

Position Title	Research Associate
Classification	Level A/Level B
School/Division	School of Physics, Mathematics and Computing
Centre/Section	Mathematics and Statistics
Supervisor Title	Professor
Supervisor Position Number	314482
Position Number	320402

Your work area

The Australian Centre for Transforming Maintenance through Data Science (CTMTDS) is a joint collaboration between Curtin University, the University of Western Australia and CSIRO, and industry partners Alcoa, BHP, and Roy Hill, as well as CORE Innovation Hub and the Minerals Research Institute of Western Australia. The Centre, co-funded by the Australian Research Council through the Industrial Transformation Training Centre scheme, aims to train a new generation of data scientist, equipping them with the skills needed to develop new data science methods for solving complex modelling, technical language processing and optimisation challenges in asset maintenance. This cohort of data scientists will drive an exciting transformation of maintenance practice in the Australian resources industry based on new advances in complex systems, machine learning, artificial intelligence and optimisation. The Centre involves a team of 20 scientists and engineers at the three research institutes together with practicing engineers at the industry partners.

Reporting structure

Reports to: Professor Michael Small
Dotted line reports to:

Your role

Working with a multidisciplinary team of academics from UWA, Curtin and CSIRO and with partner organisations, you will be expected to work with industry and conduct research leading to both industry impacts and high-quality publications.

The goal of this research fellowship is to develop algorithms and methods to support application of complex systems and network science to problems related to industrial maintenance. Applications will include knowledge graphs extracted from maintenance work orders, and cascading failures in complex engineering systems. The Centre has access to industry partner data and seeks to improve prediction of events from both numerical and text data sets.

The role will complement existing areas of expertise in natural language processing, network science, dynamical systems and nonlinear time series analysis.

Your key responsibilities

Conduct high quality research on the project by:

Collaborating with CTMTDS researchers to develop methods and tools to support complex systems-based modelling on industrial data sets.

Engage with the Centre's industry partners to identify and address maintenance-related industry questions using appropriate methods;

Liaise with industry contacts and assist students to effectively work with teams consisting of both industry and university stakeholders;

Work across institutions and act as a mentor for a cohort of research students during study and industry placement.

Support and co-supervise final year undergraduate students and PhD students.

Support the Theme lead, Prof. Michael Small, in managing industry and centre collaboration as directed.

Publication of research papers and presentations at international conferences and workshops.

Other duties as directed.

Your specific work capabilities (selection criteria)

A PhD focus relevant to complex systems, network science, or knowledge graphs.

Practical and research experience in the analysis of experimental or industry data;

Strong track record of research publications;

Written and verbal communication skills in the preparation of high-quality reports, presentations and publications for a range of audiences;

The following additional requirements are considered highly relevant to the position:

Experience in any of the following is highly desirable: complex network analysis; complex engineering systems; symbolic approximation; discrete symbolic dynamics; and, natural language processing.;

Experience in working with industry partners on industry problems at their work sites;

Experience in working as a team player, preferably within a cross-disciplinary team and across different institutions;

Experience in translating research outcomes to practise. This may include development and delivery of industry short-courses or software development;

Experience supervising undergraduate or graduate research student projects.

Special requirements (selection criteria)

Occasional on-site visits to industry partners are required. You will be expected to comply with the work culture, values and safety expectations of our industry partners.

Compliance

Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including:

The University's Code of Conduct hr.uwa.edu.au/policies/policies/conduct/code/conduct

Inclusion and Diversity web.uwa.edu.au/inclusion-diversity

Safety, health and wellbeing safety.uwa.edu.au/