

gavin leech

AI research / better inferences

about

g@gleech.org
[Scholar](#)
[Twitter](#)
[Github](#)
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programming (in production)

Python/SciPy/Spark,
PyTorch, Keras, *nix,
Azure, C#, JS (ES6,
node, TS), PHP, Pig,
Powershell.

interests

[Reviews](#)
open science,
[self-calibration](#),
failures of reasoning,
failures of reasoning
about reasoning,
lists.

publications

[Mass mask-wearing notably reduces COVID-19 transmission](#) (2021), preprint
[Seasonal variation in SARS-CoV-2 transmission in temperate climates](#) (2021), preprint
[Government interventions in Europe's second wave](#) (2021), preprint
[Safety Properties of Inductive Logic Programming](#) (2021), SafeAI @ AAAI
[How robust are COVID-19 estimates?](#) (2020), spotlight paper at NeurIPS
[The effectiveness of nonpharmaceutical interventions against COVID-19](#) (2020), *Science*

projects

AI safety in academia: [estimates & models](#) of how much safety might be done indirectly.

ProlexaPlus: [Brought](#) modern language modelling (Flair) into Prolog for some reason.

Reversals in psychology: [Collated](#) striking outcomes of the replication crisis.

Hardening the browser: [Guide to beginners' infosec](#) with emphasis on cost-benefit.

Side effects in Gridworlds: Implemented new environments, DQN, and MaxEnt IRL in Tensorflow. Written up [here](#), code [here](#), cited [here](#).

The First Computers: [Deployed](#). Conceptual analysis to solve a historical question.

education

PhD Interactive Artificial Intelligence, University of Bristol

Ongoing, 2023 finish. 1st year was a de facto research Master's, including foundations of probability, NLP, GOFAL, legal aspects. Thesis on fast probabilistic programming, or something. [UKRI CDT studentship](#).

MSc Software Development, University of Glasgow

[82%](#) GPA. Java, SQL, HTML/CSS/PHP, assembly, plus design patterns, data structures & algos. Thesis in computational linguistics: ['Hidden Markov Models for Accommodation'](#)

BSc Mathematics & Statistics, The Open University

[89%](#) GPA. Probability up to diffusion processes, regression to GLMMs, numerics to BFGS, linear algebra to multi-linear, RCTs. Part-time during FT work. Reviewed [here](#).

experience

- 2020 – 2021 **Researcher** EpidemicForecasting.org
Member of a large collaboration on the epidemiology of COVID (Oxford / Imperial / Harvard / other). Led the masks project and helped drive on second-wave and seasonality. Probabilistic programming, also technical writing, data collection, literature reviews, conceptualisation.
- 2019 – Now **Assistant Teacher** University of Bristol
Sole instructor in tutorials, training TAs. Bayesian ML & Algorithms 2.
Buzzwords: Gaussian processes, Markov Random Fields, Bayesian optimisation, variational inference, dynamic programming, graph theory, minimum spanning trees, pathing, complexity theory.
- 2016 – 2019 **Data Scientist** AXA Insurance, London
Built dozens of ML models (GLMs, GBMs, deep neural nets) for actuarial pricing, medical risk, & image recognition. Tech lead for 5 scientists & engineers; web scraping at scale; migration from SAS to Hadoop, & Hadoop to Azure.
Buzzwords: Python, Spark, Keras, XGBoost, Tableau, Avro, Pytest, GDPR
- 2015 – 2016 **Software Developer** Freetobook, Glasgow
Improved a large legacy accommodation engine: PHP back-end, JS front-end, REST APIs. Sole design of a PCI compliant credit-card storage system.
Buzzwords: PHP 5 & 7, LAMP, SQL, Laravel, cURL, Gitlab, New Relic.
- 2015 **Software Developer** Stugo, Glasgow
Jumped into web dev; my code in worldwide production within 2 weeks. Products: a medicine pump device manager & a pharmacy record system.
Buzzwords: C#, WPF, node.JS, MEAN, Ractive, Mongo, Vagrant, VMware.

judgment

- Brier score of 0.16 after one year of PredictionBook.
- Top forecaster in Nuno Sempere's Value Forecasting Tournament.
- Resolution Council Judge for Parallel Forecast, an AI prediction experiment. Topics: timelines, macroeconomics, state-of-the-art performance.