

Doctor in Computer Science from Macquarie University (MQU), Australia, and from the Federal University of Minas Gerais (UFMG), Brazil. Master in Computer Science and Bachelor in Physics from UFMG. Recipient of the Google LARA Research Scholarship and the Excellence in Higher Degree Research (Student Award) from the Faculty of Science and Engineering, MQU. Interested in Formal Methods, Quantitative Information Flow, Responsible Computing (e.g. Fairness, Privacy, Utility), Artificial Intelligence, and Neuroscience.

Member of the [Topete Research Group](#) and the [INSCRYPT | T-Rex](#) Laboratory.

Awards

- **Excellence in Higher Degree Research (Student Award)** 2024-12
Faculty of Science and Engineering, Macquarie University.
- Outstanding Poster 2024-06
Future Communications Research Centre, Macquarie University.
Poster: [Quantitative Information Flow for Privacy Analysis](#) (Future Communications Research Centre Workshop).
- Research Rising Star 2023-10
School of Computing, Faculty of Science and Engineering, Macquarie University.
Paper: [A Novel Analysis of Utility in Privacy Pipelines, Using Kronecker Products and Quantitative Information Flow](#).
- **Google LARA Research Scholarship** 2022-02
9th Google Latin America Research Awards (LARA).
A robust and explainable QIF-based framework for assessing big data privacy risks.

Scholarships

- Google Latin America Research Awards (LARA) Scholarship. 2023-02 – 2025-06
- International Macquarie University Research Excellence (iMQRES) Scholarship. 2021-07 – 2025-12
- [CAPES](#) Doctoral Degree Scholarship. 2019-03 – 2021-04
- [CNPq](#) Master Degree Scholarship.

Education

- **Doctoral Degree in Computer Science** 2023-02 – 2025-12
Degree conferred on 26 February 2026.
[School of Computing, Macquarie University](#) Sydney, NSW, Australia
Recipient of an International Macquarie University Research Excellence (iMQRES) Scholarship.
Supervised under Cotutelle by [Annabelle McIver](#).
– Thesis approved on 05 December 2025: [A Formal Approach To Quantify Privacy And Utility In Software And Large Datasets](#) (DOI: 10.25949/31689175).
- **Doctoral Degree in Computer Science** 2021-07 – 2025-12
[Graduate Program in Computer Science, UFMG](#) Belo Horizonte, MG, Brazil
Recipient of a [CAPES](#) Scholarship.
Supervised under Cotutelle by [Mário Alvim](#).
– Thesis defended and approved on 15 December 2025: [A formal approach to quantify privacy and utility in software and large datasets](#) (HDL: 1843/3806).
– Cotutelle research area: Quantitative Information Flow theory and its application to precisely characterise how different methods of noise introduction affect the trade-off between privacy and utility in microdata and statistical data publications.
- **Master Degree in Computer Science** 2019-03 – 2021-04
[Graduate Program in Computer Science, UFMG](#) Belo Horizonte, MG, Brazil
Recipient of a [CNPq](#) Scholarship. Supervised by [Mário Alvim](#) and by [Annabelle McIver](#).
– Dissertation defended and approved on 28 April 2021: [A formal quantitative study of privacy in the publication of official educational censuses in Brazil](#) (HDL: 1843/38085).
– Dissertation selected for the [XXXV Thesis and Dissertation Contest \(CTD 2022\)](#), as part of the XLII Congress of the Brazilian Computing Society (CSBC 2022) (DOI: 10.5753/ctd.2022.223158).
- **Bachelor Degree in Physics** 2014-03 – 2018-07
[Federal University of Minas Gerais \(UFMG\)](#) Belo Horizonte, MG, Brazil

Teaching

- Sessional Teaching Academic 2023-07 – 2025-12
[School of Computing, Macquarie University](#) Sydney, NSW, Australia
– Taught small groups of graduate and undergraduate students (20 to 30 students) in laboratories.
– Assisted with advanced technical concepts, programming, and troubleshooting.
– Facilitated learning and group discussions.
Units: Offensive Security (COMP2320/COMP6320), Data Privacy and Information Security (COMP3300), Secure Applications Development (COMP3310), Formal Methods (COMP4000).
Skills: Bash, Burp Suite, Dafny, Differential Privacy, Django, Flask, Git, Java, Jupyter, Kali Linux, Linux, Python, Shell.

