Alistair Letcher

Personal Information

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aletcher.github.io

Education

2017–2018 **MSc in Mathematics and Foundations of Computer Science**, *Oxford University*, UK
Ranked 1st with an average of 94.4%. Thesis: *Stability and Exploitation in Differentiable Games*.

2013–2017 **Master of Mathematics**, *Durham University*, UK
Ranked 1st with an average of 93%. Thesis: *Algebraic Features of Multiple Zeta Values*.

Publications

2022 **Polymatrix Competitive Gradient Descent**, *preprint*.

2022 **COLA: Consistent Learning with Opponent-Learning Awareness**, *preprint*.

2021 **On the Impossibility of Global Convergence in Multi-Loss Optimization** *[ICLR]*.

2020 **Ridge Rider: Diverse Solutions by Following Eigenvectors of the Hessian** *[NIPS]*.

2019 **Differentiable Game Mechanics** *[JMLR]*.

2019 **Stable Opponent Shaping in Differentiable Games** *[ICLR]*.

2018 **Automatic Conflict Detection in Police Body-Worn Audio** *[ICASSP]*.

Research Code

2021 **Global Convergence in Differentiable Games**, Jupyter Notebook.

2020 **Stable Opponent Shaping (and other algorithms)**, Jupyter Notebook.

Awards

2018 **Outstanding Poster Award** at the *Joint Mathematics Meetings*, San Diego.

2018 **Richard Bird Prize**, best thesis in Oxford Computer Science.

2017 **Iain MacPhee Memorial Prize**, best thesis in Durham Mathematics.

2017 **Tony Corner Prize**, highest-ranked student in Durham Mathematics.

2015/2016 **Vice-Chancellor's Scholarship for Academic Excellence** (twice).

Research / Work Experience

2018–2019 **Modelling / ML Expert**, *L2F*, EPFL Innovation Park, Switzerland
Full-time job in a start-up affiliated to EPFL; developed quant models using ideas from combinatorics and machine learning. Coding experience in Python (Pandas, TensorFlow, PyTorch).

July 2019 **Eastern European Machine Learning Summer School**, Bucharest, Romania
Accepted with scholarship to present my work on multi-agent learning.

June–July 2017 **Research Project**, *Institute of Pure and Advanced Mathematics*, UCLA, United States
Funded research project entitled *Automatic Conflict Detection in Police Body-Worn Audio*.

July 2016 **Undergraduate Summer School**, *London Mathematical Society*, UK
Nominated and funded by the LMS. Two weeks of courses and problem-solving in pure mathematics.

June–July 2015 **Research Project**, *Department of Mathematics*, Durham University, UK
Funded research projet on the stochastic dynamics of microtubule growth.