

Emilien Dupont

<https://emiliendupont.github.io>

EDUCATION

- **University of Oxford** Oxford, UK
PhD Machine Learning Oct 2018 - Oct 2022
 - Supervised by Yee Whye Teh & Arnaud Doucet
 - Research interests: generative models, neural fields, neural rendering, neural ODEs and flows, neural compression
- **Stanford University** Stanford, CA
MS Computational and Mathematical Engineering Sept 2014 - Mar 2016
 - GPA: 4.02
- **Imperial College London** London, UK
BSc Theoretical Physics Oct 2010 - Jun 2014
 - Rank: 1/206 students, Grade: 87.2%

EXPERIENCE

- **Google DeepMind** London, UK
Research Scientist, Senior Research Scientist Jan 2023 - Oct 2024, Nov 2024 -
 - Research on LLMs for scientific discovery and neural compression
- **Google DeepMind** London, UK
Research Scientist Intern Mar 2021 - July 2021
 - Research with Danilo Rezende on generative models of neural networks with applications to computer vision
- **Apple** Oxford, UK
Part Time Research Intern Nov 2019 - June 2020
 - Part time research on neural rendering during PhD with collaborators at Apple
- **Apple** Seattle, WA
Research Intern June 2019 - Aug 2019
 - Research with Qi Shan on equivariant neural rendering
- **Schlumberger STIC** Menlo Park, CA
Machine Learning Scientist June 2016 - July 2018
 - Created, implemented and deployed machine learning algorithms to solve problems in time series, vision and geology, improving state of the art for several tasks
 - Research on deep generative models with a focus on learning interpretable representations
- **Gurobi Optimization** Palo Alto, CA
Software Engineering Intern June 2015 - Aug 2015
 - Researched, formulated and solved integer optimization models for a wide area of industry applications including energy, telecom and medicine
- **DTU Compute** Lyngby, Denmark
Research Intern June 2013 - Sep 2013
 - Research with Allan Engsig-Karup on sparse dynamics for PDEs

PUBLICATIONS

- [1] *J. Ball, L. Versari, **E. Dupont**, H. Kim, M. Bauer*, Good, Cheap and Fast: Overfitted Image Compression with Wasserstein Distortion, *CVPR 2025 Highlight*
- [2] *B. Romera-Paredes*, M. Barekatain*, A. Novikov*, M. Balog*, P. Kumar*, **E. Dupont***, F. Ruiz*, J. Ellenberg, P. Wang, O. Fawzi, P. Kohli, A. Fawzi**, Mathematical discoveries from program search with large language models, *Nature*
- [3] *H. Kim*, M. Bauer*, L. Theis, J. Schwarz, **E. Dupont****, C3: High-performance and low-complexity neural compression from a single image or video, *CVPR 2024*
- [4] *J. Xu, **E. Dupont**, K. Martens, T. Rainforth, Y. W. Teh*, Deep Stochastic Processes via Functional Markov Transition Operators, *NeurIPS 2023*
- [5] *M. Bauer*, **E. Dupont**, A. Brock, D. Rosenbaum, J. Schwarz, H. Kim**, Spatial Functa: Scaling Functa to ImageNet Classification and Generation, *ICLR 2023 Neural Fields Workshop*
- [6] ***E. Dupont***, Neural Networks as Data, *Thesis*
- [7] ***E. Dupont***, H. Loya*, M. Alizadeh, A. Golinski, Y. W. Teh, A. Doucet*, COIN++: Neural Compression Across Modalities, *TMLR 2022*
- [8] ***E. Dupont***, H. Kim*, A. Eslami, D. Rezende, D. Rosenbaum*, From data to functa: Your data point is a function and you can treat it like one, *ICML 2022*
- [9] ***E. Dupont***, A. Golinski*, M. Alizadeh, Y. W. Teh, A. Doucet*, COIN: COmpression with Implicit Neural representations, *ICLR 2021 Neural Compression Workshop Spotlight*
- [10] ***E. Dupont**, Y. W. Teh, A. Doucet*, Generative Models as Distributions of Functions, *AISTATS 2022 Oral*
- [11] *M. Hutchinson*, C. Le Lan*, S. Zaidi*, **E. Dupont**, Y. W. Teh, H. Kim*, LieTransformer: Equivariant self-attention for Lie Groups, *ICML 2021*
- [12] ***E. Dupont**, M. A. Bautista, A. Colburn, A. Sankar, C. Guestrin, J. Susskind, Q. Shan*, Equivariant Neural Rendering, *ICML 2020*
- [13] ***E. Dupont**, A. Doucet, Y. W. Teh*, Augmented Neural ODEs, *NeurIPS 2019*
- [14] ***E. Dupont**, S. Suresha*, Probabilistic Semantic Inpainting with Pixel Constrained CNNs, *AISTATS 2019*
- [15] ***E. Dupont***, Learning Disentangled Joint Continuous and Discrete Representations, *NeurIPS 2018*
- [16] ***E. Dupont**, T. Zhang, P. Tilke, L. Liang, W. Bailey*, Generating Realistic Geology Conditioned on Physical Measurements with GANs, *ICML 2018 TADGM Workshop*

