Dylan M. Sandfelder

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EDUCATION

University of Oxford — Oxford, UK
Doctor of Philosophy, Engineering Science — **Expected 2027**
Fully funded by the Oxford-Man Institute of Quantitative Finance (OMI)

University of Oxford — Oxford, UK
Master of Science, Advanced Computer Science — **Aug. 2022**
Received Distinction on Thesis | Received Merit Overall

McGill University — Montréal, QC
Bachelor of Science, Honors Computer Science — **Dec. 2020**
Minor in Mathematics | Received Distinction Overall (GPA: 3.86/4.00)

RESEARCH AND TEACHING EXPERIENCE

University of Oxford (DPhil Researcher), Oxford, UK — **Oct. 2023 – Present**

- Supervised by Prof. Xiaowen Dong on a doctoral thesis at the intersection of **machine learning, applied mathematics, and quantitative finance**, focusing on **graph representation learning**
- Co-supervised by Prof. Mihai Cucuringu through Oxford's Department of Statistics
- Fully funded by the Oxford-Man Institute of Quantitative Finance as an international student

University of Oxford (MSc Researcher), Oxford, UK — **Jan. 2022 – Aug. 2022**

- Supervised by Ismail Ceylan for a Distinction-level master's thesis on the relational inductive bias of GNNs
- Collaborated with Oxford computer science researchers and ran experiments on Oxford's ARC cluster

MILA (Research Assistant), Montréal, QC — **May 2020 – May 2021**

- Worked with Prof. William Hamilton at the Montréal Institute of Learning Algorithms to develop novel graph neural network frameworks using PyTorch and PyTorch Geometric
- Built and ran high-intensity graph learning models on clustered computer nodes
- Published work on building a graph taxonomy in a workshop paper to NeurIPS 2021

McGill University (Researcher), Montréal, QC — **Jan. 2020 – May 2020**

- Supervised by Prof. William Hamilton for an honour's project on higher-order models leveraging ego-nets
- Won a McGill Science Undergraduate Award for my work with ego-net graph neural networks
- Published the project as a special session paper in IEEE-ICASSP 2021

Kouzhu Educational Technology (Lecturer), Nanjing, China — **Jun. 2017 – Aug. 2017**

- Taught classes in China on robotic design and the principles of good software development
- Built and programmed working robots with STEM students as a teaching tool
- Received excellent official reviews from students and other participants

LEADERSHIP AND INDUSTRY EXPERIENCE

Amorphous AI (CTO), London, UK **Jul. 2024 – Present**

- Built and deployed a multi-agentic AI platform for structuring and reasoning on health data
- Awarded a Balliol Interdisciplinary Institute grant and 1st place in the Oxford Multi-Agent AI hackathon

Record Financial Group (Quantitative Analyst Intern), London, UK **Jul. 2024 – Aug. 2024**

- Investigated novel momentum strategies for bond futures across international markets
- Developed and implemented tradeable quantitative methods exploiting bond future momentum
- Presented the strategy to board members and showed how it fits into the firm's existing strategy ecosystem

Kumo AI (Resident Applied ML Engineer), Mountain View, CA **Sep. 2022 – Jun. 2023**

- Ran high-intensity graph neural network models on large customer datasets to predict future business metrics and give insight to clients
- Improved model efficiency by 20% by innovating network architecture
- Derived and implemented an auto-regressive framework improving GNN performance across many tasks

Piriko (Co-Founder, CTO), Montréal, QC **Feb. 2018 – Aug. 2022**

- Raised $100k and negotiated a partnership with Concordia University making Piriko their group-study app
- Created an app with a hybrid TypeScript code base for iOS and Android using Ionic
- Designed and integrated a DynamoDB database using an AWS NodeJS backend

Medtronic (Software Engineering Intern), Boston, MA **Jun. 2018 – Aug. 2018**

- Collaborated with a team of senior developers on critical product software in the field of surgical robotics
- Solved complicated feedback control issues using Simulink/MATLAB controllers, Python, C++, and C
- Implemented automated testing code to record and playback robotic movements in real-time

AWARDS

- 1st place Oxford Multi-Agent AI hackathon **2024**
- Balliol Interdisciplinary Institute grant **2024**
- Scholarship from Oxford-Man Institute (fully funded) **2023**
- McGill Science Undergraduate Research Award **2020**
- International RoboSub Competition Finalist **2017**

PUBLICATIONS

- *Sandfelder, Dylan and Cucuringu, Mihai and Dong, Xiaowen, "Data-Driven Graph Filters via Adaptive Spectral Shaping," GSP 2025 - Graph Signal Processing Workshop (GSP), 2025*
- *Oliveira, Daniel and Sandfelder, Dylan and Fujita, André and Dong, Xiaowen and Cucuringu, Mihai, Tactical Asset Allocation with Macroeconomic Regime Detection (March 18, 2025). Available at SSRN: https://ssrn.com/abstract=5183762 or http://dx.doi.org/10.2139/ssrn.5183762*
- *D. Sandfelder, P. Vijayan and W. L. Hamilton, "Ego-GNNs: Exploiting Ego Structures in Graph Neural Networks," ICASSP 2021 - 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2021, pp. 8523-8527.*
- *Liu, Renming, et al. "Towards a Taxonomy of Graph Learning Datasets." Presented at the Data-Centric AI Workshop at NeurIPS 2021, December 2021.*