

Position Description

College/Division:	College of Engineering & Computer Science			
School/Centre:	Software Innovation Institute			
Position Title:	Senior Research Engineer			
Classification:	SM1			
Position No:	TBC			
Responsible to:	Director & A/Prof Jochen Trumpf			

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 ANU Software Innovation Institute is a flagship initiative within the ANU Reimagine project. The newly created Institute is forming an expert team of researchers, research engineers, software engineers and students from a range of disciplinary and professional backgrounds to conduct research and build software at scale. The Institute undertakes complex software development projects requiring research translation, and is developing new research techniques in machine learning, data science and computer science to solve previously unsolved problems for clients, with an initial focus on the higher education and security and intelligence sectors. By 2022 in steady state, the Software Innovation Institute aims to deliver a state-of-the-art Software Engineering teaching program with a world leading work-integrated learning component. Clients of the Institute receive software development services using the ANU's world- class research expertise and access to an advanced capability pipeline. The model (a refinement of the medical teaching hospital approach) will provide opportunities for advanced practice-based learning in software development projects for external clients, and for future industry investment.

The Institute's research, education and engagement activities centre around its joint mission of tech for public good, delivered by:

- 1. research, research translation and software development services at scale, and
- 2. establishing a Software Engineering "teaching hospital" at ANU.

The Software Innovation Institute is the third of a series of ANU Innovation Institutes within the ANU College of Engineering and Computer Science, which aim to provide structures enabling ANU to utilise new forms of financing and partnerships. Through enhanced partnering with industry, government, non- profits, professions and communities using innovative business models, the Institutes enable the creation of new pathways towards commercial and social applications for ANU research.

The Institute is building an internal culture that leverages both the academic excellence of the ANU and the agile methodologies in use in entrepreneurial hotspots such as Silicon Valley. Working in a fast-changing environment, and in line with its mandate, the Software Innovation Institute builds a culture of impact-driven research translation

and contribution, inter-disciplinary collaboration, diversity, inclusion and strategic decision making, which makes it a unique workplace.

The Institute is a key partner providing research translation services to a strategic project between ANU, AUSTRAC and the major banks to develop a Fintel Real-time Alerting system to surface money-laundering and terrorism-financing risks in the financial system. We are seeking a Senior Research Engineer with expertise in cryptography to contribute to the development of the financial crime alerting platform.

KEY ACCOUNTABILITY AREAS Position Dimension & Relationships:

The position is a fixed term 2-year appointment (extendible for 1 further year based on performance) located with the Fintel Realtime Alerting Platform Project team in the Software Innovation Institute at ANU. The appointee will be accountable to the Institute Director Jochen Trumpf at ANU and Dr Kee Siong Ng at AUSTRAC.

Role Statement:

In their role of Senior Research Engineer in the ANU's Software Innovation Institute, the appointee will be required to:

- Work with solution architects from the Software Innovation Institute, AUSTRAC, the 4 major banks, CSIRO's Data61, and vendors to architect the overall design and implementation of a financial crime alerting platform (the "Alerting Platform") across the financial network.
- Develop and implement secure, robust, and scalable privacy-preserving record linkage and machine learning algorithms using research techniques like Homomorphic Encryption, Secure Multi-party Computations, and Differential Privacy suitable for use in large enterprises.
- 3. Develop and implement Machine Learning and Graph Analytics algorithms for detecting criminal risk and activities in the financial system
- 4. Implement algorithms at scale on modern parallel distributed platforms like Spark and Greenplum.
- 5. Contribute to the development of a DataOps platform to provide a path from development to production for machine learning models
- 6. Work with vendors, other engineers, business analysts and UX designers to integrate algorithm implementations with data pipelines and production systems
- 7. Maintain an awareness of and help promote OH&S, EEO and other policy priorities of the university.
- 8. Comply with all ANU policies and procedures and in particular those relating to work health and safety and equal opportunity
- 9. Undertake other duties as required, consistent with the classification of the position.

Selection Criteria

- 1. A PhD in Cryptography, Machine Learning, or related areas.
- 2. Proven track record in the development of novel, enterprise-grade cryptographic and machine learning solutions with demonstrable benefits in real-world applications
- 3. Strong experience with enterprise-grade, open-source software engineering projects
- 4. Excellent communication skills, both written and verbal, and ability to present to both technical and nontechnical audiences at all levels
- 5. Desirable) Good domain knowledge of how Intelligence functions work within governments and the private sector.
- 6. (Desirable) Ability to obtain security clearance from the Australian government.
- 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:	August 2019
Printed Name:	Jochen Trumpf	Uni ID:	

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	SII			
Position Title	Senior Research Engineer	Classification	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	\boxtimes		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 MATERIAL	S	
hazardous substances			microbiological materials		
allergens			potential biological allerger	is 🗌	
cytotoxics			laboratory animals or insec	ts 🛛	
mutagens/teratogens/ carcinogens			clinical specimens, includin blood	g 🗆	
pesticides / herbicides			genetically-manipulated specimens		
			immunisations		
OTHER POTENTIAL HAZARI	DS (please s	pecify):			

Supervisor's Signature:	Print Name:	Jochen Trumpf	Date:	September 2019
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