

# Georgios Fragkos

COMPUTER & SOFTWARE ENGINEER · RESEARCH ASSISTANT

The University of New Mexico, Dept. of Electrical and Computer Engineering, Albuquerque, NM 87131, USA

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## Education

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### Ph.D.:

Albuquerque, NM, USA

#### THE UNIVERSITY OF NEW MEXICO

Jan. 2019, Grad. Year: Dec. 2022

- **Laboratory:** Performance and Resource Optimization Lab (**PROTON LAB**)
- **Major Field Program:** Computer Engineering
- **Research Specialization:** Reinforcement Learning, Deep Learning, Decision-Making
- **Advisor:** Dr. Eirini Eleni Tsiropoulou (**Personal Website**)
- **Current GPA:** 4.33/4.00 (**with Honors**)

### Master of Science (MSc) in Computer Engineering:

Albuquerque, NM, USA

#### THE UNIVERSITY OF NEW MEXICO

Jan. 2019 - Dec. 2020

- **Laboratory:** Performance and Resource Optimization in Networks Lab (**PROTON LAB**)
- **Major Field Program:** Computer Engineering
- **Advisor:** Dr. Eirini Eleni Tsiropoulou (**Personal Website**)
- **MSc Thesis Title:** Artificial Intelligence Enabled Distributed Edge Computing for Internet of Things Applications
- **GPA:** 4.33/4.00 (**Graduated with Distinction**)

### BSc & MSc in Electrical & Computer Engineering (5-year joint Diploma degree)

Athens, Greece

#### NATIONAL TECHNICAL UNIVERSITY OF ATHENS

Oct. 2012 - Oct. 2018

- **Major Field:** Computer Science
- **Minor Field:** Computer Engineering
- **Diploma Thesis:** "Development of distributed consensus methods using Blockchain technology integrated with Neo4j Graph Database"
- **Advisor:** Professor Theodora Varvarigou (**Personal Website**)
- **Co-Advisor:** Dr. Antonios Litke (**Google Scholar Site**)
- **GPA:** 7.82/10
- **Passed Nationwide University Entrance Examination with Score: 18.980/20.000 (estimate: top 1% nationwide)**

## Work & Research Experience

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### Facebook, Inc.

Menlo Park, CA

INCOMING SOFTWARE ENGINEER INTERN, PH.D. SYSTEMS & INFRASTRUCTURE RESEARCH

May. 2022 - Aug. 2022

### Sandia National Laboratories

Albuquerque, NM, USA

RESEARCH INTERN, RENEWABLE & DISTRIBUTED SYSTEMS INTEGRATION

Aug. 2020 - May. 2022

- Project funded by US Department of Energy (DOE)
- Design Cybersecurity standards for the Smart Grid
- Python APIs, Blockchain, Reinforcement Learning

### The University of New Mexico

Albuquerque, NM, USA

RESEARCH ASSISTANT, PERFORMANCE AND RESOURCE OPTIMIZATION LABORATORY (**PROTON LAB**)

Jan. 2019 - Present

- Machine Learning
- Deep Learning, Deep Reinforcement Learning
- Game Theory
- Radio Access Networks Modeling

## The National Technical University of Athens

Athens, Greece

RESEARCH ASSISTANT, INSTITUTE OF COMMUNICATIONS AND COMPUTER SYSTEMS (ICCS)

May 2017 - Dec. 2018

- Contributed to the EU Funded Horizon 2020 BLOOMEN Project - **[BLOOMEN Link]**
- Studied and Developed distributed Blockchain-based applications for preserving media copyrights and systems' security
- Engineering Areas: Distributed Systems, Blockchain Technology, Graph Databases, Network Architecture and Security, Software Development, Python, Javascript, C, Solidity

## European Organization for Nuclear Research (CERN)

Switzerland, Geneva

RESEARCH ASSISTANT, ATLAS EXPERIMENT

2016 - 2017

- Full Summer Internship as an undergraduate student
- Provided by Brookhaven National Laboratory, New York, USA
- Contributed to the New Small Wheel Electronics Upgrade Project
- Developed machine learning tools for acquiring, analysing and testing large datasets coming from the ATLAS detector
- Engineering Areas: Machine Learning, Multithreaded Scripting, Python, High-Energy-Density Physics

## Skills

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**Languages (Excellent)** Python, MATLAB, C++, C, SQL