Experience

- Postdoctoral Research Fellow 2026-01 – 2026-06
[School of Electrical Engineering and Computer Science, The University of Queensland](#) Brisbane, QLD, Australia
Project: *Resilient and Secure systems through Verified security Policies (RSVP)*, financed by the Defence Science and Technology Group, Australian Department of Defence, to develop a tool to analyse security policies and report indications of potential problems, redundancies, and violations of invariants that define security boundaries of a system. Repository: [UQ-PAC/RSVP](#).
Project supervised by [Graeme Smith](#).
Skills: Authorisation, Cedar, Cybersecurity, Data Security, Git, Information Security, Java, OpenFGA.
- Research Assistant 2025-07 – 2025-12
[School of Computing, Macquarie University](#) Sydney, NSW, Australia
Project: *Expanding Probabilistic Verification to Quantum Communications Systems*, financed by the [Future Communications Research Centre](#), Macquarie University, to study the delivery time of quantum repeaters networks.
Project supervised by [Annabelle McIver](#).
Skills: Algorithms, Caesar, Formal Methods, Probabilistic Programming, Quantum Information, Software Verification.
- Sessional Teaching Academic 2023-07 – 2025-12
[School of Computing, Macquarie University](#) Sydney, NSW, Australia
Four units taught at undergraduate and postgraduate level; see [Teaching](#).
- Intern (Student Researcher) 2022-07 – 2022-11
[Google LLC](#) New York, NY, United States of America
 - Developed and delivered formal analyses of complex privacy software algorithms (Google Topics API).
 - Delivered technical presentations to Google colleagues.
 - Published findings in a scientific paper.Internship supervised by [Andrés Muñoz Medina](#).
Skills: Algorithms, Apache Beam, Differential Privacy, Git, LaTeX, Machine Learning, Python, Web Technologies.
- Information Security Analyst 2020-12 – 2021-03
[FUNDEP, UFMG](#) Belo Horizonte, MG, Brazil
 - Developed and delivered formal analyses of the privacy properties of big datasets.
 - Developed and delivered high-performance software for experimentation.Project: [PRICE](#) - Privacy in Educational Censuses. Directed by [Mário Alvim](#).
Skills: Git, GitLab, Java, Jupyter, LaTeX, Pandas, Python.
- Visiting Scholar 2019-09 – 2019-11
[School of Computing, Macquarie University](#) Sydney, NSW, Australia
Internship supervised by [Annabelle McIver](#).
- Undergraduate Tutoring & Technological and Industrial Initiation 2014-10 – 2016-01
[Room of Physics Demonstrations, UFMG](#) Belo Horizonte, MG, Brazil
 - Developed and delivered a high-resolution and low-cost Optical Spectrometer and its software.Recipient of [PROGRAD/UFMG](#) & [CNPq](#) Scholarships. Supervised by [Elmo Salomão](#).
Skills: LabVIEW, SolidWorks.

Volunteering

- Volunteer IT System Administrator 2019-03 – 2026-06
[INCRYPT | T-Rex Laboratory, UFMG](#) Remote & Belo Horizonte, MG, Brazil
 - Deployed and maintained the Linux servers for high-performance computing of research software.
 - Deployed and maintained the Linux virtual machines for infrastructure services, including websites and Continuous Integration and Continuous Delivery (CI/CD) pipelines and runners.Skills: Apache, Bash, CI/CD Pipelines and Runners, Debian, Docker Products, Git, GitLab, Linux, Shell.
- Ally Network training 2025
[Macquarie University](#)
Completed voluntarily while employed as a sessional academic, a category of staff not required to undertake it.

Conference Papers (peer-reviewed)

Ratings are from the CORE2023 conference ranking, in which A* is the top tier.

