

**Sean James O'Connor**  
**Johns Hopkins University, Class of 2023**  
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**Field of Interest: Mathematics and Computer Science**

With a particular focus on Homotopy Type Theory and related areas, including type theory, constructive mathematics, and computer formalization/proof assistants.

**Experience**

- **Adjoint School Participant** **University of Strathclyde, Glasgow**  
**Semester-long program, unpaid** **February 2022 – July 2022**

Participated in the Applied Category Theory Adjoint School 2022 program, in the “Fuzzy Type Theory for Opinion Dynamics” group, headed by Paige North with Hans Riess as the TA. The Adjoint School consisted of a semester of online meetings in which a variety of different applied category theory papers were presented, along with an in-person research week in July immediately followed by the Applied Category Theory Conference 2022. During this conference I also gave a talk about my group’s findings from the previous week.

- **CMU Summer Undergraduate**  
**Applied Mathematics Institute REU** **Carnegie Mellon University, PA**  
**Eight-week program, paid** **June 2021 – July 2021**

Participated in CMU’s SUAMI research experience for undergraduates, where I along with five other students conducted research under David Offner in groups of three. We investigated a particular topic in graph theory and have come up with several novel results that we are in the process of trying to get published. Our work was also accepted to be presented at the 2022 Joint Mathematics Meeting.  
<https://www.cmu.edu/math/undergrad/suami/2021/index.html>

- **PILOT Program** **Johns Hopkins University, MD**  
**Semester-long program, paid** **August 2020 – December 2021**

Led multiple peer-lead team learning groups, where I helped encourage collaboration and promote effective review of the material. During the first semester of the 2020-2021 year, I was a PILOT Leader for Calculus II for Engineering majors. During the second semester of the 2020-2021 year, I was a PILOT Leader for Linear Algebra. During the first semester of the 2021-2022 year, I was a PILOT Leader for Physics I for Biology majors.

**Most Recent Awards:**

- **Scored 21/120 on the 2021 Putnam (Rank 329 out of 2,975)**
- **Dean’s List for all Five Semesters thus far at Johns Hopkins University (3.97/4.00 GPA, 4.00/4.00 Math & CS GPA)**

- **Johns Hopkins University Hodson Scholar Recipient**
- **National Merit Scholarship Finalist**

## Education

- **Johns Hopkins University, Class of 2023** **Baltimore, MD**
  - **Major:** Mathematics and Computer Science
  - **STEM curriculum:**
    - o Graduate: Topics in Homotopy Type Theory, Combinatorics and Graph Theory in CS
    - o Honors: Linear Algebra, Multivariable Calculus, Analysis I, Analysis II, Discrete Mathematics, Complex Analysis, Algebra I
    - o Non-Honors: Intermediate Programming (C/C++), Computer System Fundamentals, Data Structures, Automata and Computation Theory, Functional Programming in Software Engineering, Differential Equations, Intro to Optimization, Intro to Probability, Classical Mechanics 1, Electricity and Magnetism 1, Special Relativity and Waves
    - o Study Abroad: Groups Rings and Modules, Topics in Analysis
- **Study Abroad at Cambridge University:**
  - o Studied abroad at Pembroke College, Cambridge University during the spring of 2022. Here I took “Groups, Rings, and Modules”, a part IB paper, and “Topics in Analysis”, a part II paper.
- **Directed Reading Program:**
  - o Participated in the JHU DRP during the second semester of the 2020-2021 year; studying type theory under the guide of a graduate student in mathematics
- **Computer Skills:**
  - o Languages: JAVA, Python, C/C++, MATLAB, LaTeX, OCaml, Agda, Lean
  - o CAD Design: Autodesk Inventor Professional 2019
  - o MS Word, Excel, PowerPoint, Google Docs, Emacs, VSCode

## Leadership Positions

- **JHU Club: Treasurer of DSAGA** **2020 – 2021**
  - o Elected in early 2020, continued participation through 2020-2021 year. Will resume my position during the fall of 2022. DSAGA is the undergraduate LGBTQ+ club on campus.