Australian National University

Position Description

College/Division:	College of Engineering & Computer Science
School/Centre:	Research School of Computer Science
Position Title:	Senior Data Engineer – Machine Learning
Classification:	ANU Officer 8 / SM 1
Position No:	TBC
Responsible to:	A/Prof Kee Siong Ng

PURPOSE STATEMENT:

The ANU College of Engineering and Computer Science (CECS) is one of the premier engineering and computer science research institutions in the world. Comprising the Research School of Computer Science (RSCS) and the Research School of Engineering (RSEng), both are recognised as research leaders in their respective areas continuing the ANU tradition of excellence in research and research-led education.

The ANU College of Engineering and Computer Science (CECS) is dedicated to contributing to The Australian National University's reputation for excellence in research and research-led education, bringing together expertise across a range of areas to reimagine the role of engineering and computing for future generations. CECS is a diverse and vibrant community dedicated to discovery and to making knowledge matter. Our academics and students are engaged in ground-breaking, cutting-edge research, in exciting areas such as renewable energy, robotics, telecommunications, biomaterials, human-machine interaction, and artificial intelligence.

The Research School of Computer Science (RSCS) is unique in Australia. It includes a creative mix of staff and students that embrace the breadth of computer science profession. It is a diverse and vibrant community dedicated to discovery and to making knowledge matter. It contains world-class academics undertaking high-quality research, training of research students and delivering coursework teaching programs.

RSCS and CSIRO's Data61 have been funded by the Australian government to develop an open-source and scalable graph analytics platform in partnership with key public-service agencies in the security domain. We are seeking a Senior Data Engineer to join the project and contribute to software development activities in the area of data integration and machine learning on large scale complex graphs.

KEY ACCOUNTABILITY AREAS

Position Dimension & Relationships:

The position is a fixed term 2-year appointment (extendible based on performance) located in the Data Science for Public Good team at RSCS to work on the Integrated Graph Analytics Collaborative Research Project. The Integrated Graph Analytics Project is a joint undertaking of ANU RSCS and CSIRO's Data61 that is developing the Stellargraph platform for graph analytics, in partnership with key public-service agencies in the security domain. The appointee will be accountable to the project's co-chief investigators A/Prof Kee Siong Ng at ANU and Dr Alex Collins at Data61.

Stellargraph uses new graph machine learning techniques from graph learning research to make predictions on complex problems in our highly connected world. Representing data as graphs enables the context and rich,

relationship-driven structure of multiple data sources to be modelled to make predictions and reveal hidden insights in big data.

Applications are invited from data or software engineers with experience in developing software solutions to large scale, real world problems using machine learning. We are especially looking for a data engineer with expertise in one or more of machine learning, graph databases and sequential decision theory.

Role Statement:

ANU Officer 8

In their role as a Senior Data Engineer in the Research School of Computer Science, the appointee will be required to:

1. Build efficient and readable code to integrate data and implement graph machine-learning algorithms for the project, working collaboratively as part of the project's joint ANU and Data61 software engineering team.
2. Design scalable algorithms for solving machine learning problems on large scale graphs, under guidance from supervisor and research fellows using individual judgement and initiative in the application of best practice.
3. Collaborate and communicate effectively with engineers, researchers and business teams of the Integrated Graph Analytics project at different locations of RSCS ANU and Data61 CSIRO to ensure engineering goals are achieved.
4. Provide specialist technical advice to a variety of stakeholders as appropriate
5. Maintain an awareness of and help promote OH&S, EEO and other policy priorities of the university.
6. Comply with all ANU policies and procedures and in particular those relating to work health and safety and equal opportunity
7. Undertake other duties as required, consistent with the classification of the position.

Senior Manager 1 (in addition to ANU Officer 8)

1. Maintain a working knowledge both of best-practice engineering procedures in at least one of these areas: machine learning, graph databases, sequential decision theory. As required, provide a high level of engineering advice to the engineers, researchers, other experts and students on the project's cross disciplinary team.
2. Undertake the engineering, testing and application of new research solutions to large scale graph problems, including assessing the performance of the solutions on different real world applications.
3. Supervise and mentor junior team members/engineers as required.

Selection Criteria

ANU Officer 8:

1. A Bachelor or Masters degree in computer science or a related area, or equivalent software engineering experience in one of these areas: machine learning, graph databases, sequential decision theory.
2. Demonstrated experience building solutions for large-scale software development projects, including implementing machine learning algorithms with packages such as Tensorflow, Keras, Pytorch, DeepLearning4j or XGBoost.
3. Significant experience with two or more of the following programming languages: Python, Scala, C++, Java, Go, Haskell.
4. Excellent oral and written English language skills and a demonstrated ability to communicate and interact effectively with a variety of engineers, researchers, other experts and students in a cross-disciplinary environment.
5. Demonstrated ability to set priorities, meet deadlines and quickly adapt to new environments.
6. A demonstrated high-level understanding of equal opportunity principles and a commitment to the application of equal opportunity policies in a University context.

Senior Manager 1:

1. Relevant postgraduate qualifications or extensive relevant practical experience in one of these areas: machine learning, graph databases, sequential decision theory.
2. Extensive knowledge of, and demonstrated experience building solutions for large-scale software development projects, including implementing machine learning algorithms with packages such as Tensorflow, Keras, Pytorch, DeepLearning4j or XGBoost. Experience with open-source software projects or projects with messy, real world data will be beneficial.
3. Extensive experience with two or more of the following programming languages: Python, Scala, C++, Java, Go, Haskell.
4. Demonstrated ability to own projects, research and present ideas, and work well both within and outside your team to build respectful and productive working relationships with colleagues at all levels.
5. Experience in supervision, mentoring and training of more junior engineers, and technical support staff.
6. Well-developed interpersonal and liaison skills with the demonstrated ability to work effectively as a team member and a proven ability to set priorities, meet deadlines and to quickly adapt to new environments.
7. A demonstrated high-level of understanding of equal opportunity principles and a commitment to the application of EO policies in a university context.

Supervisor Signature:		**Date:**	March 2019
Printed Name:	Kee Siong Ng	**Uni ID:**	U9914730

References:

General Staff Classification Descriptors

Academic Minimum Standards

Pre-Employment Work Environment Report

Please note the Pre-Employment Work Environment Report form must be completed by the supervisor of the advertised position and provided electronically and separately, as it will be uploaded into the ANU Recruit system and available for applicants to download when reviewing the position documentation. Without this form jobs cannot be advertised.

Pre-Employment Work Environment Report

Position Details

College/Div/Centre	CECS	**Dept/School/Section**	RSCS
Position Title	Senior Data Engineer – Machine Learning	**Classification**	ANU Officer 8 / SM 1 (Technical)
Position No.	TBC	**Reference No.**	N/A

In accordance with the Occupational Health and Safety Act 1991 the University has a duty of care to provide a safe workplace for all staff.

- This form must be completed by the supervisor of the advertised position and forwarded with the job requisition to Appointments and Promotions Branch, Human Resources Division. Without this form jobs cannot be advertised.
- This form is used to advise potential applicants of work environment issues prior to application.
- Once an applicant has been selected for the position consideration should be given to their inclusion on the University's Health Surveillance Program where appropriate – see . http://info.anu.edu.au/hr/OHS/__Health_Surveillance_Program/index.asp Enrolment on relevant OHS training courses should also be arranged – see http://info.anu.edu.au/hr/Training_and_Development/OHS_Training/index.asp
- '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	☐	☐
catering / food preparation	☐	☐	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's Signature:		**Print Name:**	Tony Hosking	**Date:**	March 2019