- [The Privacy-Utility Trade-off in the Topics API](#) 2024-10
[2024 ACM SIGSAC Conference on Computer and Communications Security](#). **CORE2023: A***
DOI: [10.1145/3658644.3670368](#). **arXiv:** [2406.15309](#).
- [A Novel Analysis of Utility in Privacy Pipelines, Using Kronecker Products and Quantitative Information Flow](#) 2023-11
[2023 ACM SIGSAC Conference on Computer and Communications Security](#). **CORE2023: A***
DOI: [10.1145/3576915.3623081](#). **arXiv:** [2308.11110](#).
- [Measuring Re-identification Risk](#) 2023-06
[2023 ACM SIGMOD/PODS Conference](#). **CORE2023: A***
DOI: [10.1145/3589294](#). **arXiv:** [2304.07210](#).
- [Flexible and scalable privacy assessment for very large datasets, with an application to official governmental microdata](#) 2022-07
[22nd Privacy Enhancing Technologies Symposium \(PETS 2022\)](#). **CORE2023: A**
DOI: [10.56553/popets-2022-0114](#). **arXiv:** [2204.13734](#).

- A formal quantitative study of privacy in the publication of official educational censuses in Brazil
Proceedings of the XXXV Thesis and Dissertation Contest (CTD 2022).
DOI: 10.5753/ctd.2022.223158. 2022-07
- On Privacy and Accuracy in Data Releases
31st International Conference on Concurrency Theory (CONCUR 2020). 2020-08
DOI: 10.4230/LIPIcs.CONCUR.2020.1. CORE2023: A

Workshop Papers (peer-reviewed)

Earlier or workshop versions of the conference papers above.

- A new Framework for Measuring Re-Identification Risk 2023-12
Workshop on Regulatable Machine Learning
at the 37th Conference on Neural Information Processing Systems (RegML @ NeurIPS 2023).
- A Quantitative Information Flow Analysis of the Topics API 2023-11
Proceedings of the 22nd Workshop on Privacy in the Electronic Society (WPES 2023).
DOI: 10.1145/3603216.3624959.
- A novel analysis of utility in privacy pipelines, 2023-09
using Kronecker products and quantitative information flow
Theory and Practice of Differential Privacy (TPDP) 2023.
- Measuring Re-identification Risk 2023-05
2023 Security for the Web Workshop.

Theses and Dissertations

- A Formal Approach To Quantify Privacy And Utility In Software And Large Datasets 2025-12
Macquarie University.
DOI: 10.25949/31689175.
- A formal approach to quantify privacy and utility in software and large datasets 2025-12
Universidade Federal de Minas Gerais.
HDL: 1843/3806.
- A formal quantitative study of privacy in the publication of official educational censuses in Brazil 2021-04
Universidade Federal de Minas Gerais.
HDL: 1843/38085.

Other Publications and Presentations

- An Introduction to Raman Spectroscopy 2017-11
Didactic or instructional material. Supervised by Leandro Malard.
- A Geometric Introduction to Lie Groups (in Portuguese) 2016-11
III National Scientific Initiation and Master Program (PICME) Symposium.
- Coupling optical techniques with scanning tunneling microscopy to investigate organic films 2016-09
XV Brazilian Materials Research Society (SBPMat) Meeting.

Software

- Topics API Analysis 2024-06
Zenodo. DOI: 10.5281/zenodo.11032230.
This repository provides the experimental results of the paper *The Privacy-Utility Trade-off in the Topics API*.
- Bayes Vulnerability for Microdata (BVM) library 2021-04
Zenodo. DOI: 10.5281/zenodo.6533703.
Quantitative Information Flow assessment of vulnerability for microdata datasets using Bayes Vulnerability. This tool was used for the vulnerability assessment published in: *A formal quantitative study of privacy in the publication of official educational censuses in Brazil* and *Flexible and scalable privacy assessment for very large datasets, with an application to official governmental microdata*.

Datasets

- AOL Dataset for Browsing History and Topics of Interest 2024-06
Zenodo. DOI: 10.5281/zenodo.11029571. (Downloads: > 1K.)

Skills

- Programming Languages: C++, Java, Julia, LabVIEW, MATLAB, Python, Rust, TypeScript.
- Technologies: Alloy, Apache, Apache Beam, Bash, Burp Suite, Caesar, Cedar, Continuous Integration and Continuous Delivery (CI/CD), Dafny, Debian, Differential Privacy, Django, Docker Products, Flask, Git, GitHub, GitLab, Jupyter, Kali Linux, LaTeX, Linux, Moodle, OpenFGA, Pandas, Shell, SolidWorks, Web Technologies.

