Australian National University

Position Description

College/Division:	ANU College of Science and Medicine
Faculty/School/Centre:	School of Medicine and Psychology
Department/Unit:	Psychology (with computer science supervision)
Position Title:	Postdoctoral Fellow
Classification:	B
Position No:	42705
Responsible to:	Dr Conal Monaghan
Number of positions that report to this role:	0
Delegation(s) Assigned:	

The ANU College of Science and Medicine encompasses a tradition of research excellence that has fostered Nobel Laureates and trains leaders in science, medicine, health and the environment in Research Schools consistently ranked among the top performers in the world in their various fields. The College, and the School of Medicine and Psychology (SMP), in particular, is committed to solving problems through fundamental and applied scientific research, and improving health outcomes for people in Australia and around the world. SMP works to advance human health and wellbeing, enhancing the lives of individuals and strengthening communities, including those of Aboriginal and Torres Strait peoples, in the ACT, NSW and beyond. By integrating the disciplines of medicine and psychology we aim to unlock the secrets of health and wellbeing, develop impactful therapies, solve national and international health problems, and lead impactful social change.

As this position represents the school's commitment to interdisciplinary research, you will also work closely with the ANU School of Computing (SOC), a transformative centre for research in artificial intelligence and machine learning, computer systems and software, and theoretical foundations of computing. The SOC spans traditional computer science and modern data and computational science, with a passionate mission to deliver high-quality impact across research, education and engagement.

PURPOSE STATEMENT:

In conjunction with the Australian Government, the School of Medicine and Psychology at the Australian National University is seeking a Postdoctoral Fellow with expertise in Artificial Intelligence (AI) with a particular interest in natural language processing for a pioneering interdisciplinary research project that bridges computer science and psychology.

This is a unique opportunity to apply your technical expertise to the complex and challenging problem of understanding personality through digital footprints. You will develop sophisticated AI approaches to extract psychological insights from unstructured text data. Your work will help answer fundamental questions about how our digital expressions reflect our underlying psychological characteristics. Although you will be based in Psychology, you will have supervision and engagement within the ANU School of Computing.

This position offers the chance to work with world-class computing infrastructure while tackling intellectually challenging problems that span disciplinary boundaries. This is a truly interdisciplinary research environment where your technical expertise will be applied to fundamental questions about human psychology. You will work directly with both psychology and computer science, in addition to the Australian Government. The research supervisory team will include Dr Conal Monaghan, Associate Professor Boris Bizumic, and Honorary Professor Tom Gedeon.

KEY ACCOUNTABILITY AREAS:

Position Dimension and Relationships:

You will work to create systems that can extract psychological insights from text data from a range of online sources. This creates fascinating technical challenges, as unprompted natural text is inherently more diverse and potentially more difficult to analyse - yet potentially more revealing of authentic psychological patterns.

You'll systematically evaluate various model architectures to determine optimal approaches for psychological assessment, working with both encoder and decoder frameworks across different model sizes. You'll establish empirical benchmarks for model performance, identifying the sweet spot where computational efficiency meets psychological accuracy. You will then use this foundational research to build an orchestrated pipeline to link digital footprint data to personality. For example:

- Determining how much text is required for reliable personality inferences
- Identifying which sources and content types yield the most psychologically relevant information
- Developing safeguards against deceptive or misleading text
- Quantifying the predictive advantages of personality-informed models over pure machine learning approaches

This work will provide a range of interesting computational challenges to solve, and has significant implications for psychological assessment, digital ethics, and our understanding of how language reflects personality.

Role Statement:

In their role as an Academic Level B the Postdoctoral Fellow is expected to:

1. Undertake both guided and independent research in AI and natural language processing for personality assessment, publishing results in peer-reviewed journals and conferences, and collaborating with an interdisciplinary research team
2. Fine-tune, implement, and evaluate AI models for extracting psychological insights from various types of online content, with a particular focus on large language models
3. Create well-documented, reproducible code with thorough technical documentation that supports transparency and collaboration across disciplines
4. Conduct systematic evaluations of different AI model architectures to determine optimal approaches for psychological assessment, balancing technical performance with practical considerations
5. Collaborate with senior staff to prepare and submit research proposals to external funding bodies, helping secure resources for advancing the research program
6. Collaborate with Australian government partners, understand specific requirements, and be able to adapt and innovate in response to government priorities.
7. Contribute to teaching activities of the School as opportunities arise, including presenting guest lectures, leading tutorials, and developing of course materials related to AI and its applications in psychology
8. Mentor students and junior research team members
9. Engage in the academic communities of both the School of Computing and the School of Medicine and Psychology, attending seminars and fostering cross-disciplinary collaboration
10. Maintain high ethical standards in AI development, with particular attention to privacy considerations when working with personal text data
11. Demonstrate intellectual curiosity and enthusiasm for interdisciplinary research
12. Take responsibility for workplace health and safety considerations and comply with all ANU policies and procedures
13. Work to secure National Computing Infrastructure (NCI) credits and grants that are necessary for the project, then run code on the NCI.

