Marios Papachristou

CONTACT INFORMATION		
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AREAS

Algorithms, Information Networks, Machine Learning, Data Mining

EDUCATION

Cornell University *2020 – exp. 2026*
Ph.D. in Computer Science (*GPA: 4.0*), Minor: *Applied Mathematics*
– *Advisor:* Jon Kleinberg
– *Relevant Coursework:* Analysis of Algorithms, Information Networks, Numerical Methods for Data Science, Design of Online Marketplaces, ML Theory

M.S. in Computer Science (*GPA: 4.0*) *2020 – 2022*

National Technical University of Athens *2015 – 2020*
Diploma in ECE (*GPA: 9.49/10.00 – top 2%*). Major: *Computer Science.*
– *Advisor:* Dimitris Fotakis

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

[P1] **Marios Papachristou**, Sid Banerjee, Jon Kleinberg. "Dynamic Interventions for Networked Contagions". *ACM Web Conference (WWW) 2023.*
[preprint] [code] [poster] [paper] [slides]

[P2] **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]

[P3] **Marios Papachristou**, Jon Kleinberg. "Allocating Stimulus Checks in Times of Crisis". *ACM Web Conference (WWW) 2022.*
[preprint] [code] [paper] [talk] [slides] [news]

[P4] **Marios Papachristou**. "Sublinear Domination and Core–periphery Networks". *Scientific Reports (Nature)*, 2021.
[paper] [code]

[P5] $\alpha\beta$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]

[P6] **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)**

[P7] 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**, Amin Rahimian. "Differentially Private Distributed Estimation and Learning". *Under review.* 2023.
[preprint] [code]

[W2] **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]

[W3] **Marios Papachristou**, Sid Banerjee, Jon Kleinberg, "Optimal Resource Allocation for Remediating Networked Contagions". *Under review.* 2023.
This paper extends our previous work in WWW 2022 *and* WWW 2023.
[slides]

[W4] **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]

[W5] **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 20234*
– 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

- ***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*

SERVICE
- *Program Commitee*
    - ACM Conference on Fairness Accountability and Transparency (FAccT) *2022*

- – ACM Conference on Knowledge Discovery and Data Mining (KDD) *2023*
- *Reviewing*
  - – 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*
  - – Student-applicant Support Program at Cornell CIS *2022*
  - – Google Summer of Code *2019–2022*

LAST UPDATED   October 6, 2023