

# 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

### Ph.D.:

Albuquerque, NM, USA

#### THE UNIVERSITY OF NEW MEXICO

Jan. 2019, Grad. Year: May 2022

- **Laboratory:** Performance and Resource Optimization in Networks Lab (**PROTON LAB**)
- **Major Field Program:** Computer Engineering
- **Research Specialization:** Reinforcement Learning, Game Theory
- **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, Grad. Year: Nov. 2020

- **Laboratory:** Performance and Resource Optimization in Networks Lab (**PROTON LAB**)
- **Major Field Program:** Computer Engineering
- **Advisor:** Dr. Eirini Eleni Tsiropoulou (**Personal Website**)
- **Current GPA:** 4.33/4.00 (**With Honors**)

### BSc and MSc in Electrical & Computer Engineering (5-year joint 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

### Sandia National Laboratories

Albuquerque, NM, USA

RESEARCH & SOFTWARE ENGINEER INTERN, RENEWABLE AND DISTRIBUTED SYSTEMS INTEGRATION

Aug. 2020 - Sep. 2021

- Project funded by US Department of Energy (DOE)
- Utilize Deep Reinforcement Learning to design Cybersecurity standards for the Smart Grid
- Machine Learning

### The University of New Mexico

Albuquerque, NM, USA

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

Jan. 2019 - Present

- Artificial Intelligence, Autonomous Decision Making
- Deep Learning, Deep Reinforcement Learning
- Game Theory
- Blockchain

### 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**]
- Collaborating Institutes: Deutsche Welle, Wordline ATOS, ANT1 Cyprus, Kendraio, BMAT
- 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

- 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 tools for acquiring, analysing and presenting the data, coming from the ATLAS detector through the MMFE8 and the VMMs electronics
- Engineering Areas: Network Architecture and Design, Multithreaded Programming, Python, Qt

## Skills

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|-------------------------------|--|
| <b>Languages (Excellent)</b>  | Python, C, MATLAB, SQL                   |
| <b>Frameworks (Excellent)</b> | Pytorch, Tensorflow                      |
| <b>Operating Systems</b>      | Linux, macOS, Windows                    |
| <b>Agile Development</b>      | Mercurial, Git, BitBucket                |
| <b>IDEs</b>                   | IntelliJ, Anaconda, Eclipse              |
| <b>Languages</b>              | Greek (Native), English(Full Proficient) |

## Research Interests

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- Reinforcement Learning, Deep Reinforcement Learning
- Game Theory
- Distributed Decision Making
- Blockchain

## Publications

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### Conferences

1. Patrizi, N.; **Fragkos, G.**; Tsiropoulou, E.E.; Papavassiliou, S. "Contract-Theoretic Resource Control in Wireless Powered Communication Public Safety Systems," in IEEE Globecom 2020 (to appear)
2. Patrizi, N.; **Fragkos, G.**; Ortiz, K.; Oishi, M.; Tsiropoulou, E.E. "A UAV-enabled Dynamic Multi-Target Tracking and Sensing Framework," in IEEE Globecom 2020 (to appear)
3. Chai, Y.; **Fragkos, G.**; Tsiropoulou, E.E.; Veneris A. "A Truth-Inducing Sybil Resistant Decentralized Blockchain Oracle," in IEEE BRAINS 2020 (to appear)
4. 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)
5. **Fragkos, G.**; Minwalla, C.; Plusquellic, J.; Tsiropoulou, E.E. "Reinforcement Learning Toward Decision-Making for Multiple Trusted-Third-Parties in PUF-Cash," in IEEE WF-IoT 2020 (to appear)
6. **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
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.**; Johnson, J.; Tsiropoulou, E.E. "A Dynamic RBAC Policy Improvement Based On Offline Deep Reinforcement Learning," in IEEE Transactions on Human-Machine Systems (to be submitted)
2. Apostolopoulos, P.A.; **Fragkos, G.**; Tsiropoulou, E.E; Papavassiliou S. "Data Offloading in UAV-assisted Multi-access Edge Computing Systems under Resource Uncertainty," in IEEE Transactions of Mobile Computing (under review)
3. **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 (under review)
4. Diamanti, M.; **Fragkos, G.**; Tsiropoulou, E.E; Papavassiliou S. "Unified User Association and Contract-theoretic Resource Orchestration in NOMA Heterogeneous Wireless Networks," in IEEE Open Journal of the Communications Society (OJ-COMS), 2020. (to appear)
5. **Fragkos, G.**; Lebien, S.; Tsiropoulou, E.E. "Artificial Intelligent Multi-Access Edge Computing Servers Management," in IEEE Access 2020 (to appear)
6. **Fragkos, G.**; Minwalla, C.; Plusquellic, J.; Tsiropoulou, E.E. "Artificial Intelligent Electronic Money," in IEEE Consumer Electronics Magazine (to appear)
7. Tsoulas, K.; Palaiokrassas, G.; **Fragkos, G.**; Litke, A.; Varvarigou, T. "A Graph Model based Blockchain Implementation for Increasing Performance and Security in Decentralized Ledger Systems," in IEEE Access 2020
8. **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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|-----------|---|------------------------|
| 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>  |