

Adam Foster

a.evan.foster@gmail.com +44 7380 554484
uk.linkedin.com/in/adamefoster csml.stats.ox.ac.uk/people/foster/

EXPERIENCE

2017 – PRESENT | UNIVERSITY OF OXFORD, UNIVERSITY COLLEGE

DPHIL STATISTICAL MACHINE LEARNING

I am a final year DPhil student in the Oxford Computational Statistics and Machine Learning group, under the supervision of Yee Whye Teh and Tom Rainforth. A large part of my work in Oxford has been on optimal experimental design: how do we design experiments that will be most informative about the process being investigated? I also study contrastive representation learning through the lenses of mutual information and invariance.

SUMMER 2020 | BENEVOLENTAI

AI SCIENCE INTERN

I investigated deep representation learning methods for single-cell RNA sequence data in genomics.

SUMMER 2018 | UBER AI LABS

RESEARCH INTERN

I interned with the Pyro team under the supervision of Noah Goodman. My contributions to Pyro were part of a project to automate optimal experimental design for adaptive experimentation in science.

2016 – 2017 | ROAM ANALYTICS

MACHINE LEARNING ENGINEER

Through the Silicon Valley Internship Program, I spent a year in San Francisco working for a startup as a machine learning engineer. I helped build a knowledge graph of medical and pharmaceutical concepts and data. I went on to use MinHash as a way to search large data in sublinear time, and investigate causal inference using observational data as a way to improve patient outcomes.

2012 – 2016 | UNIVERSITY OF CAMBRIDGE, QUEENS' COLLEGE

MMATH MATHEMATICS

Grade Distinction | Rank 6th

Awards 2016 Wishart Prize; 2014–16 Foundation Scholarship; 2015 Colton Prize; 2013 Braithwaite Prize
In Part III, “the oldest and most famous mathematics examination in the world”, I chose to focus on statistics and probability. My essay was entitled ‘New advances in causal inference’.

PUBLICATIONS

E Mathieu, [A Foster](#), YW Teh. On Contrastive Representations of Stochastic Processes. **arXiv:2106.10052**.

[A Foster](#), Á Vezér, CA Glastonbury, P Creed, S Abujudeh, A Sim. Contrastive Mixture of Posteriors for Counterfactual Inference, Data Integration and Fairness. **arXiv:2106.08161**.

T Goda, T Hironaka, W Kitade, [A Foster](#). Unbiased MLMC stochastic gradient-based optimization of Bayesian experimental designs. **arXiv:2005.08414**.

[A Foster](#), DR Ivanova, I Malik, T Rainforth. Deep Adaptive Design: Amortizing Sequential Bayesian Experimental Design. **ICML (long presentation). 2021**.

[A Foster](#), R Pukdee, T Rainforth. Improving Transformation Invariance in Contrastive Representation Learning. **ICLR. 2021**.

[A Foster](#), M Jankowiak, M O'Meara, YW Teh, T Rainforth. A Unified Stochastic Gradient Approach to Designing Bayesian-Optimal Experiments. **AISTATS. 2020**.

[A Foster](#), M Jankowiak, E Bingham, P Horsfall, YW Teh, T Rainforth and ND Goodman. Variational Bayesian Optimal Experiment Design. **NeurIPS (spotlight). 2019**.

CODE

I'm on Github ([ae-foster](#)). My open source contributions include optimal experimental design support in **Pyro**, of which I am the main author, a PyTorch implementation of **SimCLR** and our own contrastive learning method **InvCLR**, and Redis support for **Datasketch**.