

EDUCATION

2008 PhD in Logic & Philosophy of Mathematics, University of Calgary

SELECTED RESEARCH GRANTS & AWARDS

2022 Bednarowski Trust Fellow, University of Edinburgh

Research project: *Explicating normic support*

2021 Kosciuszko Foundation Fellow, Northeastern University, Boston

Research project: *Epistemological challenges to imprecise probabilism*

2017-2021 Principal Investigator in a National Science Center project, University of Gdansk

Research project: *Conceptual, formal and practical aspects of forensic and judicial applications of probabilistic tools*

2012 Trinity College Long Room Hub Visiting Fellow, Trinity College Dublin

Research project: *Mathematical existence, abstraction principles and real number theory*

2011-2012 Visiting Fellow, Benares Hindu University, Varanasi

Research project: *Knowability paradox and Nyaya logic*

2009 British Academy Visiting Fellow, Bristol University

Research project: *Modal reconstructions of mathematical theories*

POSITIONS HELD

2012-2019 Postdoctoral Fellow of Research Foundation Flanders

2008- Associate Professor, University of Gdansk (with academic leaves)

2005-2008 TA, research assistant, instructor of record, University of Calgary

SELECTED DATA SCIENCE PROJECTS

- **Legal Probabilism bayesian networks in R**

R implementation of **bayesian network methods** for criminal evidence evaluation, based on our work with Marcello Di Bello on the *Legal Probabilism* entry in the Stanford Encyclopedia of Philosophy

- **Short-term impact of personal attacks on Reddit user activity**

In cooperation with **Samurai Labs**, we tracked 148,317 users and identified personal attacks among 182,528 posts and comments using their high precision software. I analyzed the data from three perspectives: (i) **classical statistical methods**, (ii) **Bayesian estimation**, and (iii) **model-theoretic analysis with hurdle and zero-inflated models**. They agree: personal attacks decrease the victims' activity.

- **Bayesian estimation of multi-class bias in word2vec embeddings**

We propose **Markov chain Monte Carlo** methods to supersede cosine-distance-based bias measures such as WEAT and argue that the resulting picture is not as clear as it initially might have seemed.

- **Probabilistic coherence measures over bayesian networks**

Algorithms for calculating main existing coherence measures over bayesian networks, with a new method essentially relying on the causal structure, implemented in R, building on bnlearn, with application to multiple counterexamples to earlier proposals.

- **MC in backtesting of optimized trading strategies**

Implementation in R of **Monte Carlo methods** for gauging uncertainty in algorithmic trading strategy evaluation. Illustrates how correcting for multiple testing in optimization can undermine claims to significance.

KEY SKILLS

R tasks and tools

- Bayesian statistics
STAN, JAGS, BUGS, rethinking, rjags, runjags, BESTmcmc
- Bayesian networks
bnlearn, gRain
- Discrete data models
countreg, vcd, vcdExtra, car, MASS
- Time series, dynamic regression, algo trading
xts, quantmod, tidyquant, TTR, fpp3
- Data wrangling and visualization
tidyverse, ggplot2, ggpubr

other

- Python
- SQL
- Reproducible research
R markdown, LaTeX, beamer, Shiny
- Datacamp: 24 courses completed
130,102xp, 1,536 exercises aced

ACADEMIC ACTIVITIES

- **Multiple university courses taught** related to probability, statistical programming and inference

e.g.: statistical methods in criminology; probability & philosophy of juridical evidence evaluation; Uncertainty and R programming; interpretations of probability; decisions, games, and social choice theory; cognitive failures; meta-arithmetic; formal theories of truth; ontology of mathematics, logic I, logic II

- **3 books and ca. 30 research papers** in top academic journals

e.g.: Stanford Encyclopedia of Philosophy; Aggressive Behavior; Review of Symbolic Logic; Law, Probability & Risk; The International Journal of Evidence & Proof, Journal of Applied Logics, Artificial Intelligence and Law

- **30 invited lectures**

e.g.: University of Oxford, Paris I Panthéon-Sorbonne, University of Edinburgh, Kyoto University, Keio University, Nagoya University, University of Turin

- **13 major research grants and awards**, 15 international conferences organized, referee for 18 journals

- **Research group coordinator** of **LoPSE research group** (4-7 researchers) since 2013