AWARDS

- Google DeepMind Scholarship 2018
PhD funding, 150,000 USD
- Schlumberger Out of the Ordinary Award 2018
Award for extraordinary technical achievements
- Digital Forum Innovation Award 2017
Schlumberger award for most innovative project among 300+ submissions
- Schlumberger AI Leader 2016
Elected as leader of the 1000+ AI community within Schlumberger
- Governor's Prize 2014
Ranked 1st of 206 students in Physics at Imperial College London

TEACHING

- Teaching Assistant, SB2.1, Statistical Inference Oxford, 2020
- Teaching Assistant, SB2.2, Statistical Machine Learning Oxford, 2019
- Teaching Assistant, CME 102, Ordinary Differential Equations Stanford, 2016

SKILLS

- Programming
 - *Experienced*: Python
 - *Familiar*: C++, Matlab, JavaScript, Scala (Spark)
- Frameworks
 - *Deep Learning*: Pytorch, Jax, Haiku, Keras
 - *Visualization*: d3, plotly
- Languages
 - *Fluent*: Danish, English, French
 - *Intermediate*: German

PROJECTS

- **Visualizations**
Created d3 based **interactive visualizations** of mathematical concepts, data and generative art
- **Open source paper implementations**
Open sourced code for several deep learning papers with ★1000+ on **Github**

ACADEMIC SERVICES

- Co-organizer of the ICLR 2023 Workshop *Neural Fields across Fields: Methods and Applications of Implicit Neural Representations*
- Reviewer: ICLR 2025 Weight Space Learning Workshop, ICLR 2023, AISTATS 2022, ICLR 2022, ICLR 2021 (*Outstanding reviewer award*), NeurIPS 2020 (*Outstanding reviewer award*), ICML 2020 (*Top reviewer award*), NeurIPS 2019 (*Top reviewer award*)

INVITED TALKS

- Compression by overfitting 2024
NeurIPS 2024 Neural Compression Workshop Keynote
- FunSearch: Mathematical discoveries through program search with LLMs 2024
CVPR 2024 Multimodal Algorithmic Reasoning Workshop Keynote
- FunSearch: Mathematical discoveries through program search with LLMs 2024
Schmidt Futures
- FunSearch: Mathematical discoveries through program search with LLMs 2024
UC Berkeley
- Compression with neural fields 2023
VQEG
- The Curse of Discretization and Learning Distributions of Functions 2021
ML Collective
- Representational Limitations of Invertible Models 2020
ICML 2020, INN+ Workshop

- Combining Physics and Machine Learning with Neural ODEs 2019
Abingdon, UK
- Deep Learning for Prognostics and Health Management Tutorial 2017
Prognostics and Health Management Conference, Tampa Bay, FL
- Deep Learning Applications Panel 2017
Prognostics and Health Management Conference, Tampa Bay, FL

LINKS

- emiliendupont.github.io
- github.com/EmilienDupont
- observablehq.com/@emiliendupont
- twitter.com/emidup
- linkedin.com/in/emiliendupont
- scholar.google.com/citations?user=IY5WyIEAAAAJ