

# Iason (Jason) Milionis

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## EDUCATION

<b>Columbia University</b> Doctor of Philosophy (Ph.D.) Candidate in Computer Science Master of Philosophy (M.Phil.) in Computer Science (awarded May 2024) Master of Science (M.S.) in Computer Science (awarded May 2022)	September 2021 - Present <i>New York, NY</i>
<b>National Technical University of Athens (NTUA)</b> Master of Engineering (M.Eng.): Joint degree in Electrical & Computer Engineering	September 2016 - June 2021 <i>Athens, Greece</i>

• Working with the [CS Theory Group](#)  
• Ph.D. Advisors: Prof. Christos Papadimitriou & Prof. Tim Roughgarden. GPA: 4.0/4.0

- 1st in class, GPA: 10.00/10.00, valedictorian, graduated with the highest GPA in the 200-year long history of NTUA
- Thesis: “Regression with unbounded covariates under differentially private learning constraints”
- Thesis Advisor: Prof. Dimitris Fotakis, CoReLab (Computation & Reasoning Laboratory)

## CONFERENCE & JOURNAL PUBLICATIONS

<b>The Early Days of the Ethereum Blob Fee Market and Lessons Learnt</b>	FC 2025
• with Lioba Heimbach	
<b>Swim till you sink: Computing the limit of a game</b>	SAGT 2024
• with Rashida Hakim, Christos Papadimitriou, Georgios Piliouras • <b>Best Paper</b> award of the 17th International Symposium on Algorithmic Game Theory	
<b>A Myersonian Framework for Optimal Liquidity Provision in Automated Market Makers</b>	ITCS 2024
• with Ciamac C. Moallemi, Tim Roughgarden	
<b>An impossibility theorem in game dynamics</b>	PNAS 2023
• Proceedings of the National Academy of Sciences of the United States of America, volume 120, no. 41 • with Christos Papadimitriou, Kelly Spendlove, Georgios Piliouras	
<b>Automated Market Making and Arbitrage Profits in the Presence of Fees</b>	FC 2024, FC DeFi 2023 (abstract)
• with Ciamac C. Moallemi, Tim Roughgarden	
<b>Complexity-Approximation Trade-offs in Exchange Mechanisms: AMMs vs. LOBs</b>	FC 2023
• with Ciamac C. Moallemi, Tim Roughgarden	
<b>Automated Market Making and Loss-Versus-Rebalancing</b>	ACM CCS DeFi 2022
• with Ciamac C. Moallemi, Tim Roughgarden, Anthony Lee Zhang • Informed AMM design and ignited follow-up on approaches for mitigating Loss-Versus-Rebalancing (LVR) • Invited poster presentation at the Data Science Institute (DSI) <a href="#">Financial and Business Analytics Center</a> • Selected for inclusion in the DSI Data Science Day 2024 poster and demo session	
<b>A Framework for Single-Item NFT Auction Mechanism Design</b>	ACM CCS DeFi 2022
• with Dean Hirsch, Andy Ardit, Pranav Garimidi • Selected for the Association for Computing Machinery (ACM) Showcase, to further the outreach beyond academics	
<b>Nash, Conley, and Computation: Impossibility and Incompleteness in Game Dynamics</b>	SAGT 2022
• with Christos Papadimitriou, Georgios Piliouras, Kelly Spendlove	
<b>Differentially Private Regression with Unbounded Covariates</b>	AISTATS 2022
• with Alkis Kalavasis, Dimitris Fotakis, Stratis Ioannidis	

## PROFESSIONAL & ADVISORY EXPERIENCE

<b>Research Intern, Crypto</b> <i>Andreessen Horowitz Capital Management (a16z)</i>	June 2024 - August 2024 <i>New York, NY</i>
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- Ph.D. research internship on market design

**Crypto Researcher Intern** June 2023 - August 2023  
New York, NY  
*Jump Trading*

- Ph.D. research internship looking into transaction fee structures and price discovery on AMMs

**Technical AI Safety Fellow** July 2023 - August 2023  
New York, NY  
*Columbia AI Alignment Club (CAIAC), Columbia Effective Altruism (CUEA)*

- Selected as a Fellow by the Columbia AI Alignment Club

**Research Fellow** January 2023 - May 2023  
New York, NY  
*Uniswap Labs*

- Conducted applied research on the competitiveness of liquidity providers in automated market makers
- Worked with Austin Adams, Xin Wan

**Research Intern** June 2022 - August 2022  
Athens, Greece  
*Archimedes Research Center*

- Ph.D. research internship at the summer AI intern program, working on the group of Optimization Theory.