**Frameworks (Excellent)** PyTorch, Tensorflow, Scikit

**Agile Development - Version Control** Git, Mercurial, BitBucket

**IDEs** IntelliJ, Anaconda, Eclipse, Visual Studio Code

**Languages** Greek (Native), English(Full Proficient)

## Publications

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### Conferences

1. N. Patrizi, **G. Fragkos**, E. E. Tsiropoulou and S. Papavassiliou, "Contract-Theoretic Resource Control in Wireless Powered Communication Public Safety Systems," GLOBECOM 2020 - 2020 IEEE Global Communications Conference, 2020, pp. 1-6, doi: 10.1109/GLOBECOM42002.2020.9348200.
2. N. Patrizi, **G. Fragkos**, K. Ortiz, M. Oishi and E. E. Tsiropoulou, "A UAV-enabled Dynamic Multi-Target Tracking and Sensing Framework," GLOBECOM 2020 - 2020 IEEE Global Communications Conference, 2020, pp. 1-6, doi: 10.1109/GLOBECOM42002.2020.9322567.
3. **Fragkos, G.**; Tsiropoulou, E.E; Papavassiliou S. "Artificial Intelligence Enabled Distributed Edge Computing for Internet of Things Applications," in 2020 16th International Conference on Distributed Computing in Sensor Systems (DCOSS), Marina del Rey, CA, USA, 2020 pp. 450-457
4. Y. Cai, **G. Fragkos**, E. E. Tsiropoulou and A. Veneris, "A Truth-Inducing Sybil Resistant Decentralized Blockchain Oracle," 2020 2nd Conference on Blockchain Research & Applications for Innovative Networks and Services (BRAINS), 2020, pp. 128-135, doi: 10.1109/BRAINS49436.2020.9223272. (**Best Paper Award**)
5. **G. Fragkos**, C. Minwalla, J. Plusquellic and E. E. Tsiropoulou, "Reinforcement Learning Toward Decision-Making for Multiple Trusted-Third-Parties in PUF-Cash," 2020 IEEE 6th World Forum on Internet of Things (WF-IoT), 2020, pp. 1-6, doi: 10.1109/WF-IoT48130.2020.9221344.
6. Diamanti, M.; **Fragkos, G.**; Tsiropoulou, E.E; Papavassiliou S. "Resource Orchestration in Interference-Limited Small Cell Networks: A Contract-Theoretic Approach," in International Conference on NETWORK Games, Control and Optimisation (Netgcoop), 2020. (to appear)
7. Rael, K.; **Fragkos, G.**; Plusquellic, J.; Tsiropoulou, E.E. "Artificial Intelligence Enabled Distributed Edge Computing for Internet of Things Applications," in 2020 16th International Conference on Distributed Computing in Sensor Systems (DCOSS), Marina del Rey, CA, USA, 2020, pp. 312-319
8. **Fragkos, G.**; Patrizi, N.; Tsiropoulou, E.E; Papavassiliou S. "Socio-aware Public Safety Framework Design: A Contract Theory based Approach," in ICC 2020 - 2020 IEEE International Conference on Communications (ICC), Dublin, Ireland, 2020, pp. 1-7
9. **Fragkos, G.**; Kemp, N.; Tsiropoulou, E.E; Papavassiliou S. "Artificial Intelligence Empowered UAVs Data Offloading in Mobile Edge Computing," in ICC 2020 - 2020 IEEE International Conference on Communications (ICC), Dublin, Ireland, 2020, pp. 1-7
10. **Fragkos, G.**; Tsiropoulou, E.E; Papavassiliou S. "Disaster Management and Information Transmission Decision-making in Public Safety Systems," IEEE GLOBECOM, pp. 1-6, 2019
11. Palaiokrassas G., Litke A., **Fragkos G.**, Papaefthymiou V., Varvarigou T. "Deploying Blockchains for a New Paradigm of Media Experience," In: Coppola M., Carlini E., D'Agostino D., Altmann J., Bañares J. (eds) Economics of Grids, Clouds, Systems, and Services. GECON 2018. Lecture Notes in Computer Science, vol 11113. Springer, Cham
12. **Fragkos G.**, Kapsoulis N., Litke A., Palaiokrassas G., Varvarigou T. "Anonymized Personalization for Distributed Applications over Blockchain," in Decentralized Conference 2018, Athens, Greece
13. A.Litke, G. Palaiokrassas, **G. Fragkos**, V. Papaefthymiou and T. Varvarigou. "Deploying blockchains for a new paradigm of media experience", in Economics of Grids, Clouds, Systems and Services, Springer, 2018.

