

Cillian Hourican

Computational modelling & data-science consultant · available for freelance work

✉ cillian.hourican@gmail.com 🌐 cillianhourican.com 📄 in/cillian-hourican 🎧 CillianHourican

I help teams turn complex, interconnected data into models they can act on — a PhD-level grounding in statistics, machine learning, networks and causal inference, applied to your problem, validated honestly, and explained without the jargon. Currently a postdoctoral researcher at the University of Amsterdam, and available for freelance data and modelling work.

How I work: I frame the real question rather than the model, honestly stress-test what I build, and hand over plain-language results plus code your team can maintain.

WHAT I DO

Predictive modelling & simulation

Forecasting, statistical and surrogate models, and uncertainty quantification — turning messy, historical data into models you can base decisions on.

Networks, complex systems & causal inference

Untangling interconnected systems: network analysis, higher-order interactions and causal reasoning that go beyond pairwise correlation. My core research niche.

Machine learning & AI solutions

Building, validating and explaining ML models, and the dependable pipelines and tools around them, with a scientist's eye for what actually generalises.

Workshops & training

Hands-on training and guest lectures in Python/R, modelling and data analysis, to build the capability inside your own team.

SELECTED WORK

- Early-stage coronary-artery-disease screening from routine, low-cost biomarkers — machine-learning models sharpened with synthetic “virtual patient” data. (European Heart Journal — Digital Health, 2024)
- Multilayer network analysis linking cardiovascular disease and depression to specific molecular biomarkers, validated in the UK Biobank. (Psychological Medicine, 2025)
- An open, bias-aware information-theoretic workflow that detects higher-order, “together-only” risk combinations across a large ageing cohort. (PLOS Computational Biology, 2026)
- Efficient search algorithms that locate synergistic variable combinations in high-dimensional datasets without exhaustive enumeration. (Entropy, 2024)

RANGE & PERSPECTIVE

Comfortable in unfamiliar territory. My research alone has spanned cardiovascular disease, depression, ageing, genomics and the gut microbiome — each a new domain to learn fast and model rigorously; the methods travel. I also co-founded [CausalixAI](#), building AI-powered causal-modelling tools, so I bring a product and delivery perspective alongside the research.

BACKGROUND

Apr 2026 – present	Postdoctoral Researcher — Computational Science Lab, University of Amsterdam
2022 – present	PhD, Computational Science — University of Amsterdam (defense scheduled 27 November 2026)
Ongoing	Co-founder, CausalixAI — AI-powered causal-modelling tools
2021	MSc Computational Science (GPA 8/10) — University of Amsterdam
2018	BA (Mod.) Mathematics First-Class Honours — Trinity College Dublin

SKILLS & TOOLS

Languages	Python, R
Modelling	Predictive & statistical modelling · machine learning & deep learning · uncertainty quantification
Specialisms	Networks · causal inference · information theory · complex systems · simulation (Vensim, AnyLogic)

Available for freelance engagements, remote or on-site in the Netherlands and EU. **Tell me what you are trying to decide — an initial conversation is free:** cillian.hourican@gmail.com.

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