Marios Papachristou

PERSONAL INFORMATION	E-mail	mp2242@cornell.edu
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	Website	papachristoumarios.github.io
	Nationality	Greek, US Permanent Resident (Green Card Holder)

RESEARCH INTERESTS

Algorithms, Network Economics, Supply Chains, Systemic Risk, LLMs, Differential Privacy, Machine Learning, Data Mining, Computational Social Science

EDUCATION

Cornell University *2020 – Expected 2025*
Ph.D. in Computer Science, Minor: *Applied Mathematics*
  – *Advisor:* Jon Kleinberg

M.S. in Computer Science *2020 – 2022*

National Technical University of Athens *2015 – 2020*
Diploma in Electrical and Computer Engineering
Major: *Computer Science.*
  – *Advisor:* Dimitris Fotakis
  – Top 2% of graduating class

INDUSTRY EXPERIENCE

Microsoft Research *Summer 2023*
Office of Applied Research, *with Chin-Chia Hsu and Longqi Yang*

Twitter *Summer 2022*
User Modeling Research Group, *with Rishab Goel, Frank Portman, Matt Miller*

SELECTED HONORS & AWARDS

  – **LinkedIn Ph.D. Fellowship** *2022*
    One-year fully funded fellowship by LinkedIn. Acceptance rate 14%.
  – **Onassis Scholarship** *2023*
    Three-year fellowship for Greek Ph.D. students. Acceptance rate: 16%.
  – **A.G. Leventis Scholarship** *2022*
    Award for graduate students of Greek origin. Acceptance rate 12.5%.
  – **Chateaubriand Fellowship** *2022*
    Fellowship granted by the French Embassy in the US for studies in France (declined for personal reasons). Acceptance rate 33%.
  – **Cornell Fellowship** *2020*
    One-year fully funded fellowship by the CS department based on "exceptional preparation and promise".
  – **IEEEXtreme 11.0 Programming Competition** *2017*
    Top 1% worldwide in IEEE's algorithms competition.

PAPERS
Google Scholar Profile
$\alpha\beta$ = alphabetical order
$*$ = equal contribution

Selected Papers

[S1] **Optimal Resource Allocation for Remediating Networked Contagions**
Marios Papachristou, Sid Banerjee, Jon Kleinberg
Major Revision (submitted R&R), Management Science, 2024
[preprint]

[S2] **Group Decision-Making among Privacy-aware Agents**
Marios Papachristou, Amin Rahimian
R&R at Operations Research, 2024

Preliminary version presented at the Theory and Practice of Differential Privacy Workshop (TPDP)
[preprint] [talk]

[S3] **Network Formation and Dynamics among Multi-LLMs**
Marios Papachristou, Yuan Yuan
Working Paper, 2024
[preprint] [slides]

[S4] **Structural Measures of Resilience for Supply Chains**
Marios Papachristou, Amin Rahimian
Under review at Management Science, 2024
[preprint] [code] [slides]

[S5] **Allocating Stimulus Checks in Times of Crisis**
Marios Papachristou, Jon Kleinberg
ACM Web Conference (WWW), 2022
[paper] [code] [talk] [slides] [news]

Journal Papers

[J1] **Differentially Private Distributed Estimation and Learning**
Marios Papachristou, Amin Rahimian
IISE Transactions, 2024
[paper] [code] [talk]

[J2] **Sublinear Domination and Core–periphery Networks**
Marios Papachristou
Scientific Reports (Nature Portfolio), 2021
[paper] [code]

[J3] **Truncated Log-concave Sampling for Convex Bodies with Reflective Hamiltonian Monte Carlo**
$^{\alpha\beta}$Apostolos Chalkis, Vissarion Fisikopoulos, *Marios Papachristou*, Elias Tsigaridas
ACM Transactions on Mathematical Software (TOMS), 2023
[paper] [code]

[J4] **Commons-based peer production and digital fabrication: The case of a RepRap-based, Lego-built 3D printing-milling machine**
Vasilis Kostakis*, and *Marios Papachristou**
Telematics and Informatics, 2014
[paper]

Refereed CS Conference Proceedings

[C1] **Dynamic Interventions for Networked Contagions**
Marios Papachristou, Sid Banerjee, Jon Kleinberg
ACM Web Conference (WWW), Economics and Markets Track, 2023
[paper] [code] [poster] [slides]

