

Ioannis Markakis

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RESEARCH EXPERIENCE

- **Research Associate** September 2025 - September 2027
University of Cambridge
– Project: “Latent Space Semantics for Dependent Type Theory”
Cambridge, United Kingdom
- **Research Assistant** October 2024 - August 2025
University of Cambridge
– Project: “New Categorical Foundations for Compositional Computer Science”
Cambridge, United Kingdom

EDUCATION

- **PhD in Computer Science** October 2020 - September 2025
University of Cambridge
– Thesis title: “An inductive approach to ω -categories and their computads”
– Supervisor: Prof. Jamie Vicary
– Submission: 27 September 2024
– Defense: 3 February 2025
– Graduation: 25 July 2025
Cambridge, United Kingdom
- **Master of Science in Mathematics** September 2017 - May 2020
University of Maryland
– Thesis title: “Cardinal powers and Silver’s theorem”
– Supervisor: Prof. Michael Chris Laskowski
– GPA: 4.0/4.0
College Park, Maryland, United States
- **Bachelor of Science in Mathematics** September 2013 - May 2017
University of Crete
– Grade: “Excellent” 9.34/10
– Class Rank: 1st out of 97 students in the academic year 2016-2017
– Erasmus exchange at the University of Barcelona during the 3rd year of studies
– Completed 6 graduate-level courses
Heraklion, Greece

PUBLICATIONS

- **Articles**
- [1] T. Benjamin and I. Markakis. *Hom ω -categories of a computad are free*. *Journal of the London Mathematical Society* 112.6 (2025).
- [2] T. Benjamin, I. Markakis, W. Offord, C. Sarti, and J. Vicary. *Naturality for higher-dimensional path types*. *Proceedings of the 40th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS 2025)*. 2025.
- [3] T. Benjamin, I. Markakis, and C. Sarti. *CaTT contexts are finite computads*. *Electronic Notes in Theoretical Informatics and Computer Science*. Vol. 4 - Proceedings of MFPS XL. 2024, 5.
- [4] C. J. Dean, E. Finster, I. Markakis, D. Reutter, and J. Vicary. *Computads for weak ω -categories as an inductive type*. *Advances in Mathematics* 450 (2024).
- [5] I. Markakis. *Computads for generalised signatures*. *Journal of Pure and Applied Algebra* 228.9 (2024).

• Preprints

- [1] T. Benjamin, I. Markakis, W. Offord, C. Sarti, and J. Vicary. *Higher Eckmann-Hilton Arguments in Type Theory*. Preprint. 2025.
- [2] T. Benjamin and I. Markakis. *Invertible cells in ω -categories*. Preprint. 2024.
- [3] D. I. Dais and I. Markakis. *Computing minimal generating systems for some special toric ideals*. Preprint. 2017.

• Formalisation

- [1] I. Markakis. *Agda formalisation of computads for ω -categories*. 2023.

SCIENTIFIC TALKS

• Category Theory 2024

Title: Opposite and hom weak ω -categories

April 2024

Santiago, Spain

• Masaryk University Algebra Seminar

Title: A novel approach to ω -categories

April 2024

Brno, Czech Republic

• 107th Peripatetic Seminar on Sheaves and Logic

Title: Computads for generalised signatures

April 2023

Athens, Greece

• 30th Yorkshire and Midlands Category Theory Seminar

Title: Computads for generalised signatures

March 2023

Birmingham, United Kingdom

• Topology, Algebra and Categories in Logic 2022

Title: Computads for weak ω -categories

June 2022

Coimbra, Portugal

TEACHING EXPERIENCE

• Lecturer

University of Cambridge

October 2025 - December 2025

Cambridge, United Kingdom

– Lectured the Part II course “Denotational Semantics”

• Supervisor

University of Cambridge

October 2020 - October 2025

Cambridge, United Kingdom

– Supervised undergraduate computer science students in groups of 2 - 3 for the courses “Discrete Mathematics” (Michaelmas 2020, 2021, and 2024), “Logic and Proof” (Lent 2022, 2023, 2024, and 2025) “Computation Theory” (Lent 2023)

– Organized lab sessions for the graduate course “Advanced Topics in Category Theory” (Lent 2023 and 2025)

• Graduate Teaching Assistant

University of Maryland

September 2017 - May 2020

College Park, Maryland, United States

– Independent instruction for the course “College Algebra and Trigonometry” (Fall 2017)

– Teaching assistance for the courses “Precalculus” (Fall 2018 and 2020) and “Calculus I” (Spring 2018)

– Graded weekly assignments for the undergraduate courses “Introduction to Abstract Algebra” (Spring 2019) and “Axiomatic Set Theory” (Spring 2019) as well as the graduate courses “Logic I” (Fall 2020) and “Algebraic Geometry I” (Fall 2020)

• Undergraduate Teaching Assistant

University of Crete

Spring 2014 and 2016

Heraklion, Crete, Greece

– Exercise tutorials for groups of 50 - 100 students for the course “Foundations of Mathematics”

AWARDS AND SCHOLARSHIPS

• College Scholarships

Fitzwilliam College

March and November 2022

Cambridge, United Kingdom

– Two scholarships for academic excellence in doctoral studies

• Departmental Scholarship

University of Cambridge

Sep 2020

Cambridge, United Kingdom

– Four-year doctoral scholarship from the Department of Computer Science and Technology at the University of Cambridge

- **Graduate Scholarship**
Onassis Foundation
 – Four-year doctoral scholarship for studies at the University of Cambridge

October 2020 - September 2024
 Vaduz, Liechtenstein
- **“Stylianos Pichorides” Award**
University of Crete
 – Award from the Department of Mathematics and Applied Mathematics for excellence in undergraduate studies

November 2016
 Heraklion, Greece
- **“Chrysanthos and Anastasia Karydis” Award**
University of Crete
 – Award for the highest entrance score in the Department of Mathematics and Applied Mathematics

July 2016
 Heraklion, Greece
- **“Forward for Education” Award**
Eurobank
 – Award for excellent performance in the Panhellenic Examinations (University Entrance Examinations)

October 2013
 Heraklion, Greece
- **Bronze Medal**
Hellenic Mathematical Society
 – Award for performance in the Greek Mathematical Olympiad “Archimedes”

April 2010
 Athens, Greece

OTHER ACADEMIC ACTIVITIES

- **Theory and Applications of Categories**
Reviewer
 – Reviewed papers for the journal

June 2025
- **12th Symposium on Compositional Structures**
Program Committee Member
 – Reviewed two papers for the conference

April 2024
 Birmingham, United Kingdom
- **Logical Methods in Computer Science**
Reviewer
 – Reviewed papers for the journal

October 2023
- **28th and 32nd Yorkshire and Midlands Category Theory Seminar**
Workshop Organizer
 – Responsible for local organization

September 2022 and August 2023
 Cambridge, United Kingdom
- **Applied Category Theory 2021**
Conference Organizer
 – Responsible for program organization and communication with speakers
 – Support for remote participation

June 2021
 Cambridge, UK