Marios Papachristou

RESEARCH FIELD   Computer and Information Science

AREAS   Social and Information Networks, Data Mining, Algorithms, Machine Learning, Artificial Intelligence, Supply Chains, Software Engineering, Open-source technologies, Large Language Models

EDUCATION

Cornell University   *Sept 2020 – ongoing*
Ph.D. Candidate in Computer Science (*GPA: 4.0/4.3*), Minor: *Applied Math*
   – *Advisor:* Jon Kleinberg

Cornell University   *Sept 2020 – May 2022*
M.S. in Computer Science (*GPA: 4.0/4.3*)

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

PUBLICATIONS
$\alpha\beta$= alphabetical order,
†= co-first authorship,
$*$ = correspondence

CITATIONS (GOOGLE SCHOLAR)
   141 citations

PEER-REVIEWED CONFERENCE PAPERS
1. **Marios Papachristou**, Sid Banerjee, Jon Kleinberg. "Dynamic Interventions for Networked Contagions". *ACM Web Conference (formerly known as the International World Wide Web Conference) (WWW) 2023.*
2. **Marios Papachristou**, Jon Kleinberg. "Core-periphery Models for Hypergraphs". *ACM SIGKDD Intl. Conf. on Knowledge Discovery and Data Mining (KDD) 2022.*
3. **Marios Papachristou**, Jon Kleinberg. "Allocating Stimulus Checks in Times of Crisis". *ACM Web Conference (formerly known as the International World Wide Web Conference) (WWW) 2022.*

PEER-REVIEWED JOURNAL PAPERS
1. **Marios Papachristou***. "Sublinear Domination and Core–periphery Networks". *Scientific Reports (Nature)*, 2021.
2. $\alpha\beta$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*, 2023.
3. 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.

PEER-REVIEWED EXTENDED ABSTRACTS
1. **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.*

PEER-REVIEWED WORKSHOP PAPERS
1. **Marios Papachristou**, Rishab Goel, Frank Portman, Matt Miller, Rong Jin. "GLINKX: A Scalable Unified Framework for Homophilous and Heterophilous Graphs". *NeurIPS workshop on Graph Learning Frontiers (GLFrontriers)*, 2022.

PREPRINTS & WORKS IN PROGRESS

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

2. **Marios Papachristou**, Amin Rahimian. "Production Networks Resilience: Cascading Failures, Power Laws and Optimal Interventions". *Under review.* 2023.
   [preprint] [code]

3. **Marios Papachristou**, Sid Banerjee, Jon Kleinberg, "Optimal Resource Allocation for Remediating Networked Contagions". *Under review.* 2023.
   This paper incorporates and extends our previous papers: link and link.

4. **Marios Papachristou**, Rishab Goel, Frank Portman, Matt Miller, Rong Jin. "GLINKX: A Scalable Unified Framework for Homophilous and Heterophilous Graphs". *Under review,* 2022.
   [preprint]

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

EXPERIENCE

Applied Research Intern – Microsoft   *May 2023 – ongoing*
  – Conduct research in the area of ML/AI focusing on Large Language Models (GPT-3.5, GPT-4) for collective intelligence.

Graduate Researcher – Cornell University   *Sept 2020 – ongoing*
  – Conduct research in the area of social and information networks and focus on developing models of contagion and intervention algorithms to mitigate contagion in financial networks and supply chain networks, as well as developing efficient algorithms for distributed estimation and learning in heterogeneous networks under differential privacy.
  – Deliver lectures for PhD-level courses on social and information networks, hold office hours, and grade assignments.

Engineering Intern – Twitter   *May 2022 – Aug 2022*
  – Conduct research on ML/AI and specifically develop scalable machine learning methods for node classification in large-scale homophilous and heterophilous networks.

Google Summer of Code 2020 (GeomScale)   *June 2020 – August 2020*
  – Conduct research on sampling from truncated log-concave densities, and convex optimization, working on the volesti open-source package.

Researcher – Athens University of Economics and Business   *2018 – 2020*
  – Department of Management Science and Technology, Business Analytics Lab.
  – Conduct research on the intersection of software engineering, networks and machine learning.

Google Summer of Code 2018 (GFOSS-OTA)   *April 2018–September 2018*
  – Conduct research on developing an framework for the automated codification of Greek Legislation using tools from network analysis, natural language processing, data mining and machine learning.

Remote Researcher – P2P Lab   *2013 – 2014*
  – Conduct research on developing a modular open-source/open-hardware 3D printer.

PEER-REVIEWING

- ACM Conference on Knowledge Discovery and Data Mining (KDD)   *2023*

- European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) through the Machine Learning Journal (Springer) *2023*
- NeurIPS 2022 Workshop on Graph Learning Frontiers (GLFrontiers) *2022*
- ACM Conference on Fairness Accountability and Transparency (FAccT) *2022*
- NeurIPS 2021 Workshop on Human and Machine Decisions *2021–*
- Journal of Open Source Software *2021–*

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 %2 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 2023*
- Discrete Mathematics (NTUA) *Spring 2017*
- Programming Techniques (NTUA) *Spring 2016*
- Introduction to Computer Programming (NTUA) *Fall 2016, Fall 2017*

Talks & Presentations

- ***Production Networks Resilience: Cascading Failures, Power Laws, and Optimal Interventions***
  - INFORMS Annual Meeting (to be presented by co-author) *October 2023*
- ***Resource Allocation in a Financial Contagion Environment***
  - CS6850 (Cornell; guest lecture) *April 2023*
  - Cornell Theory Seminar *November 2022*
- ***Dynamic Interventions for Networked Contagions***
  - INFORMS Annual Meeting (invited talk) *to be presented in October 2023*
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  - 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