Dan Ley

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EDUCATION

UNIVERSITY OF CAMBRIDGE | 2017-21

Course: M.Eng Engineering (Double First) | Supervised by Dr Adrian Weller and Umang Bhatt

Masters project in Explaining Uncertainty in Deep Learning | Award for outstanding project (top 5%)

1st paper accepted to 3 ICLR workshops, 2nd to 4 ICML workshops. Combined paper accepted to AAAI 2022 (first author).

1st Year: Class I - 87% (12th of 324) 2nd Year: Class I - 83% (12th of 310) 3rd Year: Pass (No Classing) 4th Year: Distinction

Coursework: Probabilistic ML, Practical Optimisation, Computational Statistics, Data Compression, Bayesian Inference

Software engineering project for the design, development, testing and maintenance of a logic simulation program in Python

EXETER MATHEMATICS SCHOOL & QUEEN ELIZABETH'S ACADEMY TRUST | 2010-17

A-Levels: 4 A*s in Mathematics, Further Mathematics, Physics and Chemistry (college award for Academic Excellence in Maths)

GCSEs: 13 A*s including Maths, English and Triple Science (school award for Highest Academic Achievement)

EXPERIENCE

JPMORGAN CHASE & CO (AI RESEARCH SCIENTIST) | October 2021 - Present

Canary Wharf, London, UK (Work From Home Hybrid)

- Explainable AI research on global counterfactual explanations, implementing a state-of-the-art (NeurIPS) method and identifying inefficiencies, proposing a modified method that executes 8 times faster for the same performance

UNIVERSITY OF CAMBRIDGE (RESEARCH ASSISTANT) | July - September 2021 (8 Weeks)

Cambridge, Cambridgeshire, UK (Work From Home)

- Continuation of MEng research on explaining uncertainty in deep learning; training models in PyTorch for generation of counterfactual explanations (Bayesian Neural Networks, Variational Autoencoders)
- Exploring the notion of a distribution over counterfactual explanations for a single input and finalising AAAI'22 submission

JPMORGAN CHASE & CO (SOFTWARE ENGINEER) | July - August 2020 (5 Weeks)

Bournemouth, Dorset, UK (Work From Home)

- Object-oriented programming in a finance setting using Python (testing with pytest), Flask, sklearn, tensorflow and SQL
- Planned a solution for a disaster relief charity to port 40% of in-person training to online training and initiated contact with a software-service company to discuss technical and financial details of our solution (£200k+ annual savings proposed)

IMAGINATION TECHNOLOGIES LTD (HARDWARE ENGINEER) | July - September 2019 (12 Weeks)

Kings Langley, Hertfordshire, UK

- Co-inventor on 3 separate pending patent applications for arithmetic hardware designs with improved PPA (Power, Performance, Area) over industry standards; worked with the datapath team in an R&D environment
- Learnt to rapidly interpret code from past/current team members and make changes (Linux, Python, Perforce, VHDL)

PUBLICATIONS

(1) D. Ley, U. Bhatt, and A. Weller. Diverse, Global and Amortised Counterfactual Explanations for Uncertainty Estimates. In Thirty-Sixth AAAI Conference on Artificial Intelligence, 2022.

`https://arxiv.org/abs/2112.02646`

(2) D. Ley, U. Bhatt, and A. Weller. Diverse and Amortised Counterfactual Explanations for Uncertainty Estimates. In ICML Workshop on Algorithmic Recourse, 2021.

`https://sites.google.com/view/recourse21/accepted-papers`

(3) D. Ley, U. Bhatt, and A. Weller. δ-CLUE: Diverse Sets of Explanations for Uncertainty Estimates. In ICLR Workshop on Security and Safety in Machine Learning Systems, 2021.

`https://arxiv.org/abs/2104.06323`

Honours

Scholar of Corpus Christi College, University of Cambridge (2021)

University of Cambridge Information Engineering Prize for Outstanding Research Project – Top 5% of Students (2021)

Travel Award for ICLR Workshop on Security and Safety in Machine Learning Systems (2021)

Dewhurst Scholarships for Outstanding Examination Performance (2018-2021)

Computing/Software Development

Completed Udemy's Machine Learning A-Z™: Hands-On Python & R In Data Science (Python sections)

Full marks in Python based computing module in first year examinations

Designed, built and maintained calvaryexeter.co.uk for a local church using HTML & CSS in Adobe Dreamweaver (2016-Present)

Group student Python project for text-recognition and characterisation of PDF reports for the UK Hydrographic Office (2016)

Independently built a downloadable computer game with currently over 100,000 downloads online (2012-13)

Mathematical Background

90% average in First, Second and Third Year Mathematics Modules - Highest Scoring Modules (2017-20)

Senior Team Mathematics Challenge Regional Final Winners and National Final Competitors (2016 & 2017)

British Mathematical Olympiad Qualification through Senior Mathematical Challenge (2016)

50,000 hits on Brilliant.org online through published problems/solutions to mathematics problems

Ranked 1st of over 220,000 users on the JobFlare app (speed tests for cognitive abilities)

Sporting Achievement

Football coach for Corpus Christi College FC, University of Cambridge (2021-Present)

Marathon and Double Marathon Runner (2020 & 2021)

Competitive football for Cambridge University Blues and Cambridge City FC Development (2017-2021)

Languages

Passive Cantonese (listening), University Spanish module (equivalent to B2 level Spanish), GCSE French and Spanish at A*