

# James McAllister – CV

PhD Researcher – Mathematical Neuroscience

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Intelligent Systems Research Centre

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🐙 [GitHub Profile](#)

🌐 [LinkedIn Profile](#)

## EDUCATION

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- **Ulster University, Intelligent Systems Research Centre** 2023 – present  
*PhD, Mathematical Neuroscience*
- **Queen's University, Belfast** 2022–2023  
*MRes (Research Methods) – Distinction*
- **Queen's University, Belfast** 2018–2019  
*PGCE (Mathematics) – GTCNI Star Award and E. Fulton Prize for Mathematics*
- **Trinity College Dublin** 2014–2018  
*MA (Dubl) Mathematics – First class honours with Gold Medal*

## EXPERIENCE

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- **Ulster University** September 2023 – present  
*Postgraduate Teaching Assistant*  
– Leading tutorials in Mathematics modules for computing, engineering, and artificial intelligence  
Magee Campus
- **Wellington College** 2019–2022  
*Teacher of Mathematics, Further Mathematics and Physics*  
Belfast

## RESEARCH PROJECTS, PUBLICATIONS, AND PRESENTATIONS

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- **Heterosynaptic plasticity rules induce small-world network topologies** Due 2024  
*International Conference of Mathematical Neuroscience*
- **The capacity and accuracy of a triple well Hopfield model** 2023  
*Intelligent Systems Research Centre Computational Neuroscience Autumn School Project*
- **A discrete attractor model of decision making** 2023  
*Using dynamical systems to model decision-making processes – Neuromatch Academy Project*
- **The topology of autistic heterogeneity** 2022/23  
*Research Project*
- **The impact of formative assessment on student attitudes to mathematics** 2022/23  
*A synthesis of the literature*
- **Insights from a multilevel analysis of high-stakes examination results in mathematics** 2021  
*Cantley, I., & McAllister, J. <https://doi.org/10.1007/s11199-021-01234-5>*
- **Georg Cantor: Trigonometric Series and the Emergence of Transfinite Set Theory** 2017/18  
*Final Year Research Dissertation. First class (distinction). Academic poster display*
- **Complex Numbers in Mathematics Education** 2017/18  
*Mathematics Education Research Project. First class (distinction)*

## SKILLS AND INTERESTS

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**Languages:** English, German, French, British Sign Language

**Programming Languages:** Python, Julia, MATLAB, SPSS

**Other Developer Tools:** LaTeX, Microsoft, Google Suite

**Areas of Interest:** Mathematical modelling of synaptic plasticity, network theory, applications of topology and geometry, functional analysis, mathematical biology, assessment theory

## ACHIEVEMENTS

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- **Gold Medal, Trinity College Dublin** *2018*
- **Naughton Foundation Scholarship** *2014–2018*
- **Exhibition Award, Trinity College Dublin** *2014*
- **Trinity College Dublin Sizarship** *2014–2018*
- **E. Fulton Prize for Mathematics (PGCE), QUB** *2019*
- **GTCNI Star Award** *2019*

## COURSES, TRAINING, AND TALKS

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Computational Neuroscience Autumn School (1 week): 10/23, Intelligent Systems Research Centre, Ulster University

Computational Neuroscience Neuromatch Academy Summer School (3 weeks): 07/2023

INCF (International Neuroinformatics Coordinating Facility): Computational Modelling of Neuronal Plasticity - Python-based modelling course

Faculty of Education, Cambridge University. Title: The gender similarities hypothesis: Insights from a multilevel analysis of high-stakes examination results in mathematics, 03/2020, research article and presentation.

## REFEREES

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**Referee 1:** Dr Cian O'Donnell, PhD Supervisor, Computational Neuroscience, School of Computing, Engineering & Intelligent Systems, Ulster University. c.odonnell2@ulster.ac.uk

**Referee 2:** Prof Paschalis Karageorgis, Associate Professor, Pure & Applied Mathematics, School of Mathematics, Trinity College Dublin, karageop@tcd.ie