Projects

- PRICE – Privacy in Educational Censuses (& PRICE II) 2020 – 2021 (& 2023 – 2025)
[INSCRIPT](#) | [T-Rex Laboratory](#), [UFMG](#)  Information Security Analyst
The new Brazilian privacy legislation legally holds entities as responsible for the quality, confidentiality, and privacy of data they keep about individuals. INEP, the National Institute of Educational Studies and Research of the Ministry of Education, publishes very detailed educational data annually. The PRICE project was a study commissioned by INEP on how to transform the data to be published in a way that the privacy of students is not violated, while maintaining its utility for statistical research.
Decentralised Execution Term (TED) INEP-UFMG 8750.
Coordinator: [Mário Alvim](#).
- Topics API privacy analysis 2022 – 2024
Quantitative analysis of the privacy-utility trade-off in the Google Topics API, a technology deployed in production, carried out during an internship at Google Research and published externally at CCS 2024, with the experimental results and the dataset released publicly.
- Workshop on database anonymisation techniques 2018-11-30
 Educational Statistics Directorate (DEED/INEP)
 Regional Planning and Development Center (CEDEPLAR/UFMG)
The workshop aimed to present INEP professionals with the state of the art of data anonymisation techniques with the most recurrent use, their advantages and disadvantages, in order to support organisational decisions regarding the adoption of one or more techniques, considering the technical capacity of the teams, infrastructure, operation and any existing legal limitations.
Coordinator: [Mário Alvim](#).
- Lumus Max Optical Spectrometer 2014 – 2015
[Lumus Max \(in Portuguese\)](#) | [Room of Physics Demonstrations \(in Portuguese\)](#)
Development of a high-resolution and low-cost optical spectrometer. Some parts of the hardware were designed using Dassault Systèmes' SolidWorks and the software was implemented using National Instruments' LabVIEW visual programming language.
Coordinator: [Elmo Salomão](#).
Skills: LabVIEW, SolidWorks.
- Electrical Paul's Trap 2014
[Electrical Paul's Trap \(in Portuguese\)](#) | [Room of Physics Demonstrations \(in Portuguese\)](#)
Development of an electrical Paul's Trap (quadrupole ion trap).
Coordinator: [Elmo Salomão](#).

Invited Talks and Presentations

- The Privacy-Utility Trade-off in the Topics API October 2024
ACM Conference on Computer and Communications Security (CCS), Salt Lake City, UT, U.S.A.
- The Privacy-Utility Trade-off in the Topics API May 2024
Workshop on Formal Methods in Australia/New Zealand, The University of Queensland
- The Privacy-Utility Trade-off in the Topics API February 2024
Sydney Privacy Workshop, University of Sydney
- Quantitative Information Flow (QIF) for Privacy Analysis October 2023
Industry Forum, Future Communications Research Centre, Macquarie University
- Formal Analysis of Utility in Privacy Pipelines October 2023
using Quantitative Information Flow and Kronecker Products
HDR Research Rising Star Seminar, School of Computing, Macquarie University
- Quantitative Information Flow (QIF) August 2022
Google Research, New York, NY, U.S.A.
In this presentation, we introduced the main concepts and applications of QIF to the Google Research team.
- A formal quantitative study of privacy in the publication of official educational censuses in Brazil August 2022
[XXXV Thesis and Dissertation Contest \(CTD 2022\)](#), XLII Congress of the Brazilian Computing Society (CSBC 2022)
- Flexible and scalable privacy assessment for very large datasets July 2022
Privacy Enhancing Technologies Symposium (PETS), Sydney, NSW, Australia
- Case Study on Privacy and Transparency in Data Publishing February 2020
[9th Summer School in Computer Science, UFMG](#). ([YouTube](#))
In this lecture, we addressed some anonymisation techniques that have been proposed and applied in an attempt to balance the right to privacy while maintaining the usefulness of databases, their advantages and disadvantages, and presented real cases of individuals who have been re-identified, both in Brazil and worldwide.

Referees

Available upon request.