Marios Papachristou

CONTACT INFORMATION		
	E-mail	papachristoumarios@cs.cornell.edu
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	Website	papachristoumarios.github.io

AREAS

Algorithms, Information Networks, LLMs, Differential Privacy, Machine Learning, Data Mining

EDUCATION

Cornell University *2020 – exp. 2026*
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 (*top 2%*). Major: *Computer Science.*
 – *Advisor:* Dimitris Fotakis

REFEREED PUBLICATIONS
Google Scholar Profile
$\alpha\beta$ = alphabetical order
∗ = equal contribution

[P1] **Marios Papachristou**, Amin Rahimian. "Differentially Private Distributed Estimation and Learning". *IISE Transactions. Special Issue on Federated, Distributed Learning and Analytics* 2024.
[preprint] [code] [poster]

[P2] **Marios Papachristou**, Sid Banerjee, Jon Kleinberg. "Dynamic Interventions for Networked Contagions". *ACM Web Conference (WWW) 2023.*
[preprint] [code] [poster] [paper] [slides]

[P3] **Marios Papachristou**, Jon Kleinberg. "Core-periphery Models for Hypergraphs". *ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD) 2022.*
[paper] [code] [data] [slides] [poster]

[P4] **Marios Papachristou**, Jon Kleinberg. "Allocating Stimulus Checks in Times of Crisis". *ACM Web Conference (WWW) 2022.*
[preprint] [code] [paper] [talk] [slides] [news]

[P5] **Marios Papachristou**. "Sublinear Domination and Core–periphery Networks". *Scientific Reports (Nature)*, 2021.
[paper] [code]

[P6] $\alpha\beta$Apostolos Chalkis, Vissarion Fisikopoulos, **Marios Papachristou**, Elias Tsigaridas. "Truncated Log-concave Sampling for Convex Bodies with Reflective Hamiltonian Monte Carlo". *ACM Transactions on Mathematical Software (TOMS)*, 2023. This paper incorporates and supersedes our previous preprint.
[paper] [code]

[P7] **Marios Papachristou**. "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 (ESEC/FSE) 2019.*
[paper] [code] [data]
(ESEC/FSE Student Research Competition Finalist Paper)

[P8] Vasilis Kostakis*, and **Marios Papachristou**∗. "Commons-based peer production and digital fabrication: The case of a RepRap-based, Lego-built 3D printing-milling machine". *Telematics and Informatics*, 2014.
[paper]

WORKING PAPERS [W1] **Marios Papachristou**, Yuan Yuan. "Network Formation and Dynamics among Multi-LLMs". *Under review.* 2024.
[preprint] [slides]

[W2] **Marios Papachristou**, Sid Banerjee, Jon Kleinberg. "Optimal Resource Allocation for Remediating Networked Contagions". *R&R in Management Science.* 2023.
This paper extends our previous works in WWW 2022 and WWW 2023.
[slides]

[W3] **Marios Papachristou**, Longqi Yang, Chin-Chia Hsu, "Leveraging Large Language Models for Collective Decision-Making". *Under review.* 2023.
[preprint]

[W4] **Marios Papachristou**, Amin Rahimian. "Group Decision-Making among Privacy-aware Agents". *Under review.* 2023.
Preliminary version accepted at the AAAI Workshop on Privacy-Preserving Artificial Intelligence. 2023.
[preprint] [poster]

[W5] **Marios Papachristou**, Amin Rahimian. "Production Networks Resilience: Cascading Failures, Power Laws and Optimal Interventions". *Under review. Preliminary poster presented at the ACM Conference of Economics and Computation (EC).* 2023.
[preprint] [code] [slides]

[W6] **Marios Papachristou**, Rishab Goel, Frank Portman, Matt Miller, Rong Jin. "GLINKX: A Scalable Unified Framework for Homophilous and Heterophilous Graphs". *Under Review.* 2023
Preliminary version presented at NeurIPS workshop on Graph Learning Frontiers (GLFrontriers), 2022.
[preprint] [poster] [workshop]

