

Joseph O'Brien

PHD STUDENT

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🎓 Education

University of Limerick

PHD IN APPLIED MATHEMATICS

Limerick, Ireland

2017 -

- Mathematical modeling of social spreading phenomena within complex systems
- Supervisor: Professor James P. Gleeson
- Expected graduation: 2021

BSC IN FINANCIAL MATHEMATICS

2013 - 2017

- Graduated top of my class with 1st class honours GPA - 3.9/4.

📄 Publications

Journal Articles

A generalized framework for simultaneous long-short feedback trading

IEEE Trans. on Automatic Control

J.D. O'BRIEN, M.E. BURKE, AND K. BURKE

Jul 2020

Quantifying uncertainty in a predictive model for popularity dynamics

Physical Review E

J.D. O'BRIEN, A. ALETA, Y. MORENO, AND J.P. GLEESON

Jun 2020

A generalization of the classical Kelly betting formula to the case of temporal correlation

IEEE Control Systems Letters

J.D. O'BRIEN, K. BURKE, M.E. BURKE, AND B.R. BARMISH

Jun 2020

Spreading of memes on multiplex networks

New Journal of Physics

J.D. O'BRIEN, I.K. DASSIOS, AND J.P. GLEESON

Jun 2019

Under Review

Hierarchical route to the emergence of leader nodes in real-world networks

J.D. O'BRIEN, K.A. OLIVEIRA, J.P. GLEESON, AND M. ASLLANI

Dec 2020

A complex networks approach towards ranking professional Snooker players

J.D. O'BRIEN, AND J.P. GLEESON

Oct 2020

Identification of skill in an online game: The case of Fantasy Premier League

J.D. O'BRIEN, J.P. GLEESON, AND D.J.P. O'SULLIVAN

Sep 2020

🏆 Grants, Fundings, & Awards

Best Presentation Award

Dublin, Ireland

7TH IRISH SIAM STUDENT CONFERENCE

2020

- Awarded best talk for my presentation *O'Sullivan, Hendry, Davies,...? A complex networks approach to ranking professional Snooker players.*

SIAM Certificate of Recognition

Philadelphia, USA

SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS

2020

- Awarded in recognition of outstanding efforts and accomplishments on behalf of the SIAM Chapter at the University of Limerick.

Best Talk Award

Oxford, UK

OXFORD SIAM-IMA STUDENT CONFERENCE

2019

- My talk entitled *Spreading of memes on multiplex networks* based on work undertaken during my PhD was deemed the best at this conference.

Short Term Scientific Mission Award

MATHEMATICS FOR INDUSTRY NETWORK

- €2,000 grant to fund my research visit to Prof. Yamir Moreno's group at BIFI, University of Zaragoza.

Zaragoza, Spain

2019

COST Action

CONFERENCE ORGANISER SUPPORT GRANT

- €2,800 grant to fund a week-long mathematical modeling workshop with over 25 participants organized during my presidency by the SIAM Student Chapter.

Limerick, Ireland

2018

Regional Winner - Mathematics & Physics

UNDERGRADUATE AWARDS

- Awarded for best undergraduate contribution in Mathematics & Physics on the Island of Ireland for my final year thesis *The Theory of Feedback Based Stock Trading*. This programme received a total of 6,472 submissions from nearly 300 institutions across 47 countries.

Dublin, Ireland

2017

Doctoral Studies Scholarship

SCIENCE FOUNDATION IRELAND

- Funding of €104,000 to undertake my doctoral studies under the title *Mathematical modeling of social spreading phenomena within complex systems*.

Limerick, Ireland

2017

Science & Engineering Summer Research Scholarship Programme

UL40

- €2,000 scholarship competitively awarded within the University of Limerick to fund my ten week internship in MACSI researching *Lévy Copulas for Dependent Random Variables*.

Limerick, Ireland

2017

All Ireland Scholarship

UNDERGRADUATE AWARDS

- €26,000 scholarship received as a result of me placing in the 99.7th percentile nationwide in my final secondary level exams. Scholarship provided me with funding throughout my undergraduate degree.

Dublin, Ireland

2013

Presentations

Dec 2020	O'Sullivan, Hendry, Davies,...? A complex networks approach to ranking professional Snooker players	7 th Irish SIAM Student Conference
Dec 2020	Quantifying uncertainty in a predictive model for popularity dynamics (Poster)	Conference on Complex Systems
Nov 2020	Branching Processes and their Application to Popularity Dynamics	naXys, Namur Institute for Complex Systems (Invited Seminar)
Sep 2020	Anderson-like localization in real-world non-normal networks	NetSci 2020
Sep 2020	Identification of skill in an online game: The case of Fantasy Premier League	7 th Edition of Quantifying Success - NetSci
Dec 2019	What Makes a Good (Fantasy) Football Manager?	satRdays Cardiff 2019
Dec 2019	How many likes do you think this will get?: Predicting self-exciting processes	6 th Irish SIAM Student Conference
Jul 2019	Spreading of memes on multiplex networks	IC ² S ² - International Conference on Computational Social Science
May 2019	Branching Processes and their Application to Social Spreading Phenomena	University of Oxford Networks Group (Invited Seminar)
Apr 2019	Spreading of memes on multiplex networks	Oxford SIAM-IMA Student Conference
Mar 2019	The Effects of Memory and Innovation on Random Copying Mechanisms	Complanet 2019

Teaching, Outreach, & Professional Service

Review Activity

I HAVE BEEN A REVIEWER FOR THE FOLLOWING JOURNALS

- Science Advances
- New Journal of Physics
- IEEE Transactions on Automatic Control
- Chaos Solitons & Fractals
- IEEE Control System Letters
- Mathematics and Computers in Simulation

Short Informal Mathematics (SIM) Talks

ORGANIZER

- Organizer of weekly interdisciplinary seminar series hosted at the University of Limerick.

Sep. 2018 - Present

Society for Industrial and Applied Maths (SIAM)

STUDENT CHAPTER

Oct. 2017 - Present

- Held a number of positions including President and Treasurer of the University of Limerick SIAM student chapter.
- This involved organization of several events ranging from a national postgraduate conference to a week-long student mathematical modeling research group which involved over 25 students both undergraduate and postgraduate from a range of countries.

Supervision

UNDERGRADUATE THESIS

Oct. 2019 - May 2020

- Supervised Sean McBrearty, a final-year mathematics student, on his undergraduate thesis entitled *A Large Scale Data Analysis of Player Behaviour over a Season of Fantasy Premier League*.

Teaching

UNIVERSITY OF LIMERICK - DEPARTMENTAL TEACHING

Oct. 2017 - Present

- Teaching assistant for a range of applied mathematics and statistical modules to both mathematics students as well as those in degrees such as business and engineering including: Calculus 1/2, Applied Business Statistics, Engineering Mathematics 1
- Have given several lectures throughout my studies to a mixture of both undergraduate and postgraduate students in the following modules: *Stochastic Differential Equations for Finance* and *Calculus 1*