

gavin leech

AI research / data science / better inferences

about

[Email](#)
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[Reviews](#)

programming (in production)

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

interests

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

publications

[On the robustness of estimates of COVID-19](#) (2020), spotlight paper at NeurIPS

[The effectiveness of nonpharmaceutical interventions against COVID-19](#) (2020), medRxiv

[Legally grounded fairness objectives](#) (2020)

[Safety Properties of Inductive Logic Programming](#) (forthcoming)

projects

Reversals in academic psychology: [Collated](#) the most striking outcomes of the replication crisis in psychology. Some reanalysis of the original data in Jupyter.

Hardening the browser: [Guide to cybersecurity](#), with emphasis on cost : benefit.

Side effects in Gridworlds: Teamwork on the side-effects problem in reinforcement learning. Implemented DQN and MaxEnt IRL in Tensorflow, created new environments, and evaluated their safety properties. Written up [here](#), code [here](#), cited [here](#).

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

Py2HTK: [On github](#). Wrapper for a venerable NLP library. Used in [this research](#).

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](#).

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](#).

MSc Software Development, University of Glasgow

[82%](#) GPA. Java, SQL, HTML/CSS/PHP, MC6800 assembly plus Patterns, data structures & algorithmics. Psychology of security, law of safety-critical systems, design of UX. Thesis in computational linguistics: '[Hidden Markov Models for Accommodation](#)'.

experience

- | | | |
|-------------|--|---------------------------|
| 2019 – Now | Resolution Council Judge
Judging outcomes for <u>an AI prediction market</u> . Topics include timelines, macroeconomics, state-of-the-art performance. | Parallel Forecast, London |
| 2019 – Now | Assistant Teacher
Teaching tutorials & training TAs. Machine Learning & Algorithms 2.
<i>Buzzwords:</i> Gaussian processes, Markov Random Fields, Bayesian optimisation, variational inference, dynamic programming, graph theory, minimum spanning trees, pathing, complexity theory. | University of Bristol |
| 2016 – 2019 | Data Scientist
Built dozens of ML models (GLMs, GBMs, deep ANNs) 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.
<i>Buzzwords:</i> Python, Spark, Keras, XGBoost, Tableau, Avro, Pytest, GDPR | AXA Insurance, London |
| 2015 – 2016 | Software Developer
Improved a large legacy accommodation engine: PHP back-end, JS front-end, REST APIs. Sole design of a PCI compliant credit-card storage system.
<i>Buzzwords:</i> PHP 5 & 7, LAMP, SQL, Laravel, cURL, Gitlab, New Relic. | Freetobook, Glasgow |
| 2015 | Software Developer
Jumped into web dev; my code in worldwide production within 2 weeks. Products: a medicine pump device manager & a pharmacy record system.
<i>Buzzwords:</i> C#, WPF, node.JS, MEAN, Ractive, Mongo, Vagrant, VMWare. | Stugo, Glasgow |