School of Electrical, Mechanical and Industrial Engineering
Faculty of Engineering and Information Technology

Research Fellow in Computational Fluid Mechanics

POSITION NO 0054847
CLASSIFICATION Level A Research Fellow
SALARY $80,258 - $108,906 per annum
SUPERANNUATION Employer contribution of 17%
WORKING HOURS Full-time (1.0 FTE)
BASIS OF EMPLOYMENT Fixed-term for 12 months
OTHER BENEFITS https://about.unimelb.edu.au/careers/staff-benefits
HOW TO APPLY Online applications are preferred. Go to http://about.unimelb.edu.au/careers, select the relevant option (‘Current Opportunities’ or ‘Jobs available to current staff’), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY Dr Daniel Chung
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Please do not send your application to this contact

For information about working for the University of Melbourne, visit our website: about.unimelb.edu.au/careers
Acknowledgement of Country

The University of Melbourne acknowledges the Traditional Owners of the unceded land on which we work, learn and live: the Wurundjeri Woi Wurrung and Bunurong peoples (Burnley, Fishermans Bend, Parkville, Southbank and Werribee campuses), the Yorta Yorta Nation (Dookie and Shepparton campuses), and the Dja Dja Wurrung people (Creswick campus). The University also acknowledges and is grateful to the Traditional Owners, Elders and Knowledge Holders of all Indigenous nations and clans who have been instrumental in our reconciliation journey.

We recognise the unique place held by Aboriginal and Torres Strait Islander peoples as the original owners and custodians of the lands and waterways across the Australian continent, with histories of continuous connection dating back more than 60,000 years. We also acknowledge their enduring cultural practices of caring for Country.

We pay respect to Elders past, present and future, and acknowledge the importance of Indigenous knowledge in the Academy. As a community of researchers, teachers, professional staff and students we are privileged to work and learn every day with Indigenous colleagues and partners.
Position Summary

The appointee will perform computational research towards advancing our physical understanding and modelling of wall-bounded turbulent flows over riblets and roughness. The research aims to make fundamental advances as informed by applications, reflecting the funding mix of national and international government grants as well as industry contracts.

The appointee will conduct independent research leading to publication in journals and presentations at conferences. The appointee will join an existing team, comprising a postdoc and several students, located in the Department of Mechanical Engineering, and be an active member, collaborating with other researchers and supervising PhD students as required. The appointee may undertake small amounts of teaching as required.

1. Selection Criteria

- A PhD in mechanical engineering, or closely related discipline;
- A track record of research quality, as evidenced by scholarly publications in leading journals and by presentations at major conferences, commensurate with opportunity;
- Commitment to excellence and continual improvement;
- Curiosity, enthusiasm and dedication with regards to the research topic;
- Humility and willingness to learn;
- Experience, initiative and determination in overcoming challenging research problems;
- Commitment to transparency and accountability;
- Experience in modelling of wall-bounded turbulent flows;
- Experience in numerical simulation of wall-bounded turbulent flows;
- Experience in fundamental research in wall-bounded turbulent flows;
- Experience in development and implementation of algorithms for high-performance scientific computing;
- Experience in analysing large volumes of data and meticulously maintaining records;
- Experience in prioritising tasks to achieve project milestones within timelines;
- Experience in communicating research to technical and non-technical audiences;
- Excellent written and verbal communication skills, demonstrated by journal publications and by conference presentations;
- Excellent interpersonal skills, including an ability to interact with internal and external stakeholders (industry, academic, administrative and support staff) in a courteous and effective manner.

2. Key Responsibilities

2.1 Research – Advancement of Discipline

- Independently plan and carry out research on the projects and work towards successful completion of the aims of the projects;
- Develop effective timelines and milestones based on goals of the research program;
Perform numerical simulations, data analysis and flow-physical modelling, and communicate this information to the supervisor and collaborators;

Regularly prepare accurate and meticulous records and technical reports of all the numerical simulations, data analysis and flow-physical modelling;

Prepare manuscripts for publication in peer-reviewed journals;

Prepare presentations, travel to local, national and international conferences in order to communicate research outcomes;

Liaise effectively with collaborators from a variety of internal and external stakeholders;

Assist other researchers in carrying out numerical simulations, data analysis and flow-physical modelling, working as a team to further the group’s research output;

Contribute to the development of the group’s research program in fluid mechanics;

Build capacity for independent research.

2.2 TEACHING AND LEARNING

Contribute to teaching, training, scientific mentoring and supervision of students as required by the supervisor;

Conduct lectures, tutorials, mark and undertake laboratory duties as required by the supervisor.

2.3 ENGAGEMENT

Attend and actively participate in group meetings, departmental seminars and committee memberships;

Involvement in professional activities, including outreach, consulting and referrals.