[W7] **Marios Papachristou**, Dimitris Fotakis. "Stochastic Opinion Dynamics for User Interest Prediction in Online Social Networks". *Preprint,* 2020.
[preprint]

RESEARCH
EXPERIENCE

Applied Research Intern – Microsoft *May 2023 – August 2023*
– Large Language Models (LLMs) for collective intelligence.
– *Office of Applied Research, with Chin-Chia Hsu and Longqi Yang*

Engineering Intern – Twitter *May 2022 – August 2022*
– Scalable Graph Machine Learning on graphs.
– *User Modeling Research, with Rishab Goel, Frank Portman, and Matthew Miller*

Graduate Researcher – Cornell University *Sept. 2020 – ongoing*
– Research in social and information networks, (allocation algorithms to mitigate contagion in financial and supply-chain networks, statistical graph and hypergraph models)

Researcher – GeomScale Organization *May 2020 – March 2020*
– Part-time research on sampling from truncated log-concave densities, and convex optimization, working on the volesti open-source package.
– *Mentors:* Apostolos Chalkis, Vissarion Fisikopoulos, Elias Tsigaridas

Researcher – Athens University of Economics and Business *2018 – 2020*
– Software architecture recovery via call graphs, source code embeddings, and clustering methods.
– *Mentor: Diomidis Spinellis*

Google Summer of Code 2020 (GeomScale)   *June 2020 – August 2020*
  – *Project: Sampling from high-dimensional truncated log-concave densities.*
  [code] [talk1] [talk2]

Google Summer of Code 2018 (GFOSS-OTA)   *April 2018–September 2018*
  – *Project: 3gm.* Automated codification of Greek Legislation.
  [code] [data] [talk]

Researcher – P2P Lab   *2013 – 2014*

HONORS &	
AWARDS	

- Onassis Scholarship   *2023*
- LinkedIn Ph.D. Fellowship (14.8% acceptance rate)   *2022*
- Gerondelis Scholarship   *2022*
- A.G. Leventis Scholarship (12.5% acceptance rate)   *2022*
- Chateaubriand Fellowship *(declined)*   *2022*
- Cornell Fellowship   *2020*
- Thomaidion Award   *2019*
- ESEC/FSE 2019 ACM Student Research Competition Finalist   *2019*
- 4th (out of 93) in International Space Engineering Competition (CanSat) *2019*
- 2nd Award at the *"be finnovative 2.0 accelerator"*   *2018*
- 1st Award at *"Crowdhackathon Fintech #2"*   *2017*
- Top %1 worldwide in IEEEXtreme 11.0 Programming Competition   *2017*
- Touramanoglu Scholarship   *2015*
- "The Great Moment of Education" Scholarship   *2015*

TEACHING
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*

TALKS &
PRESENTATIONS
†= scheduled
⋆= presented by
co-author

- ***Network Formation and Dynamics among Multi-LLMs***
  - IBM Research, Mathematical Sciences Seminar[†]   *April 2024*
  - UIUC, Guest Lecture at the Network Analysis Course[†]   *April 2024*
  - Cornell, 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, Seminar[⋆]   *November 2023*
- ***Leveraging Large Language Models for Collective Decision-Making***
  - Microsoft Research, Invited Applied Research Talks   *August 2023*
- ***Production Networks Resilience: Cascading Failures, Power Laws, and Optimal Interventions***
  - 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**
  - *Invited Talk at* 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*

REVIEWING	
	- *Program Commitee*

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

MENTORSHIP &
VOLUNTEERING
- Student-applicant Support Program at Cornell CIS   *2022*
- Google Summer of Code Mentor   *2019–2022*
- Volunteer lessons for the National Olympiad of Informatics (PDP) and other programming competitions   *2019*

LAST UPDATED   April 10, 2024