Australian National University

Position Description

College/Division:	ANU College of Science and Medicine
Faculty/School/Centre:	Research School of Physics
Position Title:	Senior Research Software Engineer
Classification:	ANU Officer 8 (Specialist)
Position No:	43884
Responsible to:	Team Leader
Number of positions that report to this role:	N/A
Delegation(s) Assigned:	N/A

PURPOSE STATEMENT:

The Research School of Physics at The Australian National University is a leading centre for physics research and its practical applications. The School supports interdisciplinary research and major research facilities, including the ANU National Laboratory for X-ray Micro Computed Tomography (CTLab). OreAI is an ANU–Rio Tinto research partnership that applies advanced imaging, data science and computational methods to improve the characterisation and processing of mineral ores.

The Senior Research Software Engineer will provide technical expertise to support the ANU CTLab's computational and scientific software development within a team of software developers. The successful candidate will contribute and/or lead development, optimisation, and deployment of software and workflows that enable characterisation of materials imaged on ANU CTLab systems, utilising high-performance computing, visualisation and big-data approaches.

KEY ACCOUNTABILITY AREAS:

Position Dimension & Relationships:

The Research School of Physics is led by a Director and comprises research departments, centres and major research facilities spanning fundamental and applied physics. OreAI brings together researchers, research software engineers and technical specialists from across ANU and works closely with CTLab and industry collaborators to develop data-intensive approaches to materials characterisation.

The Senior Research Software Engineer will operate the OreAI team, reporting to their team lead. The Senior Research Software Engineer will be expected to work collegially, leading by example to develop and maintain effective, productive and beneficial workplace relationships with colleagues, as well as with industry stakeholders.

Role Statement:

- Under broad direction and with a degree of autonomy, the Senior Research Software Engineer focuses on requirements analysis, development, and evaluation of systems that support CTLab operations and the OreAI industry project. Key responsibilities include supporting the acquisition, processing, cataloguing and analysis of diverse scientific data from multiple imaging modalities (MicroCT and microscopy), laboratory measurements, and digital sources.
- The Senior Research Software Engineer will:
- Manage software development and machine learning projects from concept through to implementation and be responsible for the subsequent evaluation and testing.
- Develop and assess software system requirements, interfaces and specifications.
- Manage the design, development and technical processes of code repositories hosted by the ANU CTLab and OreAI industry project.
- Manage the performance optimisation and evaluation of ANU CTLab and OreAI software.
- Provide advice and technical support through the investigation, resolution and tracking of software.

- Contribute to the development of plans and schedules for assigned project tasks, ensuring technical requirements are met and risks are mitigated whilst ensuring that systems are delivered on schedule.
- Contribute to new project proposals, applying software engineering knowledge to develop work plans.
- Train and mentor other members of the team, research students and staff across the group in numerical and computational techniques.
- Maintain a working knowledge both of best-practice procedures in the context of software development, and an awareness of relevant state-of-the-art technologies that might be applicable.
- Create and maintain technical documentation of software development by the ANU CTLab and OreAI.
- Undertake other duties as required from time to time consistent with the classification level of the position.
- Comply with all ANU policies and procedures, and in particular those relating to work health and safety and equal opportunity

SELECTION CRITERIA:

1. Progress towards postgraduate qualifications in Computer Science, Software Engineering, Data Science or related disciplines, and/or significant experience in scientific software.
2. Demonstrated experience working with scientific programming and scripting languages and knowledge of common data formats (e.g. NetCDF, Zarr). Candidates must demonstrate strong proficiency in Python. Familiarity with C++ is highly desirable. Additional experience with Rust, CUDA, or full-stack web development would be advantageous.
3. Experience in image-based machine learning and image processing is highly desirable. Experience in other relevant scientific modelling, including high performance/parallel computing would be advantageous.
4. Demonstrated effective communication and liaison skills, with demonstrated experience in gathering requirements and building software to meet user needs.
5. Demonstrated ability to provide high-level technical advice and support to researchers and industrial stakeholders.
6. Demonstrated experience in working independently with minimal supervision, with an ability to understand code written by others quickly and self-sufficiently.
7. Demonstrated ability to work effectively and harmoniously as part of a team as well as excellent interpersonal and communication skills to relate effectively and provide guidance to a wide range of people.
8. A demonstrated understanding of equal opportunity principles and policies and a commitment to their application in a university context.

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. All appointments are required to make relevant declarations to comply with the National Higher Education Code to Prevent and Respond to Gender-Based Violence.

Supervisor/Delegate Name:		Date:	

References:

Professional Staff Classification Descriptors

Minimum Standards for Academic Levels (MSAL)

Australian National University

Pre-Employment Work Environment Report

Position Details

College/Div/Centre	CoSM	Dept/School/Section	Research School of Physics
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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 is used to advise potential applicants of work environment and health and safety hazards prior to application.
- This form must be completed by the supervisor of the position. Without this form jobs cannot be advertised.
- Once an applicant has been selected for the position they must familiarise themselves with the University 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.
- Information regarding reasonable workplace adjustments that may be required to enable an individual to fulfil the inherent requirements of their position is available at 2024_ANU Inherent Requirements Reference Table.pdf

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	☐	☒

PSYCHOSOCIAL HAZARDS (please specify):

OTHER POTENTIAL HAZARDS (please specify):