Miguel O'Malley

Curriculum Vitae

Personal Information

Citizenship **US Citizen**

Education

2017–2023 **PhD, Mathematics**, *Wesleyan University*, Middletown, CT
Advisor: Sara Kalisnik

2013–2017 **BA, Mathematics Major**, *The College of New Jersey*, Ewing, NJ
Graduated Cum Laude

Publications

2023 **Alpha magnitude**, *Miguel O'Malley, Sara Kalisnik, Nina Otter*
Journal of Pure and Applied Algebra

2024 **Approximately Optimal Search on a Higher-dimensional Sliding Puzzle**, *Nono SC Merleau, Miguel O'Malley Sayan Mukherjee, Erika Roldan*
Preprint, 2024.

2023 **Magnitude, alpha magnitude, and applications.**, *Miguel O'Malley*
PhD thesis.

Awards

2016 **Junior Achievement Award**, *The College of New Jersey*
2017 **Phi Beta Kappa Inductee**, *TCNJ Chapter*

Research Experience

Wesleyan University — Worked with Sara Kalisnik and Nina Otter on topics such as magnitude, alpha magnitude, topological data analysis, fractal dimension, and related concepts

Max Planck Institute and ScaDS.AI — Worked in Erika Roldan's stochastic topology group to produce research related to problems encoded in interactive media, such as games.

Development Experience

Max Planck Institute and ScaDS.AI — Developer for the Fence Challenge app. fence-challenge.vercel.app

Conference Talks and Poster Presentations

September 22-29 2021	**Spoke at VII Mexican Workshop on Geometric Topological Data Analysis** CIMAT
April 26-30 2021	**Presented poster (Persistent) Magnitude and Data at Topological Data Analysis** IMSI
June 22-24 2022	**Attended ATMCS 10** ATMCS
October 19 2022	**Spoke at AATRN**, *https://www.youtube.com/watch?v=rY5rSKvm-mU*, Alpha Magnitude AATRN
Jan 5 2024	**Spoke in the JMM AMS Special Session on Applied Topology: Theory, Algorithms, and Applications, III** AMS
March 23 2024	**Spoke at the DataShape Seminar at Inria Saclay** Inria

Outreach and Public Events

March 5 2024	**Presented projects at the MPI math lab outreach event** Max Planck Institute
March 8-9 2024	**Presented the Fence Challenge with the MPI for the SPIN 2030 Science Festival in Dresden** Max Planck Institute, Saxon State Ministry for Science, Culture and Tourism
March 14 2024	**Presented the Fence Challenge as part of the International day of Mathematics event at the University of Geneva** Uni. Geneva, ScaDS.AI

Teaching Experience

Fall 2022	**Elements of Calculus (Instructor)** Wesleyan University, Middletown, CT, USA
Spring 2022	**Point Set Topology Spring 2022 (Teaching Assistant)** Wesleyan University, Middletown, CT, USA
Fall 2021	**Elements of Calculus (Instructor)**, *Wesleyan University, Middletown, CT, USA*
Spring 2021	**Abstract Algebra Spring 2021 (Teaching Assistant)** Wesleyan University, Middletown, CT, USA
Fall 2020	**Elements of Calculus (Instructor)** Wesleyan University, Middletown, CT, USA
Spring 2020	**Differential Equations Spring 2020 (Teaching Assistant)** Wesleyan University, Middletown, CT, USA
Fall 2019	**An Introduction to Probability Fall 2019 (Teaching Assistant)** Wesleyan University, Middletown, CT, USA
Spring 2019	**Elementary Statistics Spring 2019 (Teaching Assistant)** Wesleyan University, Middletown, CT, USA

Fall 2018   **Math Workshop Fall 2018 (Tutor)**
             Wesleyan University, Middletown, CT, USA

Spring 2018 **Multivariable Calculus Spring 2018 (Teaching Assistant)**
             Wesleyan University, Middletown, CT, USA

Fall 2017   **Calculus II (Teaching Assistant)**
             Wesleyan University, Middletown, CT, USA

━━━━━━━   Skills

Development experience in C#, C++, Python, Javascript, Svelte, Unity, Matlab, and Tensorflow.

Experience managing databases and database functions for research projects with data collection aspects.

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08/04/2024