Branton DeMoss

Contact

bdemoss@robots.ox.ac.uk
www.brantondemoss.com
+44 (0)7926 576225

St Edmund Hall
Queen's Lane, Oxford
OX1 4AR, UK

Summary

Working at the intersection of reinforcement learning, world modeling, planning, and complexity theory to build autonomous agents which think ahead to act in the world.

Education

DPhil Candidate in Artificial Intelligence 2021-
University of Oxford

BA Mathematics and Physics 2018
University of Colorado Boulder

Visitor Mathematical and Theoretical Physics 2016-17
University of Oxford

Experience

Oxford Robotics Institute 2021-
Graduate Student Researcher
- Research in reinforcement learning, world models, imitation learning, and complexity.

The Collaboratory 2020-23
Co-founder; Chief Science Officer
- Deep learning on language and graphs for knowledge curation.
- Led product strategy, design, and ML R&D.

Comma.ai 2020
ML Research Intern
- Reinforcement learning for self-driving cars.

Front Range Geosciences 2017-20
Machine Learning Engineer
- Developed computer vision system for seismic data.

Center for Theory of Quantum Matter 2017
Research Assistant
- Studied quantum many-body localization under Floquet conditions.

Mathematics Department, CU Boulder 2016
Research Assistant
- Investigated knot-theoretic properties of topological quantum field theories.

High Enery Particle Physics Group, Physics Department, CU Boulder 2014-15
Research Assistant
- Monte Carlo simulations for the Deep Underground Neutrino Experiment.

Publications

Understanding Generalization by Compression 2024
Preparing for submission

LUMOS: Language-Conditioned Imitation Learning with World Models 2024
Under submission

These New Agents, This New Garden 2024
To appear in Palladium Magazine

DITTO: Offline Imitation Learning with World Models 2023
Under submission

Combining physics and deep learning to automatically pick first breaks in the Permian Basin 2021
First International Meeting for Applied Geoscience & Energy

Ein Liebesbrief an KataGo 2020
Deutsche Go Zeitung, Ausgabe 4/2020

Love Letter to KataGo, or: Go AI Past, Present, and Future 2020
American Go E-Journal

DeepTrace: A breakthrough application of deep learning to automate first break picking 2019
SEG 2019 Lenovo Thought Leadership Series

Topology and Knot Theory 2016
Course notes for CU Boulder special topics course:
"Topology, Knot Theory, and their applications in Physics and Chemistry"

Secondary Particle Showers from Hadron Absorber Interactions 2016
Deep Underground Neutrino Experiment (DUNE) Collaboration Documents

Teaching

Physics of Information and Complexity 2024
Oxford, HT 24

Philosophy of Emergence 2024
Oxford, HT 24

Topics in Reinforcement Learning 2023
Oxford, MT 23

Rocket League Behaviour Cloning from Unlabelled Data 2023
Supervised Master's Thesis, Oxford

Awards

Research Studentship Oxford, 2021
Stribic-Martin Scholarship Boulder, 2017
UROP Fellowship Boulder, 2017
Dawkins Fund Award Oxford, 2016
Gilman Scholarship Oxford, 2016
Esteemed Scholar Award Boulder, 2014