Marios Papachristou

CONTACT INFORMATION		
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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*

<table>
<tr><td rowspan="14">HONORS &
AWARDS</td><td>– Onassis Scholarship</td><td align="right">*2023*</td></tr>
<tr><td>– LinkedIn Ph.D. Fellowship (14.8% acceptance rate)</td><td align="right">*2022*</td></tr>
<tr><td>– Gerondelis Scholarship</td><td align="right">*2022*</td></tr>
<tr><td>– A.G. Leventis Scholarship (12.5% acceptance rate)</td><td align="right">*2022*</td></tr>
<tr><td>– Chateaubriand Fellowship *(declined)*</td><td align="right">*2022*</td></tr>
<tr><td>– Cornell Fellowship</td><td align="right">*2020*</td></tr>
<tr><td>– Thomaidion Award</td><td align="right">*2019*</td></tr>
<tr><td>– ESEC/FSE 2019 ACM Student Research Competition Finalist</td><td align="right">*2019*</td></tr>
<tr><td>– 4th (out of 93) in International Space Engineering Competition (CanSat)</td><td align="right">*2019*</td></tr>
<tr><td>– 2nd Award at the *"be finnovative 2.0 accelerator"*</td><td align="right">*2018*</td></tr>
<tr><td>– 1st Award at *"Crowdhackathon Fintech #2"*</td><td align="right">*2017*</td></tr>
<tr><td>– Top %1 worldwide in IEEEXtreme 11.0 Programming Competition</td><td align="right">*2017*</td></tr>
<tr><td>– Touramanoglu Scholarship</td><td align="right">*2015*</td></tr>
<tr><td>– "The Great Moment of Education" Scholarship</td><td align="right">*2015*</td></tr>
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<table>
<tr><td rowspan="4">TEACHING
EXPERIENCE</td><td>– The Structure of Information Networks (PhD-level, Cornell)</td><td align="right">*Spring & Fall 2023*</td></tr>
<tr><td>– Discrete Mathematics (NTUA)</td><td align="right">*Spring 2017*</td></tr>
<tr><td>– Programming Techniques (NTUA)</td><td align="right">*Spring 2016*</td></tr>
<tr><td>– Introduction to Computer Programming (NTUA)</td><td align="right">*Fall 2016, Fall 2017*</td></tr>
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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 University, AIPP Group   *March 2024*
  – Learning on Graphs (LoG) NYC Meetup   *February 2024*
- ***Information Aggregation and Distributed Learning in Privacy-critical Environments***
  – Cornell University, Theory Tea[†]   *May 2024*
  – 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***
  – 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   April 22, 2024