

Tyler Bikaun



Tyler Bikaun

PhD Student

Theme 1

Tyler is a mechanical engineer turned PhD candidate at the University of Western Australia and a scholar with the Mineral Research Institute of Western Australia. His research focuses on the intersection of computer science and industrial engineering, particularly applying computational techniques to technical texts in the context of industrial maintenance. Tyler's research interests lie in using deep learning to extract knowledge from technical texts to improve maintenance decision support and strategy optimisation through automated natural language understanding. However, this area is challenging due to poor quality, complex, and scarcely available datasets characteristic of the mining and mineral resources industries.

To date, Tyler has spent a considerable amount of time engaging with industrial partners of the ARC CTMTDS and academia, where he has:

- demonstrated the value of technical language processing through semi-automated reliability measure estimation,
- developed numerous software tools for acquiring high-quality datasets to support deep learning research, and
- collaborated on software to translate his academic

Publications

- [A Whole-of-Organisation Approach for Reliability Analytics \(...\)](#) —

Book Chapter

Prof Melinda Hodkiewicz

Authors: Melinda Hodkiewicz, Tyler Bikaun, Michael Stewart

2023-02-16

- [Using Context-Free Grammar to Generate Synthetic Technical Short Texts \(...\)](#) —

Conference Publishing

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Authors: Tyler Bikaun, Michael Stewart, Melinda Hodkiewicz

2022-12-03

- [Semi-automated Estimation of Reliability Measures from MaintenanceWork Order Records \(...\)](#) —

Conference Publishing

Tyler Bikaun

Authors: Bikaun, T., & Hodkiewicz, M.

2021-06-21

Presentations

- [Periscope: A tool for centralised asset reliability assessment powered by NLP \(...\)](#) —



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research into usable software for the asset-intensive industries.

Tyler's research is supervised by Associate Professor Wei Liu, Dr Tim French, Dr Michael Stewart, and Professor Melinda Hodkiewicz.

PHD Research - Technical Language Processing for Industrial Maintenance Records

Tyler's research focuses on deep learning-based knowledge extraction from technical texts authored by humans containing considerable noise (noise). Noisy technical texts are ubiquitous in industrial maintenance, capturing critical information that drives decision-making, process optimisation and asset performance understanding. Consequently, the noise in these texts poses a formidable challenge to the current state-of-the-art systems, limiting the ability to extract knowledge to support data-driven decision-making.

Highlights of Tyler's research so far have seen him:

- Design two peer-reviewed software systems that enable rapid cleaning and knowledge extraction from technical texts,
- Develop a process for semi-automated reliability measure estimation from maintenance work order records, and

Conceive a procedure for extracting meaning from technical texts to support maintenance strategy optimisation and asset performance understanding.

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[MRIWA scholarship re](#)

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2022-06-03

- [Mineral Resource Institute of Western Australia - PhD Research Showcase Poster \(...\)](#) —



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2021-08-03

- [Presentation - Semi-automated Estimation of Reliability Measures from Maintenance Work Order Records \(...\)](#) —



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2021-07-01

- [Presentation on Semi-automated Estimation of Reliability Measures from Maintenance Work Order Records \(...\)](#) —



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2021-04-13

- [QuickGraph: A Rapid Annotation Tool for Knowledge Graph Extraction from Technical Text \(...\)](#)



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2022-05-27

- [LexiClean: An annotation tool for rapid multi-task lexical normalisation \(...\)](#) —



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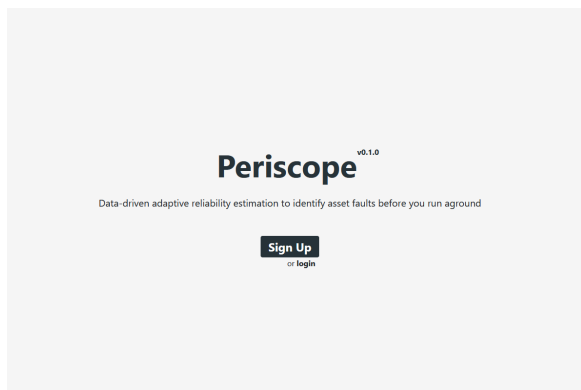
2021-11-09

Awards and Prizes

Content by label

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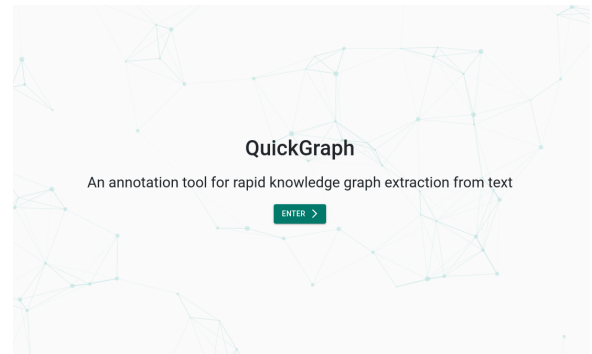
Tools



- [Periscope \(...\)](#) — 2020-01-31

Data-driven adaptive reliability estimation to identify asset faults before you run aground

[Theme 1](#) [Theme 5](#)



- [QuickGraph \(...\)](#) —
2020-01-31

A collaborative annotation tool for rapid multi-task
information extraction for knowledge graph construction.

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