**Uniswap Lead, Blockchain@Columbia** May 2022 - December 2022  
New York, NY  
*Governance Protocol Leader*

- Posted technical opinions that helped shape decisions in the Uniswap Governance community ([example](#))
- Mentored members on technical, societal aspects of governance, and treasury allocation for grant funding
- Interviewed candidates for board membership at the Blockchain Club, and planned board meeting agendas

**Affiliate, Center for Digital Finance and Technologies** September 2022 - Present  
New York, NY  
*School of Engineering and Applied Sciences, Columbia University*

- Inaugural affiliate of the Center, invited by the Center Director, Prof. Agostino Capponi
- The Center leverages multi-disciplinary expertise at Columbia to advance the digital transformation of financial services for higher efficiency and security, increased accessibility, and greater social responsibility

## RESEARCH TALKS, INTERVIEWS & INVITATIONS

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**Invited poster at Young Researchers Workshop of Cornell University ORIE** October 10, 2024  
Ithaca, NY  
*A Myersonian Framework for Optimal Liquidity Provision in Automated Market Makers*

**Invited panelist alongside industry practitioners and academics** August 6, 2024  
New York, NY  
*The Concurrent Toxic Flow Proposers*

**FinsureTech Conference 2024** July 1, 2024  
Zurich  
*The economics of decentralized exchanges and LVR (loss-versus-rebalancing)*

**Tutorial at The Twenty-Fifth ACM Conference on Economics and Computation (EC'24)** June 26, 2024  
New Haven, CT  
*Automated Market Makers and Loss-versus-Rebalancing (LVR): a Deep Dive into Decentralized Finance*

**Ninth Marketplace Innovation Workshop (MIW 2024)** May 21, 2024  
Online  
*A Myersonian Framework for Optimal Liquidity Provision in Automated Market Makers*

**Invited panelist alongside industry practitioners and academics** May 15, 2024  
New York, NY  
*The LVR Solution Space*

**Carnegie Mellon University (CMU) Secure Blockchain Summit** April 16, 2024  
Pittsburgh, PA  
*LVR (loss-versus-rebalancing) and the economics of decentralized exchanges*

**Cornell University Theory Tea** April 10, 2024  
Ithaca, NY  
*Modern auction design considerations: on auctioneer and inter-bidder incentives*

**Twenty-Eighth International Conference on Financial Cryptography and Data Security (FC 2024)** March 4, 2024  
Curaçao  
*Automated Market Making and Arbitrage Profits in the Presence of Fees*

**Econ-DeFi Seminar, Department of Economics, UC Santa Barbara** March 1, 2024  
Online  
*The Effect of Trading Fees on Arbitrage Profits in Automated Market Makers*

**15th Innovations in Theoretical Computer Science Conference (ITCS 2024)** February 1, 2024  
Berkeley, CA  
*A Myersonian Framework for Optimal Liquidity Provision in Automated Market Makers*

