Cian Eastwood

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Summary

A versatile machine-learning researcher whose Ph.D. focused on preparing models for new contexts, with proven expertise in robustness, adaptation, generalization, fine-tuning, and self-supervised learning.

Education

PhD Candidate in Machine Learning — *Sept 2018 – Current*
University of Edinburgh & Max Planck Institute for Intelligent Systems, Tübingen — *UK & Germany*

- Supervisors: Prof. Chris Williams and Prof. Bernhard Schölkopf.
- Thesis: "Shift happens: How can we best prepare machine learning systems?"
- Research: robustness, out-of-distribution generalization, domain adaptation, fine-tuning, in-context learning, self-supervised learning, causality, representation learning and disentanglement.
- Awards: Enlightenment Scholarship, NUI Travelling Doctoral Studentship.

MSc in Artificial Intelligence – Distinction (84%) — *Sept 2016 – Sept 2017*
University of Edinburgh — *UK*

- Thesis: "Experiments with information-maximising generative adversarial networks"
- Courses: Various courses in AI, e.g. probabilistic modelling and reasoning, pattern recognition and natural language processing.
- Awards: **Best Thesis**, The Informatics Scholarship, UK/EU Masters Scholarship.

Exchange Program — *Aug 2014 – Dec 2014*
University of Toronto — *Canada*

- Courses: Programming languages, computer networks, compilers, and formal methods of software design.

BSc in Computer Science – First-Class Honours (88%) — *Sept 2012 – June 2016*
National University of Ireland (NUI), Maynooth — *Ireland*

- Thesis: Minimising Volatility, Maximising Diversification.
- Courses: Broad range of courses in computer science and mathematics.
- Awards: Intel Medal—**graduated top of class**, STEM Scholarship, Entrance Scholarship.

Professional Experience

Student Researcher (PhD) — *Sept – Dec 2023*
Google DeepMind — *London, UK*

- Large-scale generative transformers for continuous data (see [1]).

Research Scientist Intern — *Jun 2023 – Aug 2023*
Spotify — *London, UK*

- Learning representations of high-dimensional treatments (e.g., playlists).
- Part of the Causal Inference Lab.

Research Intern (AI) — *Aug – Dec 2022; Jan – April 2023*
Meta — *New York, USA; London, UK*

- Self-supervised representation learning for improved downstream performance (see [2]).
- Part of FAIR Labs.

Research Assistant — *Nov 2017 – Sept 2018*
University of Edinburgh — *Edinburgh, UK*

- Deep generative models for human motion synthesis with Prof. Taku Komura.
- Collaborative research environment.

Intern Analyst — *Feb 2015 – Aug 2015*
Accenture — *Dublin, Ireland*

- Large-scale professional software development within an agile team.

Publications

[1] "GIVT: Generative Infinite-Vocabulary Transformers"
M Tschannen, **C Eastwood**, F Mentzer
Preprint, Under Review (2023)

[2] "Self-Supervised Disentanglement by Leveraging Structure in Data Augmentations"
C Eastwood, J von Kügelgen, L Ericsson, D Bouchacourt, P Vincent, B Schölkopf, M Ibrahim
NeurIPS 2023 Workshops on Self-Supervised Learning and Causal Representation Learning

[3] "Spuriosity Didn't Kill the Classifier: Using Invariant Predictions to Harness Spurious Features"
C Eastwood*, S Singh*, A Nicolicioiu, M Vlastelica, J von Kügelgen, B Schölkopf
37th Conference on Neural Information Processing Systems (NeurIPS 2023)

[4] "DCI-ES: An Extended Disentanglement Framework with Connections to Identifiability"
C Eastwood*, A Nicolicioiu*, J von Kügelgen*, A Kekić, F Träuble, A Dittadi, B Schölkopf
11th International Conference on Learning Representations (ICLR 2023)

[5] "Probable Domain Generalization via Quantile Risk Minimization"
C Eastwood*, A Robey*, S Singh, J von Kügelgen, H Hassani, G J Pappas, B Schölkopf
36th Conference on Neural Information Processing Systems (NeurIPS 2022)

[6] "Align-Deform-Subtract: An Interventional Framework for Explaining Object Differences"
C Eastwood*, N Li*, C K I Williams
ICLR 2022 Workshop on Objects, Structure and Causality

[7] "On the DCI Framework for Evaluating Disentangled Representations: Extensions and Connections to Identifiability"
C Eastwood*, A Nicolicioiu*, J von Kügelgen*, A Kekić, F Träuble, A Dittadi, B Schölkopf
UAI 2022 Workshop on Causal Representation Learning

[8] "Source-Free Adaptation to Measurement Shift via Bottom-Up Feature Restoration"
C Eastwood*, I Mason*, C K I Williams, B Schölkopf
10th International Conference on Learning Representations (ICLR 2022, **Spotlight**)

[9] "Unit-Level Surprise in Neural Networks"
C Eastwood*, I Mason*, C K I Williams
NeurIPS 2021 Workshop "I Can't Believe it's Not Better" and PMLR 163:33-40 (**Spotlight & Didactic Award**)

[10] "Learning Object-Centric Representations of Multi-Object Scenes from Multiple Views"
N Li*, **C Eastwood***, R Fisher
34th Conference on Neural Information Processing Systems (NeurIPS 2020, **Spotlight**)

[11] "A Framework for the Quantitative Evaluation of Disentangled Representations"
C Eastwood*, C K I Williams
6th International Conference on Learning Representations (ICLR 2018)

Awards

2022 NeurIPS Top Reviewer
2022 ICLR Highlighted Reviewer
2019 NUI Travelling Doctoral Studentship in Artificial Intelligence
2018 University of Edinburgh Enlightenment PhD Scholarship
2017 Informatics Dissertation Prize (Award for best thesis in the MSc Artificial Intelligence)
2016 Informatics Masters Scholarship
2016 UK/EU Masters Scholarship
2016 The Intel Medal (Award for best results in the BSc Computer Science)
2012 NUI Undergraduate STEM Scholarship
2012 NUI Undergraduate Entrance Scholarship
2012 600 points in The Leaving Certificate (Final secondary-school exams, 99.7th percentile nationally)

Invited Talks

[A] "Distribution shift and causal/disentangled representations"
Computational Intelligence, Vision, and Robotics Lab, New York University, December 2022

[B] "Probable domain generalization via quantile risk minimization"
Copenhagen Causality Lab, University of Copenhagen, November 2022 (virtual)

[C] "Shift happens: How can we best prepare?"
(Neuro)Science of Deep Learning Group, Massachusetts Institute of Technology, November 2022 (virtual)

[D] "Tackling distribution shift and out-of-disitribution generalization"
Seminar on Out-of-Distribution Generalization, Saarland University, November 2022 (virtual)

Community Service/Engagement

2023	Reviewer: ICLR, ICML; Organizing Committee: Conference on Causal Learning and Reasoning (CLeaR); Co-Organizer: NeurIPS Causal Representation Learning workshop.
2022	Reviewer: NeurIPS, ICLR.
2021	Reviewer: NeurIPS.

Skills

Programming	Python (PyTorch, JAX, Pandas, NumPy, Scikit-learn. etc.)
Miscellaneous	Linux, Shell (Bash/Zsh), LaTeX, Git

References available upon request.