download when reviewing the position documentation. Without this form jobs cannot be advertised.



# Pre-Employment Work Environment Report

## Position Details

|                        |                                                 |                         |                                     |
|------------------------|-------------------------------------------------|-------------------------|-------------------------------------|
| College / Div / Centre | ANU College of Engineering and Computer Science | Dept / School / Section | Research School of Computer Science |
| Position Title         | Postdoctoral Fellow                             | Classification          | Level B                             |
| Position No.           |                                                 | Reference No.           |                                     |

In accordance with the Occupational Health and Safety Act 1991 the University has a duty of care to provide a safe workplace for all staff.

- This form must be completed by the supervisor of the advertised position and forwarded with the job requisition to Appointments and Promotions Branch, Human Resources Division. Without this form jobs cannot be advertised.
- This form is used to advise potential applicants of work environment issues prior to application.
- Once an applicant has been selected for the position consideration should be given to their inclusion on the University's Health Surveillance Program where appropriate – see [http://info.anu.edu.au/hr/OHS/\\_Health\\_Surveillance\\_Program/index.asp](http://info.anu.edu.au/hr/OHS/_Health_Surveillance_Program/index.asp)  
Enrolment on relevant OHS training courses should also be arranged – see [http://info.anu.edu.au/hr/Training\\_and\\_Development/OHS\\_Training/index.asp](http://info.anu.edu.au/hr/Training_and_Development/OHS_Training/index.asp)
- 'Regular' hazards identified below must be listed as 'Essential' in the Selection Criteria - see 'Employment Medical Procedures' at [http://info.anu.edu.au/Policies/\\_DHR/Procedures/Employment\\_Medical\\_Procedures.asp](http://info.anu.edu.au/Policies/_DHR/Procedures/Employment_Medical_Procedures.asp)

## Potential Hazards

- Please indicate whether the duties associated with appointment will result in exposure to any of the following potential hazards, either as a **regular** or **occasional** part of the duties.

| TASK                          | regular                  | occasional               | TASK                                | regular                  | occasional               |
|-------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| key boarding                  | <input type="checkbox"/> | <input type="checkbox"/> | laboratory work                     | <input type="checkbox"/> | <input type="checkbox"/> |
| lifting, manual handling      | <input type="checkbox"/> | <input type="checkbox"/> | work at heights                     | <input type="checkbox"/> | <input type="checkbox"/> |
| repetitive manual tasks       | <input type="checkbox"/> | <input type="checkbox"/> | work in confined spaces             | <input type="checkbox"/> | <input type="checkbox"/> |
| catering / food preparation   | <input type="checkbox"/> | <input type="checkbox"/> | noise / vibration                   | <input type="checkbox"/> | <input type="checkbox"/> |
| fieldwork & travel            | <input type="checkbox"/> | <input type="checkbox"/> | electricity                         | <input type="checkbox"/> | <input type="checkbox"/> |
| driving a vehicle             | <input type="checkbox"/> | <input type="checkbox"/> |                                     |                          |                          |
| <b>NON-IONIZING RADIATION</b> |                          |                          | <b>IONIZING RADIATION</b>           |                          |                          |
| solar                         | <input type="checkbox"/> | <input type="checkbox"/> | gamma, x-rays                       | <input type="checkbox"/> | <input type="checkbox"/> |
| ultraviolet                   | <input type="checkbox"/> | <input type="checkbox"/> | beta particles                      | <input type="checkbox"/> | <input type="checkbox"/> |
| infra red                     | <input type="checkbox"/> | <input type="checkbox"/> | nuclear particles                   | <input type="checkbox"/> | <input type="checkbox"/> |
| laser                         | <input type="checkbox"/> | <input type="checkbox"/> |                                     |                          |                          |
| radio frequency               | <input type="checkbox"/> | <input type="checkbox"/> |                                     |                          |                          |
| <b>CHEMICALS</b>              |                          |                          | <b>BIOLOGICAL MATERIALS</b>         |                          |                          |
| hazardous substances          | <input type="checkbox"/> | <input type="checkbox"/> | microbiological materials           | <input type="checkbox"/> | <input type="checkbox"/> |
| allergens                     | <input type="checkbox"/> | <input type="checkbox"/> | potential biological allergens      | <input type="checkbox"/> | <input type="checkbox"/> |
| cytotoxics                    | <input type="checkbox"/> | <input type="checkbox"/> | laboratory animals or insects       | <input type="checkbox"/> | <input type="checkbox"/> |
| mutagens/teratogens/          | <input type="checkbox"/> | <input type="checkbox"/> | clinical specimens, including blood | <input type="checkbox"/> | <input type="checkbox"/> |
| carcinogens                   |                          |                          | genetically-manipulated specimens   | <input type="checkbox"/> | <input type="checkbox"/> |
| pesticides / herbicides       | <input type="checkbox"/> | <input type="checkbox"/> | immunisations                       | <input type="checkbox"/> | <input type="checkbox"/> |

**OTHER POTENTIAL HAZARDS (please specify):**

|                         |  |             |  |       |  |
|-------------------------|--|-------------|--|-------|--|
| Supervisor's Signature: |  | Print Name: |  | Date: |  |
|-------------------------|--|-------------|--|-------|--|