2.4 SERVICE AND LEADERSHIP

Contribute to preparing grant applications for high-performance computing resources;

Identify and obtain funding to support individual or collaborative projects, relating to research, teaching and engagement.

2.5 OTHER

Perform other tasks as requested by the supervisor.

3. Equal Opportunity, Diversity and Inclusion

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion, and reward on the basis of merit.

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the Advancing Melbourne strategy that addresses diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and
appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people’s age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to strive for excellence and reach the targets of Advancing Melbourne.

4. **Occupational Health and Safety (OHS)**

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

https://safety.unimelb.edu.au/people/community/responsibilities-of-personnel

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

5. **Other Information**

5.1 **DEPARTMENT OF MECHANICAL ENGINEERING**

The Department of Mechanical Engineering http://www.mech.unimelb.edu.au/ is one of the largest in Australia. The Department provides teaching into subjects in the three-year undergraduate degrees of Science and Commerce, which can be followed by a two-year professional Master of Engineering.

The Department aims to attract and retain the highest quality staff available in order to maintain a vigorous research effort. We address the most urgent contemporary problems of our rapidly developing industrial society, with investigations into biomechanics, robotics, manufacturing, materials, fluid mechanics and thermal sciences.

5.2 **SCHOOL OF ELECTRICAL, MECHANICAL AND INFRASTRUCTURE ENGINEERING**

The School of Electrical, Mechanical and Infrastructure Engineering (EMI) https://eng.unimelb.edu.au/about/departments/school-of-electrical-mechanical-and-infrastructure-engineering undertakes teaching and research across a range of disciplines that are internationally recognised for their contribution to fundamental research. EMI has several well-established industry linkages and international partnership and is building a vibrant profile of interdisciplinary research, working with industry with an aim to contribute to society. EMI offers a comprehensive range of accredited Master of Engineering and Master of Information Technology programs taught through the Electrical, Mechanical and Infrastructure departments as well as professional Masters programs. The School has a substantial cohort of research higher degree students.
A major focus of the School is to attract and retain outstanding and internationally recognised academic staff. EMI is committed to increasing the number of female engineers and scientists on its staff.

5.3 FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

The Faculty of Engineering and Information Technology (FEIT) has been the leading Australian provider of engineering and IT education and research for over 150 years. We are a multidisciplinary School organised into three key areas; Computing and Information Systems (CIS), Chemical and Biomedical Engineering (CBE) and Electrical, Mechanical and Infrastructure Engineering (EMI). FEIT continues to attract top staff and students with a global reputation and has a commitment to knowledge for the betterment of society.

FEIT has never been better positioned as a global leader, anchored in the dynamic Asia Pacific region, creating and curating knowledge to address some of the world’s biggest challenges. Through our students and our relationships with communities, we can not only respond to society’s needs but anticipate and create engineering and IT solutions for the future.

https://eng.unimelb.edu.au
https://eng.unimelb.edu.au/about/join-mse

Our ten-year strategy, FEIT 2025, is our commitment to bring to life the University-wide strategy Growing Esteem and reinforce the University of Melbourne’s position as one of the best in the world. Investment in new infrastructure, strengthening industry engagement and growing the size and diversity of our staff and student base to drive innovation and develop the transformative technologies of the future are all fundamental principles underpinning FEIT 2025.

https://eng.unimelb.edu.au/about/mse-2025

5.4 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia’s premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

Further information about working at The University of Melbourne is available at http://about.unimelb.edu.au/careers

5.5 ADVANCING MELBOURNE

The University’s strategic direction is grounded in its purpose. While its expression may change, our purpose is enduring: to benefit society through the transformative impact of education and research. Together, the vision and purpose inform the focus and scale of our aspirations for the coming decade.

Advancing Melbourne reflects the University’s commitment to its people, its place, and its partners. Our aspiration for 2030 is to be known as a world-leading and globally connected Australian university, with our students at the heart of everything we do.
We will offer students a distinctive and outstanding education and experience, preparing them for success as leaders, change agents and global citizens.

We will be recognised locally and globally for our leadership on matters of national and global importance, through outstanding research and scholarship and a commitment to collaboration.

We will be empowered by our sense of place and connections with communities. We will take opportunities to advance both the University and the City of Melbourne in close collaboration and synergy.

We will deliver this through building a brilliant, diverse and vibrant University community, with strong connections to those we serve.

The means for achieving these goals include the development of the University of Melbourne’s academic and professional staff and the capabilities needed to support a modern, world-class university. Those means require a commitment to ongoing financial sustainability and an ambitious infrastructure program which will reshape the campus and our contribution to the communities we engage with. This strategy, and the priorities proposed, is centred around five intersecting themes; place, community, education, discovery and global.

5.6 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at https://about.unimelb.edu.au/strategy/governance