



Adam Banham

Researcher, Developer, Consultant, BInfoTech(Hons), 20 Citations
Curriculum Vitae



Profile

My research expertise lies in process mining, focusing on the analysis of data extracted from business systems to gain insights into organisational operations. I specialise in developing quantitative, data-driven methodologies to eliminate human bias in business process management, offering clear visual diagnostics of internal processes and representations for decision making in processes.

During my candidature, I published 3 peer-reviewed articles, including two Q1 journal publications. Additionally, I have been a reviewer for leading conferences, including CAiSE and ICPM, actively contributing to the process mining community. My doctoral research, supported by Prof. Moe T. Wynn (QUT, Brisbane, AU), Dr. Robert Andrews (QUT, Brisbane, AU), and Prof. Sander J. J. Leemans (RWTH Aachen, DE), is now under external examination and is expected to be conferred in Q1 2025.

My technical background includes developing and maintaining large-scale software systems as a full-stack developer, where I designed and delivered a data science platform for a technology startup. I am proficient in multiple programming languages and experienced with cloud platforms for deploying scalable services. My consulting experience includes working with businesses to improve processes using process mining and business process management techniques.

I am seeking opportunities as a post-doctoral researcher or lecturer to advance my expertise in process mining, contribute to innovative teaching and mentoring, and engage in impactful research collaborations within computer science and information systems.



Education

2025
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2021

Doctor of Philosophy

Queensland University of Technology, Brisbane, Australia

Process Mining with Exogenous Data

The likely conferred date will be in Q1 of 2025.

The thesis aims to advance process mining by pursuing the following goal: **How can exogenous influences on decision making in processes be investigated?** Where *exogenous data* refers to external contextual data streams, such as time series, that may be used within process mining analysis. To investigate this goal, two sub-questions are used to guide the research:

- How can exogenous influences on processes be represented/visualised/analysed?
- What are desirable properties for quantifying data-aware process models?

The former question focuses on combining exogenous data with process mining, and what types of modelling formalisms or process enhancement techniques could study exogenous influences. The latter focuses on how process enhancement outcomes, i.e. data-aware models, should be quantified and if techniques that adhere to desirable properties can be proposed.



Contact



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Recent Publications



xPM: A Framework for Process Mining with Exogenous Data

publicly available here.



xPM: Enhancing Exogenous Data Visibility

publicly available here.



Comparing Conformance Checking for Decision Mining: An Axiomatic Approach

publicly available here.



Languages

English

Native Speaker

Python

Intermediate/Senior

Java

Intermediate

AWS

Intermediate

Javascript/HTML/CSS

Fluent

Rust

Novice

2020
↑
2017

Bachelor of Information Technology (Honours)

Queensland University of Technology, Brisbane, Australia

Exploiting Event Payloads to Discover Hierarchies in Event Logs

This honours project conducted with Prof. Sander J.J. Leemans and Dr Robert Andrews and consisted of the following:

- An investigation focused on how contextual data in event logs can be used to simplify process mining outcomes.
- Developed a framework to automatically discover if an data attribute could simplify outcomes in a process hierarchy.
- Evaluated the new framework on synthetic and publicly accessible event logs.

The thesis uses publicly available events log to empirically evaluate an approach to automatically detect a suitable construction of a multi-key for the multi-level miner proposed by Prof. Sander J.J. Leemans.



Academic Experience

2024
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2023

Research Assistant

QUT, Centre of Data Science

Assisting the future development of IUIH

My expertise in business process management (BPM) and process mining supported an regional not-for-profit health service, IUIH, for Aboriginal and Torres Strait Islander families of Australia. In this project, we investigated the future needs of their organisation through digital strategy and sound analysis of their as-is processes using both qualitative workshops and quantitative analysis of their information systems by:

- Mapping their as-is processes across several departments using BPMN;
- Validating their to-be processes with department leads;
- checking if data of their processes can be found within information systems for process mining efforts;
- delivering analysis around resource management and overall throughput of handling incoming calls to their hotline.

2023
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2022

Head Academic Tutor

QUT, School of Information Systems

Fundamentals of BPM

Working within the Process Science group at QUT, I taught students about the fundamentals of BPM. I both managed and ran teaching sessions for master students attending QUT. My active duties included:

- Facilitating tutorials for master students about business process management.
- Working with academic leads to produce high quality teaching content.
- Handling the day-to-day duties of handling students during semester.

2022
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2021

Research Assistant

QUT, School of Clinical Services

Fatalities in ICU wards

Working alongside academic clinicians and practitioners at the Royal Brisbane Women's Hospital in Brisbane, we set out to investigate an intensive care cohort of patients in a retrospective study of diseases. My duties consisted of:

- Working with clinicians to present a meaningful understanding of patient cohorts.
- Creating informative infographics about patient demographics.
- Evaluating risk assessment models used within retrospective studies.

2020
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2019

Research Assistant

QUT, School of Information Systems

Ambulance Triage

This project aimed to understand the information exchanged between emergency services and hospital teams as it informs patient assessment, trauma team activation, and clinical decision-making. Where I assisted with the following activities:

- Integrated several data sources from different organisations.
- Checked compliance of process executions with guidelines and outcomes.
- For more info see: qut.to/xd67a



Projects

During my spare time, I find myself coding in the following pet projects:

- A ProM plugin for process mining with exogenous data written in java [github.com/promworkbench/ExogenousData]
- A python library for visualising process mining data structures [github.com/AdamBanham/vispm]
- A python library for pythonic data structures for process mining [github.com/AdamBanham/koalas]

In my previous work in industry, I was a full-stack engineer and developed a data-science platform, see: [Petra Data Science - MAXTA]



Publications

- 2024 ● **Comparing Conformance Checking for Decision Mining: An Axiomatic Approach**
Adam Banham, Arthur H. M. ter Hofstede, Sander J. J. Leemans, Felix Mannhardt, Robert Andrews, Moe Thandar Wynn
@ *IEEE Access*, Volume 12
- 2022 ● **xPM: Enhancing exogenous data visibility**
Adam Banham, Sander J. J. Leemans, Moe Thandar Wynn, Robert Andrews, Kevin B. Laupland, Lucy Shinnars
@ *Artificial Intelligence in Medicine*, Volume 133
- 2021 ● **xPM: A Framework for Process Mining with Exogenous Data**
Adam Banham, Sander J. J. Leemans, Moe Thandar Wynn, Robert Andrews
@ *ICPM Workshops 2021*



Awards/Grants

- 2024 ● **Advanced Research Opportunities Program Fellowship**
Competitive grant awarded by RWTH Aachen, Aachen, Germany for a 3-month research stay.
- 2023 ● **Certificate of Excellence, Outstanding Presentation**
Doctoral Consortium, School of Information Systems, QUT, Brisbane.
- 2023 ● **Best Sessional Accomplishment Award**
School of Information Systems, QUT, Brisbane.
- 2022 ● **United Nations Hackathon - Best Regional Team**
Centre of Data Science, QUT see:
research.qut.edu.au/qutcds/2023/02/10/un-hackathon/.
- 2022 ● **HDR Accomplishment Award**
School of Information Systems, QUT, Brisbane.
- 2024
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2021 ● **PhD Scholarship and Scholarship Top Up**
Australian Government Research Training Program; Centre of Data Science, QUT
- 2021
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2020 ● **Honours Scholarship**
School of Information Systems, QUT