POSITION DESCRIPTION

Melbourne Bioinformatics
Faculty of Medicine, Dentistry and Health Sciences

Research Software Engineer – Melbourne Bioinformatics

POSITION NO 0053496

CLASSIFICATION
- Academic Specialist Level A
- Academic Specialist Level B
- Depending on qualifications & experience

SALARY
- Academic Specialist Level A - $75,289 - $102,163
- Academic Specialist Level B - $107,547 - $127,707

SUPERANNUATION Employer contribution of 17%

WORKING HOURS Full-time (1 FTE)

BASIS OF EMPLOYMENT Fixed term contract for 2 years. Possibility of extension subject to full-external funding.

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
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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
Position Summary

This position presents a unique opportunity for a talented recent graduate or experienced software engineer who is motivated to make a difference in science and health technology. The project represents a major collaboration between key members of the Parkville Medical Precinct – The University of Melbourne, Peter MacCallum Cancer Centre (PeterMac) and WEHI - and the Australian BioCommons (BioCommons), a national bioinformatics digital research infrastructure program. It is hosted at Melbourne Bioinformatics, within the Faculty of Medicine, Dentistry and Health Sciences.

We are seeking a lead software engineer for the “Portable Pipelines Project” to continue the development of a workflow orchestration system called “Janis” (https://janis.readthedocs.io). This project aims to improve the interoperability between multiple workflow specifications and simplify the deployment of complex analysis workflows on large scale computing systems.

Our current implementation has already achieved significant outcomes with thousands of cancer genomes analysed using our software. We believe there is potential for the Portable Pipelines Project to make a much bigger difference – by further facilitating translation between different workflow specifications, such as Common Workflow Language (CWL), Workflow Definition Language (WDL), Nextflow and the widely-used Galaxy platform. Given that such workflows are now a major part of most areas of biomedicine, science and engineering, Janis is likely to have national and international impact.

The role will collaborate with leading experts in cancer genomics, situated within a world-leading biomedical precinct, providing a rare opportunity to develop experience in big data analytics for biomedical science. The role reports to the Victorian Fellow and Associate Director, Human Genome Informatics in the Australian BioCommons, with significant supervision from the project lead at the PeterMac and in collaboration with other research software engineers from WEHI.

This role is ideally suited to software developer who is excited by the opportunity to apply their skills to a project with applications and impact in biomedicine and possibly beyond. It presents an opportunity to direct the design, implementation and delivery of critical research software infrastructure which can be deployed nationally and internationally.

1. Key Responsibilities

- Work within a team of software developers and bioinformaticians collaborating from multiple institutes (currently The University of Melbourne, PeterMac and WEHI) to design, implement, maintain, and deploy software systems for portable bioinformatics workflows across different hardware requirements from the respective institutes.
- Apply modern software development methodologies to develop a robust, scalable, verifiable, and portable solution that meets the needs and requirements of multiple stakeholders.
- Implement end-to-end automated testing of the developed software system.
- Assist with the instantiation of bioinformatics workflows for cancer research within the workflow system.
- Write documentation, including defining standards, procedures, data definitions and training materials relating to the developed systems.
- Assist with the deployment, delivery and support of the developed software systems, including the maintenance of cloud services usage, docker packages and version control repositories.
Participate in collaborations with other open-source projects and workflow language communities.

Observe Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in section 5.

2. Selection Criteria

2.1 ESSENTIAL

- Degree in a relevant discipline, such as Software Engineering, Computer Science, Bioinformatics, or extensive equivalent industry experience.
- Prior project work experience in a software development role using Python, and an ability to learn new languages and tools as needed.
- A high level of competency in the UNIX environment and solid understanding of cloud computing approaches or high-performance computing environments.
- Proficiency in software version control, and experience using source control tools such as Git.
- A sound understanding of modern software engineering practices, including documentation, testing, continuous integration, automated software stack deployment and data management.
- Ability to work independently as well as within a dynamic software development team.
- Excellent verbal and written communication skills as required for demonstrating software to stakeholders, users and the eResearch community.

2.2 DESIRABLE

- Familiarity or experience working with workflows specification and development (CWL, WDL, Nextflow, Galaxy, or similar).
- Familiarity or experience working with Docker, Singularity, or other virtualisation/containerisation tools.
- Familiarity or experience working with genomics bioinformatics pipelines, bioinformatics tools and analysis techniques for genomics data.
- Familiarity or experience developing training materials and delivering training to assist users in the adoption of new software tools.
- Demonstrated experience and public contributions to existing open-source projects (or other equivalent projects).

