Australian National University

Position Description

College/Division:	Research and Innovation Portfolio
Faculty/School/Centre:	National Computational Infrastructure (NCI)
Department/Unit:	HPC and Data Innovation
Position Title:	High Performance Computing Specialist (Life and Health Sciences)
Classification:	ANU Officer Level 8 (Information Technology)
Position No:	-
Responsible to:	Associate Director (HPC Performance Optimisation and Productivity)
Number of positions that report to this role:	-
Delegation(s) Assigned:	-

PURPOSE STATEMENT:

NCI is Australia's leading national provider of high-end computational and data-intensive services, with a highly respected reputation for its services, expertise and innovation. It forms an integral part of the Australia Government's research infrastructure strategy, and is engaged with, and embedded in research communities, high-impact research centres, and research institutions nationally. NCI is an operating unit of the Australian National University and is built on and sustained by a formal collaboration of national research organisations, ANU, CSIRO, Bureau of Meteorology, Geoscience Australia, other research-intensive universities, and eResearch support organisations nationally.

The position of HPC Specialist in Life and Health Sciences – particularly in genomics and bioinformatics: (a) Provides expertise and guidance, analyses, designs and implements software improvements for scaling and optimising codes on HPC systems, implementing and improving software productivity using advanced HPC workflow systems, relevant software ecosystems and their management systems, algorithms, technologies to improve the target domain and priority use-case outcomes, and contributes to the advancement of outcomes for targeted research through enhancements to high performance compute and data systems; (b) Has, and maintains, knowledge of current and future directions in HPC programming libraries and software management; (c) Leads and contributes to the design and delivery of high-quality HPC documentation and related materials; (d) Undertakes leadership roles within the NCI Life and Health Sciences domain including project definition for the application of HPC technologies, stakeholder engagement, mentoring and guidance of junior staff within or as part of collaborative projects with external organisations, supporting users, and contributing more widely to the planning of NCI's future research environment.

KEY ACCOUNTABILITY AREAS:

Position Dimension & Relationships:

The position of HPC Specialist will be located in the NCI Performance Optimisation's team for Life and Health Sciences within the portfolio of the NCI Deputy Director HPC and Data Innovation. This role supports the NCI Flagship in Life and Health Sciences.

In undertaking their work, the incumbent will work/liaise with other members of the NCI Team within the HPC and Data Innovation Portfolio (HPCDI).

Role Statement:

Under the broad direction of the NCI HPC Associate Director HPC Performance Optimisation and Productivity, the incumbent will:

1. Provide expertise and guidance to targeted research groups and communities by working with them to analyse and improve their applications and outcomes, particularly in the priority area of genomics, bioinformatics, and life-sciences and heath domains. This includes optimising the efficiency, scaling and parallelism of existing codes, implementing pipelines and workflows for use on NCI systems, contributing to analytics platforms and apply new techniques to advance/optimize the efficiency of HPC applications, software development and open source code release management, and using NCI's data collections.
2. Work with researchers and/or research groups, and other members of the NCI team, to exploit supercomputing and high-performance infrastructure, by implementing, or assisting with the development of, pipelines/workflows that integrate highly parallel computational and I/O techniques and are also transparently interoperable with cloud-based deployments.
3. Contribute to, the development of high quality software and analysis documentation and related written materials, supporting users, and helping in the delivery of associated specialized training programs.
4. Maintain currency with advances in high performance scientific computing and other means, and through direct contributions to research projects that are priorities for NCI and its partner organisations.
5. Contribute to NCI's outcomes through development and presentation of materials, conferences and seminars, website and also the content of articles for publication in the popular press and scientific literature.
6. Contribute to, technical assessments of HPC projects, and their associated codes/algorithms, to assist with the decision making in priority projects.
7. Contribute to NCI's Performance Team, including (a) direct engagement roles with staff in stakeholder organisations and groups to define project deliverables, (b) project delivery using NCI methodology and processes, and (c) contributions to the team, HPC and Data Innovation portfolio and NCI's services and infrastructure development and planning.
8. Comply with all ANU policies and procedures, and in particular those relating to work health and safety and equal opportunity.
9. Other duties, appropriate to this classification, as directed.

