Dr. Adam Banham

IS/CS Researcher, Software Engineer, Process Mining Consultant
PhD Information Systems, QUT, BInfoTech(Hons)
Curriculum Vitae

Profile

My expertise aligns with computer science and information systems, aiming to make technical contributions that facilitate business process management. Through data-driven approaches, I strive to eliminate human bias and avoid conjecture that may be introduced when relying solely on qualitative methods to derive process documentation for businesses. The information system side of my research focuses on understanding how to create/manage automatic decision making systems and the potential pitfalls of using such technology to scale up processes. My candidature presented quantitative methods for businesses that provide a clear visual representation of their internal processes and decision making used by actors. My research has contributed advanced business analytics techniques that empower businesses and improve their operational excellence using machine learning.

As an award-winning scholar and educator, I have published high-quality publications and excelled as a tutor for undergraduates and postgraduates, mentoring students through their coursework at QUT. I have been recognised for my technical acumen and ability to translate complex problems into practical solutions. I am eager to contribute to transformative projects and developing cutting-edge technologies that improve and verify business processes. Additionally, I am proficient with multiple programming languages and cloud providers, allow me to convert research contributions into real-world impact. Also, I have consulting experience, working with many businesses in process improvement projects using process mining and business process management. These projects ranged from building enterprise capacity using historical executions, compliance checking of policy guidelines, and highlighting best practices. I am now looking for opportunities to grow my expertise.

Education

2025 ↑ 2021

Doctor of Philosophy

Queensland University of Technology, Brisbane, Australia

Process Mining with Exogenous Data
Completed on 9 May 2025 (see letter) (thesis) .

The thesis aims to advanced process mining by pursuing: **How can exogenous influences on decision making in processes be investigated?** Where *exogenous data* refers to external contextual data streams, such as time series data. The thesis focused on two sub-questions:

- 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

Email
adam.banham@outlook.com.au

Website
adambanham.io

ORCID
0000-0001-9912-8220

Scholar
scholar.google.com.au

Recent Publications

xPM: Enhancing Exogenous Data Visibility
Q1/D1
publicly available here.

Comparing Conformance Checking for Decision Mining: An Axiomatic Approach
Q1
publicly available here.

Discovering the Influence of Exogenous Data on Decisions in Processes
Conference: Petri Nets 2025
publicly available here.

Languages

English	Native Speaker
Python	Senior
Web Development	Senior
Java	Intermediate
Cloud Services	Intermediate
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 mulit-level miner proposed by Prof. Sander J.J. Leemans.

Academic Experience

2025 ↑ 2024

Sessional Academic

Masters and Undergraduates

QUT, School of Information Systems, School of Computer Science

Responsibilities

Assisting the development of teaching materials and organisation of tutoring staff. Facilitating workshops and industry projects for students. Teaching duty for the following units (Sem 1):

- CAB402: Programming Paradigms;
- IFN711: MIT capstone project with industry partners;
- IFN582: Rapid Web Development with Databases;
- IFN619: Data Analytics for Strategic Decision Makers.

2024 ↑ 2023

Research Assistant

QUT, Centre of Data Science

Assisting Process Improvement of Institute for Urban Indigenous Health

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 through put of handling incoming calls to their hotline.

2023 ↑ 2022

Head Academic Tutor

QUT, School of Information Systems

Fundamentals of Business Process Management

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 ↑ 2021

Research Assistant

QUT, School of Clinical Services

Fatalities in Intensive care units

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.

Projects

During my spare time, I find myself building software to support my academic endeavours and to support teaching efforts:

- 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]
- A visual studio code extension for teaching Object-Role-Modelling [qORMa extension]

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

2020 ↑ 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`

Publications

See my personal website for an archived version of my publications, adambanham.io/pubs.

2025

A Case for Public Process Documentation: Robodebt an Automated Decision Making System

Adam Banham, Azumah Mamudu, Rehan Syed.

@ 23rd International Conference on Business Process Management, BPM Forum, 2025

2025

Discovering the Influence of Exogenous Data on Decisions in Processes

Adam Banham, Yannis Bertrand, Robert Andrews, Moe Thandar Wynn and Sander J.J. Leemans.

@ 46th International Conference on Application and Theory of Petri Nets and Concurrency, 2025

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 Shinners

@ 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 ↑ 2021

PhD Scholarship and Scholarship Top Up

Australian Government Research Training Program; Centre of Data Science, QUT

2021 ↑ 2020

Honours Scholarship

School of Information Systems, QUT

Teaching Duties

The following symbols denote duties beyond teaching:

- $^{+}$:- I only provided assistance for marking of assignments.
- *:- I provided development assistance for the course content.
- $^{=}$:- I helped students through project management between an industry partner as part of their studies.

2025 - Sem 1

QUT - IFN711 $^{=}$

Postgraduate, Masters of IT

MIT Capstone Project with Industry Partners. Handling external partners and assisting students to meet expectations of partners through a short-term project.

Student Evaluation not available

2025 - Sem 1

QUT - IFN582 *

Postgraduate, Masters of IT

Rapid Web Development with Databases. Assisted with preparation of teaching materials and developing workshop exercises with leads.

Student Evaluation not available

2025 - Sem 1

QUT - IFN619

Postgraduate, Masters of IT

Data Analytics for Strategic Decision Makers. Teaching students about how to perform business analysis using data science and preparing reports for decision makers.

Student Evaluation not available

2025 - Sem 1

QUT - CAB402

Undergraduate, Bachelor of IT

Programming Paradigms; Introducing Functional Programming Paradigms. An advanced computer science unit about alternative paradigms for computation and programming.

Student Evaluation not available

Evaluation Metrics

Over my years of teaching at QUT, the evaluation metric used to understand the quality of tutoring has changed several times. Generally speaking, a higher number across all metrics infers that students perceived the tutoring quality as helpful to their studies.

2023-Sem 2

QUT - IFN515 *

Postgraduate, Masters of BPM

Fundamentals of Business Process Management for Master Students. Assisted with assignment development for unit.

Student Evaluation 80%

2023-Sem 2

QUT - IAB201 +

Undergraduate, Bachelor of IT

Modelling Techniques for Information Systems, assisted only in marking, non-teaching role.

Student Evaluation not available

2023 - Sem 1

QUT - IFN515 *

Postgraduate, Masters of BPM

Fundamentals of Business Process Management for Master Students. Assisted in the development of course materials and moving to Canvas as learning platform.

Student Evaluation 88%

2019 - Sem 2

QUT - IFB104

Undergraduate, Bachelor of IT

Building IT Systems; First Year Undergraduate Computer Science Unit.

Student Evaluation 4.3/5.0

2019 - Sem 1

QUT - IFB104

Undergraduate, Bachelor of IT

Building IT Systems; First Year Undergraduate Computer Science Unit.

Student Evaluation 4.4/5.0