<b>Mathematical Finance Seminar Series, Department of Statistics, Columbia University</b> <i>Quantifying Loss in Automated Market Makers (Loss-Versus-Rebalancing/LVR)</i>	November 30, 2023 New York, NY
<b>Constantinos Daskalakis research group meeting, Department of EECS, MIT</b> <i>What do game dynamics uncover about the meaning of the game?</i>	November 22, 2023 Boston, MA
<b>Interviewed at the Bell Curve Podcast</b> <i>The LP Profitability Problem: LVR, Dynamic Fees and Auctions</i>	October 3, 2023 New York, NY
<b>The Science of Blockchain Conference 2023, Stanford University</b> <i>Automated Market Making and Arbitrage Profits in the Presence of Fees</i>	August 28, 2023 Palo Alto, CA
<b>Workshop on Decentralized Finance (DeFi), Twenty-Seventh International Conference on Financial Cryptography and Data Security (FC 2023)</b> <i>How Do Trading Fees Affect Arbitrage Profits?</i>	May 5, 2023 Brač, Croatia
<b>Twenty-Seventh International Conference on Financial Cryptography and Data Security (FC 2023)</b> <i>Complexity-Approximation Trade-offs in Exchange Mechanisms: AMMs vs. LOBs</i>	May 1, 2023 Brač, Croatia
<b>ACM Conference on Computer and Communications Security (CCS)</b> <b>Workshop on Decentralized Finance and Security 2022</b> <i>Quantifying Loss in Automated Market Makers</i>	November 11, 2022 Los Angeles, CA
<b>ACM Conference on Computer and Communications Security (CCS)</b> <b>Workshop on Decentralized Finance and Security 2022</b> <i>A Framework for Single-Item NFT Auction Mechanism Design</i>	November 11, 2022 Los Angeles, CA
<b>Carnegie Mellon University (CMU) Security and Privacy Institute (CyLab)</b> <b>Crypto Seminar Series</b> <i>Automated Market Making and Loss-Versus-Rebalancing (LVR)</i>	October 27, 2022 Pittsburgh, PA
<b>Panelist at the CBER (Crypto and Blockchain Economics Research Forum) Symposium</b> <i>Decentralized Exchanges</i>	October 20, 2022 Online
<b>15th International Symposium on Algorithmic Game Theory (SAGT) 2022</b> <i>Nash, Conley, and Computation: Impossibility and Incompleteness in Game Dynamics</i>	September 14, 2022 Colchester, UK
<b>The 25th International Conference on Artificial Intelligence and Statistics (AISTATS 2022)</b> <i>Differentially Private Regression with Unbounded Covariates (poster presentation)</i>	March 30, 2022 Online
<b>Simons Institute for the Theory of Computing, University of California Berkeley (UCB)</b> <i>Dynamical Systems, Games, and Topology: a relationship in formation</i>	March 8, 2022 Berkeley, CA
<b>Columbia CS Theory Student Seminar</b> <i>Dynamical Systems, Games, and Topology: an introduction</i>	New York, NY February 24, 2022

## HONORS & AWARDS

<b>Onassis Foundation Scholarship</b>	September 2024 - 2026
<b>A.G. Leventis Foundation Educational Grant</b>	2024 - 2025
<b>Two Sigma PhD Fellowship Recipient</b>	March 2024
<b>Professional Development and Leadership (PDL) Scholarship</b> Won the highly competitive scholarship by Columbia University School of Engineering	Fall 2024
<b>Columbia CS Department Service Award</b> In recognition of superior achievement and in honor of the integrity, curiosity, and creativity exhibited	May 2022
<b>General Michael Arnaoutis Foundation Scholarship</b> Scholarship for post-graduate studies, cash prize	May 2021
<b>Excellence Award (State Scholarships Foundation &amp; Ministry of Education)</b> For graduating 1st in the class of 2021 among all graduating students of the ECE School at NTUA	July 2022
<b>Chrisovergi and Kondouli Honorary Awards</b> Awarded by NTUA Dean's Council for graduating 1st in class among all students of the Department of ECE and <b>across all Departments</b> of NTUA, respectively	March 2022

<b>Kary Honorary Award</b> Medal accompanying the award, awarded by the NTUA Dean's Council for the highest GPA among all classes of the ECE School at NTUA	2016-2017, 2017-2018, 2018-2019, 2019-2020
<b>Thomaidio Honorary Award</b> First Award by the NTUA Dean's Council for the highest GPA among all classes across NTUA Departments	2016-2017, 2017-2018, 2018-2019, 2019-2020
<b>Silver Medal (2018) and Bronze Medal (2017) in SEEMOUS</b> representing Greece (South Eastern European Mathematical Olympiad for University Students)	2017, 2018
<b>Christos Papakyriakopoulos Honorary Award and Nikolaos Kritikos Scholarship</b> For the best academic performance and excellence in Mathematics during the first year of studies at NTUA	2016-2017

## ACADEMIC SERVICE

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### Program Committee (PC) Member