3. Job Complexity, Skills, Knowledge

3.1 LEVEL OF SUPERVISION / INDEPENDENCE

The successful applicant will report to the Victorian Fellow and Associate Director, Human Genome Informatics (Australian BioCommons), with significant supervision from the project lead at PeterMac, and in collaboration with other research software engineers from WEHI as well as experts within the BioCommons. They will be expected to work independently towards specified tasks with set deadlines, in a collaborative manner and demonstrating a
high level of initiative and motivation. They will also be encouraged to seek support from colleagues at Melbourne Bioinformatics team.

### 3.2 BREADTH OF THE POSITION

Academic Specialists are expected to apply considerable technical skills to projects in new domains and to grow their capacity to work on larger projects with increasing levels of autonomy. The incumbent will extend their understanding of the bioinformatics domain and positively interact and work with experts in this field. As the position also involves work on nationally funded research infrastructure projects, an interest and ability to engage with experts in e-Research is also required.

Given the breadth and scale of the role, the ideal candidate will be keen to apply their software development skills to tools and infrastructure projects that are catering to and supporting the needs of researchers in the life sciences.

Some interstate and international travel may be required.

### 3.3 PERFORMANCE MEASURES

Academic Specialists are assessed on mutually agreed levels of activity, engagement, quality and impact under the categories of Teaching and Learning, Research and Research Training and Leadership and Service. These will be determined at work commencement.

### 4. 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 based on 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 University’s People Strategy 2015-2020 and policies that address 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 Growing Esteem.

### 5. 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:

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.

6. Other Information

6.1 ORGANISATION UNIT

melbournebioinformatics.org.au

Melbourne Bioinformatics is hosted at the University of Melbourne within the Faculty of Medicine, Dentistry & Health Sciences.

Melbourne Bioinformatics’ experts in software development and bioinformatics help researchers with their research involving life sciences computation. The significant training program supports students and researchers and a growing number of subscribers to Melbourne Bioinformatics’ services who see the value in getting direct access to the computers and the expertise to advance their research quickly.

Melbourne Bioinformatics is host to the Australian BioCommons, a $20M NCRIS-funded research infrastructure program for life science research (2020-2023).

This world-class institution in the heart of Australia’s biomedical and biotechnology precinct offers to:

- solve academic and industrial bioinformatics, computational biology and bio-engineering problems
- speed up research through direct access to high-end computing systems, software and computational biology experts in one centre
- skill up teams in new computational biology techniques and tools through a comprehensive training program
- give further advice regarding data handling and management and system administration
- collaborate on any outreach programs aimed at building the life sciences computation community in Australia.

Since its establishment in 2009, Melbourne Bioinformatics (ex-VLSCI) has enhanced Victoria’s international standing in life sciences by positioning researchers at the cutting edge of this growing discipline, nurturing future leaders in these fields and creating a magnet to attract industry to Victoria. The benefits for the broader Victorian community are coming from the generation of new knowledge which is leading to improved medical and health outcomes, better food and agriculture and novel developments in engineering.

6.2 BUDGET DIVISION

mdhs.unimelb.edu.au

The Faculty of Medicine, Dentistry & Health Sciences has an enviable research record and is the University of Melbourne’s largest faculty in terms of management of financial resources, employment of academic and professional staff, teaching of undergraduate and postgraduate (including research higher degree) students and the conduct of basic and applied research. The Faculty’s annual revenue is $630m with approximately 55% of this income related to research activities.
The Faculty has a student teaching load in excess of 8,500 equivalent full-time students including more than 1,300 research higher degree students. The Faculty has approximately 2,195 staff comprising 642 professional staff and 1,553 research and teaching staff.

The Faculty has appointed Australia’s first Associate Dean (Indigenous Development) to lead the development and implementation of the Faculty’s Reconciliation Action Plan (RAP), which will be aligned with the broader University – wide plan. To enable the Faculty to improve its Indigenous expertise knowledge base, the Faculty’s RAP will address Indigenous employment, Indigenous student recruitment and retention, Indigenous cultural recognition and building partnerships with the Indigenous community as key areas of development.

6.3 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:

6.4 ABOUT.UNIMELB.EDU.AU/CAREERS 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.
6.5 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