Marios Papachristou

CONTACT INFORMATION		
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AREAS

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

EDUCATION

Cornell University *2020 – exp. 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 (*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.
[preprint] [slides]

[W3] **Marios Papachristou**, Longqi Yang, Chin-Chia Hsu, "Leveraging Large Language Models for Collective Decision-Making". *Major revision at CSCW 2024.*
[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

- ***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*
- ***Production Networks Resilience: Cascading Failures, Power Laws, and Optimal Interventions***
  – 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*

REVIEWING

- *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 — July 11, 2024