RESEARCH FELLOW - NLP AND MACHINE LEARNING

DEPARTMENT/UNIT Data Science and AI
FACULTY/DIVISION Faculty of Information Technology
CLASSIFICATION Level B
DESIGNATED CAMPUS OR LOCATION Clayton campus

ORGANISATIONAL CONTEXT

Everyone needs a platform to launch a satisfying career. At Monash, we give you the space and support to take your career in all kinds of exciting new directions. You’ll have access to quality research, infrastructure and learning facilities, opportunities to collaborate internationally, as well as the grants you’ll need to publish your work. We’re a university full of energetic and enthusiastic minds, driven to challenge what’s expected, expand what we know, and learn from other inspiring, empowering thinkers. Discover more at www.monash.edu.

The Faculty of Information Technology aims to lead global IT research and education. Our research is multi-disciplinary, multi-campus and multi-national, giving us a unique capacity to reach out further and deeper than any other institution in Australia. Our research priorities are both technically ambitious and embedded in everyday life. To learn more about the Faculty and the exciting work we do, please visit www.infotech.monash.edu.au/.

In the information age, data are ubiquitous. Data science extracts value from data assets, helping us understand the past, better manage the present, and effectively plan for the future. It plays a critical role in advancing industry, commerce, governance and research. At Monash IT, we have an unsurpassed breadth and depth of expertise across a broad range of areas that underpin the fast-developing field of data science. Our Data Science & AI Department has more than 40 permanent academic staff backed by a large cohort of project-based researchers and postgraduate students, with areas of expertise spanning machine learning, NLP, computer vision, computational and collective intelligence, optimisation and visualisation.

This position is part of a Better Care Victoria (BCV) Innovation Fund Project, “Artificial Intelligence in cardIac arrEst” (AIDE), led by Ambulance Victoria (AV), involving a team of researchers from all three of the Faculty’s departments: Data Science & AI, Software Systems & Cybersecurity, and Human-Centred Computing. The project also involves a collaboration with the Emergency Services Telecommunications Authority (ESTA) in Victoria. Out-of-hospital-cardiac arrest (OHCA) is a significant public health issue in Australia, affecting all ages, with few survivors. It is a time-critical condition requiring immediate resuscitative interventions. Triple Zero (000) call-takers play a pivotal role in the early detection and provision of bystander interventions for OHCA patients.
Intervention to improve the early detection of OHCA in the call has great potential to improve survival rates and long-term patient outcomes.

This project aims to develop an Artificial Intelligence (AI) framework for Triple Zero (000) call-takers to use as a decision support tool. The tool will recognise potential OHCAs during the Triple Zero call and notify the call-taker of the level of probability of a cardiac arrest at the earliest possible point of recognition. This project aims to develop a methodology that can rapidly be replicated in other cohorts such as stroke, heart attack, mental health, domestic violence and low acuity patients.

**POSITION PURPOSE**

A Level B research-only academic is expected to carry out independent and/or team research within the field in which they are appointed and to carry out activities to develop their research expertise relevant to the particular field of research.

The Research Fellow will work AIDE project, focusing on the NLP and Machine learning components of the decision support tool. The Research Fellow is expected to design and implement new algorithms and machine learning models to analyse dialogues between callers and Triple Zero call-takers, in order to identify cardiac arrest at the earliest possible point. The Research Fellow is also expected to conduct cutting-edge research and contribute to publications, in top M/NLP/AI venues, arising from the project.

**Reporting Line:** The position reports to the AIDE Monash Team Leader

**Supervisory responsibilities:** Not applicable

**Financial delegation:** Not applicable

**Budget responsibilities:** Not applicable

**KEY RESPONSIBILITIES**

Specific duties required of a Level B research-only academic may include:

1. The conduct of research either as a member of a team or independently and the production of reports, conference and seminar papers and publications from that research
2. Supervision of research-support staff involved in the staff member's research
3. Guidance in the research effort of junior members of research-only Academic staff in their research area
4. Contribution to the preparation or, where appropriate, individual preparation of research proposal submissions to external funding bodies
5. Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise
6. Administrative functions primarily connected with their area of research
7. Co-supervision or, where appropriate, supervision of major honours or postgraduate research projects within the field of the staff member's area of research
8. Attendance at meetings associated with research or the work of the organisational unit to which the research is connected and/or at departmental, school and/or faculty meetings and/or membership in a limited number of committees
KEY SELECTION CRITERIA

Education/Qualifications

1. The appointee will have
   ● A doctoral qualification in a relevant discipline area, such as Computer Science, Artificial Intelligence, or Computational Linguistics

Knowledge and Skills

2. Demonstrated expertise in deep learning and natural language processing is essential, with knowledge of speech processing, an advantage
3. Demonstrated analytical and manuscript preparation skills; including a track record of refereed research publications
4. Ability to solve complex problems by using discretion, innovation and the exercise diagnostic skills and expertise
5. Well-developed planning and organisational skills, with the ability to prioritise multiple tasks and set and meet deadlines
6. Excellent written and verbal communication skills with proven ability to produce clear, succinct reports and documents
7. A demonstrated awareness of the principles of confidentiality, privacy and information handling
8. A demonstrated capacity to work in a collegiate manner with other staff in the workplace and external collaborators
9. Excellent programming skills in languages such as Python, C++, Java, Matlab and R
10. Demonstrated computer literacy and proficiency in the production of high-level work using software such as Microsoft Office applications and specified university software programs, with the capability and willingness to learn new packages as appropriate

OTHER JOB RELATED INFORMATION

- Travel to other campuses of the University may be required
- There may be a requirement to work additional hours from time to time
- There may be peak periods of work during which taking of leave may be restricted

GOVERNANCE

Monash University expects staff to appropriately balance risk and reward in a manner that is sustainable to its long-term future, contribute to a culture of honesty and integrity, and provide an environment that is safe, secure and inclusive. Ensure you are aware of and adhere to University policies relevant to the duties undertaken and the values of the University. This is a standard which the University sees as the benchmark for all of its activities in Australia and internationally.