[C2] **Core-periphery Models for Hypergraphs**
Marios Papachristou, Jon Kleinberg
ACM Intl. Conf. on Knowledge Discovery and Data Mining (KDD), 2022
[paper] [code] [data] [slides] [poster]

[C3] **Allocating Stimulus Checks in Times of Crisis**
Marios Papachristou, Jon Kleinberg
ACM Web Conference (WWW), Economics and Markets Track, 2022
[paper] [code] [talk] [slides] [news]

[C4] **Software Clusterings with Vector Semantics and the Call Graph**
Marios Papachristou
ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), 2019
[paper] [code] [data]
(ESEC/FSE Student Research Competition Finalist Paper)

Preprints & Working Papers

[WP1] **Optimal Resource Allocation for Remediating Networked Contagions**
Marios Papachristou, Sid Banerjee, Jon Kleinberg
Major Revision (submitted R&R), Management Science, 2024
[preprint] [slides]

[WP2] **Group Decision-Making among Privacy-aware Agents**
Marios Papachristou, Amin Rahimian
R&R at Operations Research, 2024
Preliminary version presented at the Theory and Practice of Differential Privacy Workshop (TPDP)
[preprint] [talk]

[WP3] **Network Formation and Dynamics among Multi-LLMs**
Marios Papachristou, Yuan Yuan
Working paper, 2024
Preliminary version presented at the International Conference on Computational Social Science (IC2S2)
[preprint] [slides]

[WP4] **Leveraging Large Language Models for Collective Decision-Making**
Marios Papachristou, Longqi Yang, Chin-Chia Hsu
Major revision at CSCW, 2024
Preliminary version presented at the LLMs as Research Tools at CHI 2024
[preprint] [slides]

[WP5] **Structural Measures of Resilience for Supply Chains**
Marios Papachristou, Amin Rahimian
Under review at Management Science, 2024
[preprint] [code] [slides]

[WP6] **The Power of Choice in Random Sampling**
Marios Papachristou, Jon Kleinberg
Under review, 2024
Preprint available upon request

[WP7] **Echoes of Disagreement: Measuring Disparity in Social Consensus**
Marios Papachristou, Jon Kleinberg
Under review, 2024
Preprint available upon request

Refereed CS Workshops

[W1] **GLINKX: A Scalable Unified Framework for Homophilous and Heterophilous Graphs**
Marios Papachristou, Rishab Goel, Frank Portman, Matt Miller, Rong Jin
NeurIPS workshop on Graph Learning Frontiers (GLFrontriers), 2022
Provisional patent application submitted
[paper] [poster]

Patents

[P1] **GLINKX: A Scalable Unified Framework for Homophilous and Heterophilous Graphs**
Marios Papachristou, Rishab Goel, Frank Portman, Matt Miller, Rong Jin
Provisional patent application submitted, 2022

SOFTWARE **volesti** github.com/GeomScale/volesti
Open-source C++ statistical software for sampling and volume approximation from convex bodies.

OTHER
EXPERIENCE

GeomScale Open-source Organization *May 2020 – March 2020*
Sampling from truncated log-concave densities, and convex optimization, working on the volesti open-source package *with Dr. Apostolos Chalkis, Dr. Vissarion Fisikopoulos, and Dr. Elias Tsigaridas*

Cashierless Payments Start-up *2017 – 2018*
Part of National Bank of Greece's start-up accelerator

Athens University of Economics and Business *2018 – 2020*
Department of Management Science and Technology, *with Prof. Diomidis Spinellis*

Google Summer of Code 2020 (GeomScale) *June 2020 – August 2020*
Sampling from high-dimensional truncated log-concave densities, *with Dr. Apostolos Chalkis, Dr. Vissarion Fisikopoulos, and Dr. Elias Tsigaridas*
[code] [talk]

Google Summer of Code 2018 (GFOSS-OTA) *April 2018–September 2018*
Automated codification of Greek Legislation, *with Prof. Diomidis Spinellis*
[code] [data] [talk]

Researcher – P2P Lab *2013 – 2014*

TEACHING &
MENTORSHIP
EXPERIENCE

– The Structure of Information Networks (PhD-level, Cornell) *Spring & Fall 2023*
– Discrete Mathematics (NTUA) *Spring 2017*
– Programming Techniques (NTUA) *Spring 2016*
– Introduction to Computer Programming (NTUA) *Fall 2016, Fall 2017*

