RESEARCH FELLOW

DEPARTMENT/UNIT
Department of Data Science and Artificial Intelligence

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 strong reputation and international profile attracts the best students worldwide and we offer a range of accredited courses that transform our graduates into highly skilled and sought after IT professionals, equipped to work globally. 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.

Our areas of research expertise include:

- **Artificial Intelligence**: Bayesian techniques, natural language processing, knowledge acquisition and processing
- **Machine Learning**: association discovery, causal models, classification, deep learning and forecasting
- **Modelling**: agent-based modelling and artificial life
• **Optimisation**: constraint and mixed-integer programming, metaheuristics, modelling languages, no differentiable optimisation, resource planning and scheduling, and path finding algorithms

• **Visualisation**: immersive analytics, interactive visualisation, and layout and presentation

## 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 on the ARC-funded Discovery Project “Improving human reasoning with causal Bayes networks: a multimodel approach”, led by researchers in the Department of Data Science and AI and the Department of Human-Centred Computing, in collaboration with cognitive psychologist partners in the UK. This project aims to improve human causal and probabilistic reasoning about complex systems by taking a user-centric, multimodal, interactive approach. The project explores new integrated visual and verbal ways of explaining a causal Bayesian network and its reasoning in order to reduce known human reasoning difficulties, and investigates how to reduce cognitive load by prioritising the most useful user- and context-specific information. Expected outcomes include novel AI methods that empower users to drive the reasoning process and strengthen trust in the system’s reasoning. Performance will be assessed in medical and legal domains, with significant potential benefits to end users from better, more transparent reasoning and decision making.

The Research Fellow is expected to design and implement new algorithms to identify and analyse Bayesian network features that people have difficulty understanding, model users/context, enable interaction, prioritise information, and generate verbal explanations. They will also lead human subject testing and evaluation.

**Reporting Line:** The position reports to the lead Chief Investigator

**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 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
KEY SELECTION CRITERIA

Education/Qualifications
1. The appointee will have
   • A doctoral qualification in a relevant discipline area, such as Computer Science, Artificial Intelligence, Computational Linguistics or Cognitive Psychology

Knowledge and Skills
2. Demonstrated expertise in causal probabilistic models and causal reasoning is essential, with knowledge of NLG, HCI or visualisation, 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
9. Excellent programming skills in languages such as Python, Java, Javascript, 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.