See the classification descriptors for professional staff and minimum standards for academic staff

SELECTION CRITERIA:

1. A degree in computational science or a higher degree in a cognate field, together with extensive experience (approximately 3 years) in a significant HPC or cloud installation or research facility, or an equivalent combination of education, training and experience demonstrating the capacity to undertake the role.
2. Demonstrated experience and expertise in the use of genomics, life sciences, bioinformatics or related computational and data sciences and related emerging areas, together with knowledge of current directions of high-performance computing and data.
3. Highly-developed skills and experience in scientific programming together with substantial skills and experience in more than one of the following areas: implementing, debugging and optimising parallel algorithms; demonstrated knowledge of massively parallel tasks; software builds and reproducibility (including containers, source control management and versioning); the use of profiling tools at large scale to detect and address parallel computing limitations; software development and open source code release management; self-describing data formats relevant to life and health sciences; and experience with new or evolving HPC programming paradigms such as GPU programming.
4. Highly developed oral and written communication skills, as required to develop and modify training materials, and present high-quality lectures and seminars in a conference or outreach setting, and workshops and tutorials in training exercises.
5. Experience in working within a team, collaboratively with staff from external organisations, to realise project goals, together with the capacity to lead and mentor junior members of the team, assisting them to realise their potential.
6. A demonstrated high level understanding of equal opportunity (EO) principles, and a commitment to the application of EO policies in a university context.

The ANU conducts background checks on potential employees, and employment in this position is conditional on satisfactory results in accordance with the Background Checking Procedure which sets out the types of checks required by each type of position.

Supervisor/Delegate Signature:		**Date:**	
Printed Name:		**Uni ID:**	

References:
Professional Staff Classification Descriptors
Academic Minimum Standards

Australian National University

Pre-Employment Work Environment Report

Position Details

College/Div/Centre	NCI	**Dept/School/Section**	NCI
Position Title	HPC Specialist (Life & Health Sciences)	**Classification**	ANU8
Position No.	**40361**	**Reference No.**	

In accordance with the Work Health and Safety Act 2011 (Cth) the University has a primary duty of care, so far as reasonably practicable, to ensure the health and safety of all staff while they are at work in the University.

- This form must be completed by the supervisor of the advertised position and appended to the back of the Position Description.
- This form is used to advise potential applicants of work environment and health and safety hazards prior to application.
- Once an applicant has been selected for the position they must familiarise themselves with the University WHS Management System via Handbook guidance https://services.anu.edu.au/human-resources/health-safety/whs-management-system-handbook
- The hazards identified below are of generic nature in relation to the position. It is not correlated directly to training required for the specific staff to be engaged. Identification of individual WHS training needs must be in accordance with WHS Local Training Plan and through the WHS induction programs and Performance Development Review Process.
- 'Regular' hazards identified below must be listed as 'Essential' in the Selection Criteria - see ' Employment Medical Procedures' at http://info.anu.edu.au/Policies/_DHR/Procedures/Employment_Medical_Procedures.asp

Potential Hazards

- Please indicate whether the duties associated with appointment will result in exposure to any of the following potential hazards, either as a **regular** or **occasional** part of the duties.

TASK	regular	occasional	TASK	regular	occasional
key boarding	☒	☐	laboratory work	☐	☐
lifting, manual handling	☐	☐	work at heights	☐	☐
repetitive manual tasks	☐	☐	work in confined spaces	☐	☐
Organizing events	☐	☐	noise / vibration	☐	☐
fieldwork & travel	☐	☐	electricity	☐	☐
driving a vehicle	☐	☐			
NON-IONIZING RADIATION			**IONIZING RADIATION**		
solar	☐	☐	gamma, x-rays	☐	☐
ultraviolet	☐	☐	beta particles	☐	☐
infra red	☐	☐	nuclear particles	☐	☐
laser	☐	☐			
radio frequency	☐	☐			
CHEMICALS			**BIOLOGICAL MATERIALS**		
hazardous substances	☐	☐	microbiological materials	☐	☐
allergens	☐	☐	potential biological allergens	☐	☐
cytotoxics	☐	☐	laboratory animals or insects	☐	☐
mutagens/teratogens/ carcinogens	☐	☐	clinical specimens, including blood	☐	☐
pesticides / herbicides	☐	☐	genetically-manipulated specimens	☐	☐
			immunisations	☐	☐

OTHER POTENTIAL HAZARDS (please specify):

Supervisor/Delegate Name:		**Date:**	