## Journals

1. **Fragkos, G.**; Stavrou, S.; Tsiropoulou, E.E.; Papavassiliou, S. "A Reinforcement Learning-based Fog Computing Resource Orchestration Framework," in IEEE Internet of Things Journal (under review)
2. **Fragkos, G.**; Johnson, J.; Tsiropoulou, E.E. "A Comparison of Centralized & Decentralized Access Control in DER Authorization," in IEEE Systems Journal (under review)
3. **Fragkos, G.**; Johnson, J.; Tsiropoulou, E.E. "A Dynamic RBAC Policy Improvement Based On Offline Deep Reinforcement Learning," in IEEE Transactions on Human-Machine Systems (under review)
4. **Fragkos, G.**; Minwalla, C.; Plusquellic, J.; Tsiropoulou, E.E. "A Contract-Theoretic Approach to Local Trust in Internet of Things," in IEEE Transactions on Network and Service Management (to appear)
5. P. A. Apostolopoulos, **G. Fragkos**, E. E. Tsiropoulou and S. Papavassiliou, "Data Offloading in UAV-assisted Multi-access Edge Computing Systems under Resource Uncertainty," in IEEE Transactions on Mobile Computing, doi: 10.1109/TMC.2021.3069911.
6. **Fragkos, G.**; Minwalla, C.; Plusquellic, J.; Tsiropoulou, E.E. "Reinforcement Learning Toward Decision-Making for Multiple Trusted-Third-Parties in PUF-Cash," in ACM Journal on Emerging Technologies in Computing Systems
7. M. Diamanti, **G. Fragkos**, E. E. Tsiropoulou and S. Papavassiliou, "Unified User Association and Contract-Theoretic Resource Orchestration in NOMA Heterogeneous Wireless Networks," in IEEE Open Journal of the Communications Society, vol. 1, pp. 1485-1502, 2020, doi: 10.1109/OJCOMS.2020.3024778.
8. **G. Fragkos**, S. Lebien and E. E. Tsiropoulou, "Artificial Intelligent Multi-Access Edge Computing Servers Management," in IEEE Access, vol. 8, pp. 171292-171304, 2020, doi: 10.1109/ACCESS.2020.3025047.
9. **G. Fragkos**, C. Minwalla, J. Plusquellic and E. E. Tsiropoulou, "Artificially Intelligent Electronic Money," in IEEE Consumer Electronics Magazine, doi: 10.1109/MCE.2020.3024512.
10. **G. Fragkos**, C. Minwalla, J. Plusquellic and E. E. Tsiropoulou, "Artificially Intelligent Electronic Money," in IEEE Consumer Electronics Magazine, doi: 10.1109/MCE.2020.3024512.
11. **Fragkos, G.**; Apostolopoulos, P.A.; Tsiropoulou, E.E. "ESCAPE: Evacuation Strategy through Clustering and Autonomous Operation in Public Safety Systems," in Future Internet 2019, 11, 20.

## Honors & Awards

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2021	<b>UNM Alumni Research Award Nomination</b> Nominated for receiving the UNM Research Award, which recognizes outstanding research being conducted at UNM	<i>New Mexico, USA</i>
2021	<b>Sandia National Laboratories - Publish my code developed based on Ethereum blockchain for Smart Grid's secure communications</b> Granted Apache License 2.0 by Sandia National Laboratories, for open-sourcing the code developed during my first year-round internship	<i>New Mexico, USA</i>
2021	<b>Sandia National Laboratories - Present my research work for the DER blockchain in the SunSpec Meetup</b> Selected from my manager to present my research work at the SunSpec MeetUp	<i>New Mexico, USA</i>
2020	<b>Gerondelis Graduate Study Grant</b> Gerondelis Foundation Scholarship \$5000 for outstanding academic performance	<i>Boston, MA, USA</i>
2020	<b>IEEE Outstanding Graduate Engineering Student Award</b> IEEE Albuquerque Section awarded me with the IEEE Outstanding Graduate Engineering Student Award for outstanding academic performance in the field of Computing and Communications	<i>New Mexico, USA</i>
2020	<b>SoE ECE UNM Outstanding Graduate Award</b> The faculty of Electrical and Computer Engineering selected me for the Outstanding Graduate Award for the 2019-2020 academic year	<i>New Mexico, USA</i>
2020	<b>UNM Teaching Assistant Award Nomination</b> University of New Mexico (UNM) nominated me for the Teaching Assistant Award in the whole University of New Mexico	<i>New Mexico, USA</i>
2019	<b>IEEE HKN Graduate Member</b> The president of the IEEE HKN student branch at UNM made an honorary invitation to become an active member of the society	<i>New Mexico, USA</i>
2019	<b>UNM Graduate Excellence Fellowship</b> Offered the UNM Graduate Excellence Fellowship to enroll in the Master of Engineering Program	<i>New Mexico, USA</i>
2016	<b>1st Place Award : Hackathon - The IoT Challenge @NTUA</b> Awarded for best idea and implementation: Smart Home Sound Application for people with hearing impairment - <b>[Project Link]</b>	<i>Athens, Greece</i>
2006-2012	<b>Awards of Excellence in High School</b> 6 in total, from the Ministry of Education	<i>Athens, Greece</i>