James Thornton

Education

2019 - 2023

PhD Research Student, Machine Learning Deptartment of Statistics
University of Oxford
Supervised by George Deligiannidis and Arnaud Doucet
Optimal Transport • Time-Series • Generative Modeling

2018 - 2019

Probationary Researcher Statistical Science
University of Oxford
Centre for Doctoral Training
Taught year

2015 - 2016

Master's in Statistics with Mathematics
University of Warwick
Distinction, supervised by Anthony Lee
- Tukey Award for top dissertation (89%)
- Statistics Department Scholarship

2012 - 2015

BSc Mathematics, Operational Research, Statistics and Economics
University of Warwick
First Class Honors (85%)
- Rank 1-3 each year
- Pearson Award for top performance (91%) 2014
- EY Scholarship

2010 - 2012

A-Levels
5 A*: Mathematics **(2 years early)**, Further Mathematics, Physics, Chemistry, Economics

Technical Skills

- Python, R, C++ (order of proficiency)
- SQL, Unix, git, Slurm, AWS, GCP
- PyTorch, Jax (Flax), TensorFlow

including Open Source contributions

Contact

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www.stats.ox.ac.uk/~thornton

www.github.com/JTT94

Experience

ML Research Intern (Part-time) **09/2021 - 10/2021**
Arabesque AI
Generative modeling, nowcasting and data imputation for time-series using score-based methods, GP-VAE and deep state-space models

Analyst | Markets and Analytics Group **2016 - 2018**
BlackRock

- Built out time-series, portfolio analysis, and optimization frameworks for €4-300bn portfolios using SQL, Perl, Python, R, C++.
- Worked across > 15 engagements from data-wrangling ~ 100GB datasets to predictive modeling, delivering over $\$10$mil revenue
- Communicated methodology to CEO and board-level clients.
- Developed and deployed software, sold for ∼€1mil.

Scholarship Intern **2012 - 2014**
EY
Scholarship award including consulting work during studies

Publications

- Differentiable Particle Filtering via Regularized Optimal Transport. *ICML 2021 (Oral/ Long talk, Top 3%, First Author).* Link
- Diffusion Schrodinger Bridge with Score-Based Generative Modeling. *NeurIPS 2021 (Spotlight, Top 3%, Second Author).* Link
- The Masked Bouncy Particle Sampler: Parallelized, Piecewise-Deterministic MCMC. Link

Seminar Talks and Workshops

- End-to-End Learning via Differentiable Particle Filtering
  CIRM: End-to-end Bayesian Learning Methods: Workshop, contributed talk.
- Diffusion Generative Modeling and the Schrodinger Bridge
  Aalto, Advances in Probabilistic ML 2021. Invited talk.
- Applications of Optimal Transport
  Arabesque AI, 2021. Invited talk.
- Differentiable Particle Filtering with Optimal Transport
  Waymo, Oxford 2021. Invited talk.

Academic Service and Teaching

Reviewer **2020 -**
- AISTATS 2021
- NeurIPS 2021: *Outstanding Reviewer Award*
- NeurIPS 2020

Class Tutor **2019 - 2020**
Department of Statistics, University of Oxford
Masters/ 4th year undergraduate Advanced Simulation Methods

Teaching Assistant **2019 - 2020**
Balliol College, University of Oxford
Calculus, Probability, Statistics and Data Analysis

Class Tutor **2015 - 2016**
Warwick University
Introduction to Analysis and Algebra, 1st year undergraduates