RESEARCH FELLOW

DEPARTMENT/UNIT	Data Science and AI
FACULTY/DIVISION	Faculty of Information Technology
CLASSIFICATION	Level B
WORK LOCATION	Caulfield 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.monash.edu/it.

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 the broad range of areas that underpin the fast-developing field of data science. Our Data Science Group has more than 40 permanent academic staff backed by a large cohort of project-based researchers and postgraduate students, and includes one of the leading optimisation groups in the world.

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, nondifferentiable optimisation, resource planning and scheduling, and path finding algorithms

- Visualisation: immersive analytics, interactive visualisation, and layout and presentation

Optimisation is a key area of Data Science that focuses on finding optimal solutions to the many complex, multi-decision problems that occur in our society. The AI-based Discrete Optimisation research group at Monash IT is recognised for its strong links between theory and practice, fuelled by our excellent connections with the broader research community and industry partners. To learn more about the Optimization research group and the work we do, please visit https://www.monash.edu/it/data-science/optimisation/home.

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 collaboratively works on all aspects of the project, from concepts, theoretical underpinning, and design, through implementation and experimentation, to publication of results, curation of data, and maintenance of generated software. Primary responsibilities of the position will be both the development of, and experimentation with, constraint solving methods and related mathematical techniques; or the development of modelling language constructs, and analyses and transformations that can produce efficient inputs to solvers. The Research Fellow works side by side with a large number of other researchers in analysis, optimization, and programming language technologies, including groups from the University of Melbourne and CSIRO Data61.

Reporting Line: The position reports to the Subgroup Lead, Optimisation

Supervisory Responsibilities: Not applicable

Financial Delegation: Not applicable

Budgetary 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. Contribution to the preparation or, where appropriate, individual preparation of research proposal submissions to external funding bodies

3. Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise

4. Administrative functions primarily connected with their area of research

5. Occasional contributions to the teaching program within the field of the staff member's research

6. Co-supervision or, where appropriate, supervision of major honours or postgraduate research projects within the field of the staff member's area of research

7. 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 of a limited number of committees

KEY SELECTION CRITERIA

Education/Qualifications

1. The appointee will have:

- A doctoral qualification in Computer Science or Mathematics or equivalent qualifications or research experience

Knowledge and Skills

2. Demonstrated statistical analysis and manuscript and research proposal preparation skills; including a solid track record of refereed research publications

3. Experience in supervising and working with major honours or postgraduate students within the discipline

4. The ability to work both independently in a research environment and as part of an inter-disciplinary research team

5. High level organisational skills, with demonstrated capacity to establish and achieve goals

6. Excellent written and oral communication skills

7. A demonstrated capacity to work in a collegiate manner with other staff in the workplace

8. Significant research experience in one or more of the following areas: constraint programming, mixed integer programming, SAT and SAT Modulo Theories, modelling languages, program analysis

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

LEGAL COMPLIANCE

Ensure you are aware of and adhere to legislation and University policy relevant to the duties undertaken, including: Equal Employment Opportunity, supporting equity and fairness; Occupational Health and Safety, supporting a safe workplace; Conflict of Interest (including Conflict of Interest in Research); Paid Outside Work; Privacy; Research Conduct; and Staff/Student Relationships.