Skill Base:

A Level B academic will work with the support and guidance from more senior academic staff and is expected to develop their expertise in teaching and research with an increasing degree of autonomy. A Level B academic will normally have completed four years of tertiary study or equivalent qualifications and experience and may be required to hold a relevant higher degree.

A Level B academic will normally contribute to teaching at the institution, at a level appropriate to the skills and experience of the staff member, engage in scholarly, research and/or professional activities appropriate to their profession or discipline, and undertake administration primarily relating to their activities at the institution. The contribution to teaching of Level B academics will be primarily at undergraduate and graduate diploma level.

Selection Criteria

1. Qualification (preferably PhD) in Computer Science, Computational Linguistics, affective computing, or other relevant fields
2. Demonstrated familiarity in training large language models and evaluating their performance
3. Proficiency in Python programming language, in addition to relevant development pipelines such as PyTorch, TensorFlow, and/or HuggingFace. In addition to Python, being able to run these models in R statistical language as well will be seen as advantageous.
4. Experience in linking several models into an orchestrated pipeline
5. Experience in interacting with high-performance computing infrastructure or supercomputers
6. Evidence of research productivity through publications in peer-reviewed journals and conferences
7. Strong written and verbal communication skills, particularly in explaining technical concepts to non-specialists
8. Ability to work both independently and collaboratively in an interdisciplinary team, in addition to external stakeholders
9. Understanding of ethical considerations in AI research, including privacy and data protection
10. A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.

Other requirements:

Be an Australian Citizen, and demonstrate a willingness and ability to undertake government security clearance, and accept the restrictions and reporting conditions this may entail. Given the nature of this work, this condition must be satisfied for any applicant without exception.

Employment in this position is conditional on satisfactory results in accordance with the Background Checking Procedure which sets out the types of checks required by each type of position. All appointments are required to make relevant declarations to comply with the National Higher Education Code to Prevent and Respond to Gender-Based Violence.

Supervisor/Delegate Name:	Dr Conal Monaghan	Date:	

References:
Academic Minimum Standards

Australian National University

Pre-Employment Work Environment Report

Position Details

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Position Title	Postdoctoral Fellow	**Classification**	Academic Level B
Position No.	42705	**Reference No.**	

In accordance with the Work Health and Safety Act 2011 (Cth) the University has a primary duty of care, so far as reasonably practicable, to ensure the health and safety of all staff while they are at work in the University.

- This form must be completed by the supervisor of the advertised position and appended to the back of the Position Description.
- This form is used to advise potential applicants of work environment and health and safety hazards prior to application.
- Once an applicant has been selected for the position they must familiarise themselves with the University WHS Management System via Handbook guidance https://services.anu.edu.au/human-resources/health-safety/whs-management-system-handbook
- The hazards identified below are of generic nature in relation to the position. It is not correlated directly to training required for the specific staff to be engaged. Identification of individual WHS training needs must be in accordance with WHS Local Training Plan and through the WHS induction programs and Performance Development Review Process.
- '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

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	X	☐	laboratory work	☐	☐
lifting, manual handling	☐	☐	work at heights	☐	☐
repetitive manual tasks	☐	☐	work in confined spaces	☐	☐
Organizing events	☐	☐	noise / vibration	☐	☐
fieldwork & travel	☐	☐	electricity	☐	☐
driving a vehicle	☐	☐			
NON-IONIZING RADIATION			IONIZING RADIATION		
solar	☐	☐	gamma, x-rays	☐	☐
ultraviolet	☐	☐	beta particles	☐	☐
infra red	☐	☐	nuclear particles	☐	☐
laser	☐	☐			
radio frequency	☐	☐			
CHEMICALS			BIOLOGICAL MATERIALS		
hazardous substances	☐	☐	microbiological materials	☐	☐
allergens	☐	☐	potential biological allergens	☐	☐
cytotoxics	☐	☐	laboratory animals or insects	☐	☐
mutagens/teratogens/ carcinogens	☐	☐	clinical specimens, including blood	☐	☐
pesticides / herbicides	☐	☐	genetically-manipulated specimens	☐	☐
			immunisations	☐	☐

OTHER POTENTIAL HAZARDS (please specify):

Psychosocial Hazards: