Jake Cunningham

jakehcunningham@outlook.com

Interests

My research interests are in developing Bayesian machine learning methods with a particular focus on applications in climate science and oceanography.

Education

Ph.D. Machine Learning 2021-Present
University College London, Department of Computer Science
Supervisor: Marc Deisenroth
- Currently researching efficient inference techniques for Gaussian processes, neural stochastic processes and generative models.

M.Sc. Computing (AI and Machine Learning) 2020-2021
Imperial College London, Department of Computing
Research Project: Stochastic Partial Differential Equations and Gaussian Processes
Supervisor: Mark van der Wilk
Grade: Distinction 82.8%

M.Eng. Engineering Science 2016-2020
University of Oxford, Keble College, Department of Engineering
Research Project: Modelling Global Distribution of Floating Microplastics
Supervisor: Ton van den Bremer
Grade: First Class Honours 75.6%

Publications

H.Jake Cunningham, D.de Souza, S.Takao, M.van der Wilk, M.P.Deisenroth (2023). Actually Sparse Variational Gaussian Processes. *Proceedings of the International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2023

H.J.Cunningham, C.Higgins, T.S.van den Bremer, The Role of the Unsteady Surface Wave-Driven Ekman–Stokes Flow in the Accumulation of Floating Marine Litter. *Journal of Geophysical Research: Oceans*, 2022

Employment History

National Oceanography Centre 2022-Present
Research Engineer
- Work on improving the detection and tracking of mesoscale eddy currents.
- Trained a neural diffusion process to generate a probabilistic model of ocean currents.

Mercury Labs 2021-Present
Data Scientist
- Designed zero-shot recommender systems for low-traffic small businesses.
- Built a product embedding model for cross-site product comparisons.

Waves and Flows Research Group, University of Oxford 2020
Research Assistant
- Modelled geophysical fluid dynamics of the upper ocean.
- Performed large particle tracking simulations to model the global distribution of floating microplastics.

AMR International 2019
Strategy Consultant
- Built quantitative models to assess investment risk.

Reviewing

- AISTATS 2022
- Gaussian Processes, Spatiotemporal Modeling, and Decision-making Systems, Workshop, NeurIPS 2022

Awards

Imperial Computing Distinguished project 2021
- Awarded for outstanding individual projects in terms of technical achievement.

Challenger Society for Marine Science Student Award 2020
- Awarded for demonstrating excellence in Marine Science Research.

Keble College Franklin Award 2020
- Awarded for best overall performance in 4th year Engineering Science.

Keble College Academic Scholarship 2018-2020

Technical Skills

Languages
Python, Matlab, Julia

Machine Learning Frameworks
PyTorch, TensorFlow, JAX, GPflow