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, with a focus on making technical contributions that facilitate business process management or studying the behaviour of systems. Through data-driven approaches, I strive to eliminate human bias and avoid conjecture that can arise 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 contributes advanced business analytics that empower owners to achieve operational excellence.

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 develop cutting-edge technologies that improve and verify business processes. Additionally, I am proficient in multiple programming languages and cloud platforms, enabling me to translate 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 seeking opportunities in formal computer science or software engineering.

Education

2025 ↑ 2021

Doctor of Philosophy

Queensland University of Technology, Brisbane, Australia

Process Mining with Exogenous Data
May 2025 (letter of completion) (thesis) .
Supervisors: Prof. Moe T. Wynn, Dr. Robert Andrews, and Prof. Sander J. J. Leemans.

The thesis aims to advance process mining by pursuing:

- 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 be studied for exogenous influences. The latter focuses on how process enhancement outcomes, i.e., data-aware models, should be quantified and on whether the techniques adhere to desirable properties. The thesis contributed generally towards computer and process science.

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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.

A Case for Public Process Documentation: Robodebt an Automated Decision Making System
Conference: Business Process Management, Forum, 2025
publicly available here.

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, 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 a 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 event logs to empirically evaluate an approach to automatically construct a multi-key for the multi-level miner proposed by Prof. Sander J.J. Leemans.

Academic Experience

2027 ↑ 2025

Postdoctoral Research Fellow (Level A)

Adelaide University, School of Computer Science and IT

Responsibilities

Working under Prof Claudia Szabo @ Adelaide University, this position would see me in charge of a team of software engineers (x3) and leading research into conceptual modelling for developing behaviour for complex system simulation. The work in this position would also expand on Prof. Claudia's research into emergence behaviour in simulations and whether techniques can be proposed to identify behaviour in recorded playout logs.

2025 ↑ 2024

Sessional Academic

Masters and Undergraduates

QUT, School of Information Systems, School of Computer Science

Responsibilities

Assisting in the development of teaching materials and the organisation of tutoring staff. Facilitating workshops and industry projects for students. I have supported teaching in the following units (see below for more information on units and student survey feedback):

2025

Semester Two:

- CAB401: High Performance and Parallel Computing;
- IFN735: MIT Industry Project;
- IFN582: Rapid Web Development with Databases;
- IAB207: Rapid Web Application Development;
- IAB303: Data Analytics for Business Insight;
- PUB110: Introduction to Health Informatics;
- EGB103: Computing and Data for Engineers.

Semester One:

- 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.

Languages

English	Native Speaker
Python	Senior
Web Development	Senior
Java	Intermediate
Cloud Services	Intermediate
Rust	Novice

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]

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.

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 2

QUT - IFN735 $^{=}$

Postgraduate, Master of IT
MIT Industry Project. Handling external partners and assisting students to meet expectations of partners through a short-term project.

Student Evaluation 50%

2025 - Sem 2

QUT - IFN582

Postgraduate, Master of IT
Rapid Web Development with Databases. Teaching students web development through building a working CRUD web application. We also taught object-role modelling to understand business data requirements.

Student Evaluation 57%

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. **Testimonials are presented as-is from students.**

Notice

Due to starting my position as a Postdoctoral Research Fellow @ Adelaide in 2025 October, I had to abruptly leave the casual teaching duties in SEM 2, 2025 @ QUT. While I organised the leave around the mid-semester break to limit student impact, its impact was still noticeable in student feedback.

2025, SEM 2

2025 - Sem 2

QUT - CAB401

Undergraduate, Bachelor of IT

High Performance and Parallel Computing. Teaching students about techniques needed to exploit multi-processor computer systems to achieve dramatic performance improvements for computationally intensive problems.

Student Evaluation 50%

2025 - Sem 2

QUT - IAB207

Undergraduate, Bachelor of IT

Rapid Web Application Development. Teaching students web development through building a working CRUD web application using Flask/HTML/CSS/SQL. We also teach object-role-modelling as the choice for conceptual modelling to understand the business data needed for the application.

Student Evaluation 100%

2025 - Sem 2

QUT - IAB303

Undergraduate, Bachelor of IT

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

Student Evaluation 100%

2025 - Sem 2

QUT - PUB110

Undergraduate, Bachelor of Health Information Management

Introduction to Health Informatics. Teaching database management and conceptual modelling for healthcare applications. Introduction to health information systems for undergraduate students.

Student Evaluation 100%

2025 - Sem 2

QUT - EGB103

Undergraduate, Bachelor of Engineering

Computing and Data for Engineers. Introduction to programming using python and teaching data structures for engineering purposes.

Student Evaluation 100%

2025 - Sem 1

QUT - IFN711 =

Postgraduate, Master 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 100%

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 100%

Testimonial

"Adam is very funny and an enjoyable educator. He made tutorials fun and interesting. He explained concepts in an effective way, and this helped immensely."

2025, SEM 2

Testimonial

"I really appreciate his communication skills and personality. He explains concept really well, good coding demonstrations, and allows students to then work on tasks on their own (and pretty good assuming that they followed and listened to him). His energy is contagious and makes learning fun. It sucks that he left after the mid-sem break."

2025, SEM 2

Testimonial

"Really lovely, always happy, and very easy to learn from. Adam always makes class interesting just by being enthusiastic and down to earth."

2025, SEM 1

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 100%

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 100%

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

Testimonial

"Adam is a lovely teacher, and very helpful. I enjoyed having him as my tutor. The only comment I would say is, as someone who is new to programming, things could move a little fast for me at times. Adam was always more than willing to help when I had questions though. I'm grateful for his support during this class."

2025, SEM 1

Testimonial

"Adam is very attentive and energetic in class. He's helpful and patient with everyone. He's the best tutor out of all the tutors I have. It's a pleasure to learn with Adam's supervision."

2025, SEM 1

Testimonial

"One of the best tutor I have met until now in my life. He is friendly, supportive and motivates us to come up with new or innovative ideas. I would like to meet such tutors more often."

2023, SEM 1

Testimonial

"Dear Adam, you have been a standout in my studies at QUT. Your proficiency and knowledge as a tutor are exceptional, and your communication skills are impressive."

2023, SEM 1