– Student-applicant Support Program at Cornell CIS *2022*
– Google Summer of Code Mentor *2019–2022*
– Volunteer lessons for the National Olympiad of Informatics (PDP) *2019*

INVITED TALKS &
LECTURES
† = scheduled
⋆ = presented by co-author

• *From Spread to Stability: Insights into Network Dynamics and Resilience*
  – MIT, Research Group Meeting *June 2024*
• *Network Formation and Dynamics among Multi-LLMs*
  – INFORMS Annual Meeting[†] *October 2024*
  – IBM Research, Exploratory Math Sciences Council Seminar *April 2024*
  – UIUC, Guest Lecture at the Network Analysis Course *April 2024*
  – Cornell University, AIPP Group *March 2024*
  – Learning on Graphs (LoG) NYC Meetup *February 2024*
• *Information Aggregation and Distributed Learning in Privacy-critical Environments*
  – TOC4Fairness Online Seminar Series[⋆] *March 2024*

- – Information: Theory and Applications (ITA) Workshop* *February 2024*
  - – Rutgers University Business School, Seminar* *November 2023*
- **_Leveraging Large Language Models for Collective Decision-Making_**
  - – LLMs as Research Tools: Applications and Evaluations in HCI Data Work Workshop, ACM Conference on Human-Computer Interaction* *May 2024*
  - – Microsoft Research, Invited Applied Research Talks *August 2023*
- **_Structural Measures of Resilience for Supply Chains_**
  - – NSF Conference on Network Science and Economics *April 2024*
  - – Columbia University, Student Theory Seminar *November 2023*
  - – Cornell University, Theory Tea *November 2023*
  - – INFORMS Annual Meeting* *October 2023*
  - – Cornell University, LinkedIn Campus Visit *May 2023*
- **_Resource Allocation in a Financial Contagion Environment_**
  - – University of Chicago, Theory Seminar *October 2023*
  - – Indiana University, Center for Complex Networks and Systems Research *September 2023*
  - – Cornell University, CS 6850 Guest Lecture *April 2023*
  - – Cornell University, Theory Seminar *November 2022*
- **_Dynamic Interventions for Networked Contagions_**
  - – INFORMS Annual Meeting *October 2023*
  - – ACM Web Conference *April 2023*
  - – ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization *October 2022*
- **_Core-periphery Models for Hypergraphs_**
  - – ACM Conference on Knowledge Discovery and Data Mining *August 2022*
- **_GLINKX: A Scalable Unified Framework for Homophilous and Heterophilous Graphs_**
  - – NeurIPS Workshop on Graph Learning Frontiers *December 2022*
  - – Twitter, Machine Learning Seminar *August 2022*
- **_Allocating Stimulus Checks in Times of Crisis_**
  - – ACM Web Conference *April 2022*
  - – ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization *October 2021*
- **_Sampling from Truncated High Dimensional Logconcave Densities_**
  - – PyData Global *December 2020*
- **_Software Clusterings with Vector Semantics and the Call Graph_**
  - – ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering *August 2019*

PROFESSIONAL
SERVICE

Program Commitee

- – ACM Conference on Fairness Accountability and Transparency (FAccT) 2022
- – ACM Conference on Knowledge Discovery and Data Mining (KDD) 2023

Reviewer

- – International Conference on Computational Social Science (IC2S2) 2024
- – ACM Web Conference (WWW) 2024
- – Innovations in Theoretical Computer Science (ITCS) 2024
- – ACM Conference on Human Factors in Computing (CHI) 2024
- – European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) 2023
- – Machine Learning (Springer)
- – NeurIPS 2022 Workshop on Graph Learning Frontiers (GLFrontiers) 2022

	– NeurIPS 2021 Workshop on Human and Machine Decisions	*2021*
	– Journal of Open Source Software	*2021*

REFEREES

Jon Kleinberg (`kleinberg@cornell.edu`)
Dept. of Computer and Information Science, Cornell University

Siddhartha Banerjee (`sbanerjee@cornell.edu`)
School of Operations Research and Information Engineering, Cornell University

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Deptartment of Industrial Engineering, University of Pittsburgh

Yuan Yuan (`yuyuan@ucdavis.edu`)
Graduate School of Management, UC Davis

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