- 26th ACM Conference on Economics and Computation (EC'25)
- USENIX Security Symposium (USENIX 2025)
- Twenty-Eighth International Conference on Financial Cryptography and Data Security (FC 2025)
- Second Annual The Latest in DeFi Research Conference (TLDR 2025)
- International Conference on Advances in Financial Technologies (AFT 2024)
- Workshop on Scalability & Interoperability of Blockchains (SIB 2024): **Program Committee Co-Chair**
- The Latest in DeFi Research Conference (TLDR 2024)
- Workshop on Decentralized Finance (DeFi), Twenty-Eighth International Conference on Financial Cryptography and Data Security (FC 2024)
- International Conference on Advances in Financial Technologies (AFT 2023)
- Workshop on Decentralized Finance (DeFi), Twenty-Seventh International Conference on Financial Cryptography and Data Security (FC 2023)

### Reviewer

- Operations Research journal
- 16th Innovations in Theoretical Computer Science Conference (ITCS 2025)
- 38th Annual Conference on Neural Information Processing Systems (NeurIPS 2024)
- Finance & Stochastics journal
- AIMS (American Institute of Mathematical Sciences) Frontiers of Mathematical Finance journal
- Journal of Economic Dynamics and Control (JEDC)
- 15th Innovations in Theoretical Computer Science Conference (ITCS 2024)
- 2024 ACM-SIAM (Association for Computing Machinery - Society for Industrial and Applied Mathematics) Symposium on Discrete Algorithms (SODA 2024)
- 2023 Special Issue on The Microstructure of Decentralized Finance, Applied Mathematical Finance journal
- ACM Distributed Ledger Technologies: Research and Practice (DLT) journal
- 50th EATCS (European Association for Theoretical Computer Science) International Colloquium on Automata, Languages and Programming (ICALP 2023)

## LEADERSHIP & MENTORSHIP EXPERIENCE

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<b>Coordinator, Columbia CS Theory Student Seminar</b>	Fall 2022, Spring 2023, F2023, S2024, F2024, S2025
• Organized research talks to be given by Ph.D. students at the Columbia CS theory student weekly seminar	
<b>Mentor, Women in Science at Columbia (WISC)</b>	Fall 2023, Spring 2025
• Mentored advanced undergraduates of diverse gender identities to prepare for their future career	
<b>Mentor, Columbia Undergraduate Seminar in Theoretical Computer Science</b>	Fall 2024
• Co-led a group of advanced undergraduates on research-focused seminar on Decentralized Finance and Game Theory	
<b>Department Representative for Computer Science</b>	Fall 2024, Spring 2025
• Elected by the graduate student body to serve in the Engineering Graduate Student Council	
• Tactical member of the Academic Affairs Committee	
<b>Mentor, Columbia Undergraduate Seminar in Theoretical Computer Science</b>	Spring 2023
• Lectured on recent prediction markets research (game theory, economics and computer science)	

- Advised a group of advanced undergraduate students in theoretical computer science on their presentations for the student-run seminar on computer science

**Reviewer, Columbia CS PhD Pre-Submission Application Review (PAR) Program**

Fall 2022

- Volunteer reviewer of application materials from under-represented groups to promote diversity and equity

**TEACHING EXPERIENCE**

**Head Teaching Assistant (TA), “Analysis of Algorithms” (CSOR 4231)**

Spring 2024

- Developed and graded problem sets, and semester project, held office hours and review sessions

**Graduate Teaching Assistant (TA), “Reading the CS Classics” (COMS 6998)**

Spring 2023

- Organized research paper discussions and assignments, graded students’ paper presentations, and evaluated students’ final research papers
- Ph.D.-level course (Topics in Computer Science, COMS 6998) taught by Prof. Christos Papadimitriou

**TA, “Cryptography”**

Fall 2020

- Created problem sets, held office hours, graded students’ homework assignments and final research projects in this graduate-level course
- Lectured on blockchain consensus-related topics

**TA, “Introduction to Programming” & “Programming Techniques”**

Fall & Spring 2017-2020

- Assisted students with the laboratory exercises for the courses, and prepared course materials for teaching C & C++

**VOLUNTEERING**

**Vice-Chair, IEEE NTUA Student Branch**

October 2018 - January 2020

- Arranged technical talks by distinguished technological companies’ guests, met with Dean to discuss future plans and funding of the branch, and managed yearly competitive programming contest
- While in office, our Branch was awarded the **IEEE Region 8 Exemplary Student Branch Award**.

**Programming Experience & Analytical Skills:** Python, C++, Matlab, Wolfram Mathematica, SQL