The School of Computer Science and Engineering is one of the largest and most prestigious computing schools in Australia. It offers undergraduate programs in Software Engineering, Computer Engineering, Computer Science and Bioinformatics, as well as a number of combined degrees with other disciplines. It attracts excellent students who have an outstanding record in international competitions. At the postgraduate level there is a large PhD research program and coursework programs at the Master’s and Graduate Diploma level in Computing and Information Technology and at Graduate Certificate level in Computing. Our research mission is to be at the forefront of research into new and exciting innovations with profound national and international impact. For further information about the School, please visit http://www.cse.unsw.edu.au/

The Research Associate will work on a funded project for developing novel fuzzing techniques for discovering vulnerabilities in software binaries. The project will address the problems in software-based full system emulation fuzzing for large scale automated dynamic analysis. The project aims to improve vulnerability detection in arbitrary binary targets where hardware-assisted instrumentation is unavailable/infeasible (e.g., embedded systems). The project involves multiple partners including University of Adelaide, Deakin University, CSIRO’s Data61 and DSTG.

The role of Research Associate reports to Professor Salil Kanhere and has no direct reports.

Accountabilities

Specific responsibilities for the role include:

- Conduct research in and develop new fuzzing methods based on machine learning to guide vulnerability discovery independently and as part of a team.
• More significantly contribute to the project and lead areas of the project where the opportunity arises.
• Disseminate research results through writing of scientific papers and reports for international journals and progress reporting to other researchers and industry partners.
• Contribute to the development of software tools to demonstrate the project outcomes and for handover to the partners.
• Contribute to the preparation of research proposal submissions to funding bodies and actively seek collaboration with industry partners as appropriate.
• Participate in and/or present at conferences and/or workshops relevant to the project as required.
• Jointly supervise honours and HDR students.
• Participate in the definition of research directions and actively contribute to the coordination of research activities and research outputs to meet project milestones.
• Create a scholarly impact in the discipline which is recognised by peers in advancement of disciplinary knowledge.
• Achieve a citation rate or proportion of research outputs in most prestigious outlets (e.g., A/A* or equivalent) in line with discipline and leading universities.
• Independently seek and apply for external funding opportunities to grow and enhance the research project.
• Actively engage with industry and the community to develop significant productive relationships, attract industry funding and participate in professional activities.
• Align with and actively demonstrate the UNSW Values in Action: Our Behaviours and the UNSW Code of Conduct.
• Cooperate with all health and safety policies and procedures of the university and take all reasonable care to ensure that your actions or omissions do not impact on the health and safety of yourself or others.

Skills and Experience

• PhD (or soon to be awarded) in computer science, electrical engineering or related area with demonstrated experience in software vulnerability analysis, fuzzing and machine learning.
• Demonstrated experience in a postdoctoral position conducting research in the field of machine learning or cybersecurity.
• Demonstrated ability to conduct independent research with limited supervision.
• Demonstrated track record of publications in top-rated journals and conference in the discipline.
• Demonstrated ability to work in a team, collaborate across disciplines and build effective relationships.
• Strong interpersonal skills with demonstrated ability to communicate and interact with a diverse range of stakeholders, external clients and students.
• Demonstrated ability and willingness to deliver high quality and innovative teaching and student experience to both undergraduate and postgraduate students.
• Ability to supervise undergraduate students or equivalent experience in the supervision of junior staff in related projects.
• Demonstrated ability to supervise honours and postgraduate research students.
• Expertise in (and ability to learn others if necessary):
  o one or more of R, Stata, scikit-learn;
  o one or more deep learning tools such as TensorFlow, Keras, Caffe;
• An understanding of and commitment to UNSW’s aims, objectives and values in action, together with relevant policies and guidelines.
• Ability and capacity to implement required UNSW health and safety policies and procedures.

PRE EMPLOYMENT CHECKS REQUIRED FOR THIS POSITION

Verification of qualifications

About this document
This Position Description outlines the objectives, desired outcomes, key responsibilities, accountabilities, required skills, experience and desired behaviours required to successfully perform the role.

This template is not intended to limit the scope or accountabilities of the position. Characteristics of the position may be altered in accordance with the changing requirements of the role.