

# Simone Raponi

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## EXPERIENCE

- Mar. 2023 - **DEAS -- DIFESA E ANALISI SISTEMI.**  
**ROME, IT**  
**Senior Machine Learning Engineer**
- Jul. 2021- Mar. 2023 **NATO-STO CENTER FOR MARITIME RESEARCH AND EXPERIMENTATION (CMRE).**  
La Spezia, IT  
**Machine Learning Scientist**
- Development and Implementation of an Encoder-Decoder Sequence-to-Sequence Architecture with Recurrent Neural Networks (Long-Short Term Memory with attention) to forecast vessel trajectories using AIS data.
  - Research on the adoption of Artificial Intelligence to optimize Data Fusion problems.
  - Main contributor of the PROMENADE European project (Improved Maritime Awareness by Means of Artificial Intelligence and Big Data Methods)
- 2021 **IBERDROLA INNOVATION MIDDLE EAST.** Doha, QA  
**Machine Learning Scientist Intern**
- Development and Implementation of a synchronous distributed data acquisition algorithm for the Power Line Communication devices located in geographically distant areas.
  - The data acquired allowed the creation of a rich database to study the communication delay of Power Line Communication devices adopted worldwide.
- 2019 **IBERDROLA INNOVATION MIDDLE EAST.** Doha, QA  
**Machine Learning Scientist Intern**
- Development and Implementation of an Artificial Intelligence-driven noise forecasting model (Long-Short Term Memory) for Power Line Communication devices.
- 2018 **TELEFONICA RESEARCH.** Barcelona, SP  
**Machine Learning and Big Data Scientist Intern**
- Analysis and Experimentation of the impact of Artificial Intelligence to the privacy of users while interacting with Internet Services.
- 2018-2021 **HAMAD BIN KHALIFA UNIVERSITY.** Doha, QA  
**Teaching Assistant**
- Teaching Assistant for the courses “Security Risk Analysis”, “Multimedia Security”, “Distributed Systems Security”, “Computer Engineering Winter Program”, “Open Source Intelligence in Cyberspace”, where I had the opportunity to give frontal lessons, create and grade exams, projects, and labs.

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## EDUCATION

- 2018-2021 **HAMAD BIN KHALIFA UNIVERSITY** Doha, QA  
**Ph.D. in Computer Science and Engineering**
- Awards: **Best Ph.D. in Computer Science and Engineering.**
  - Thesis: AI-driven Detection of Cybersecurity-related Patterns.
  - Outcomes: 1 book, 11 International conference papers, 10 International journal papers, 2 patents, 1 encyclopedia entry. Granted funds of approximately \$120.000.
- 2016-2017 **SAPIENZA UNIVERSITY OF ROME** Rome, IT  
**Master's Degree in Computer Science**
- Thesis: Geographical De-anonymization of Crowds in the Dark Web.
  - Final Mark: 110/110 summa cum laude.
  - Thesis dissertation published to IEEE International Conference on Distributed Computing Systems.
  - Thesis dissertation extension published to IEEE Transactions on Services Computing.

- Thesis: An Administrative Model for Attribute-Based Access Control.
- Final Mark: 110/110 summa cum laude.

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## PATENTS

- [1] **US Patent App. 16/657,088:** *Verifying the Authenticity of a Remote Service*, R. Di Pietro, S. Sciancalepore, S. Raponi.
- [2] **US Patent App. 16/880,525:** *Online Account Access Recovery System and Method Utilizing Secret Splitting*, S. Raponi, R. Di Pietro

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## BOOKS

- [1] *New Dimensions of Information Warfare*, Springer Nature, R. Di Pietro, S. Raponi, M. Caprolu, S. Cresci.

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## SCIENTIFIC PUBLICATIONS IN JOURNALS

- [1] **Docker ecosystem -- Vulnerability Analysis**, A. Martin, S. Raponi, T. Combe, R. Di Pietro, *Computer Communications (COMCOM)*, 2018.
- [2] **FORTRESS: An Efficient and Distributed Firewall for Stateful Data Plane SDN**, M. Caprolu, S. Raponi, R. Di Pietro, *Security and Communication Networks*, 2019.
- [3] **Nationality and Geolocation-Based Profiling in the Dark (Web)**, M. La Morgia, A. Mei, E. Nemmi, S. Raponi, J. Stefa, *IEEE Transactions on Services Computing (TSC)*, 2019.
- [4] **Vessels Cybersecurity: Issues, Challenges, and the Road Ahead**, M. Caprolu, R. Di Pietro, S. Raponi, S. Sciancalepore, P. Tedeschi, *IEEE Communication Magazine*, 2020.
- [5] **A Longitudinal Study on Web-Sites Password Management (in)Security: Evidence and Remedies**, S. Raponi, R. Di Pietro, *IEEE Access*, 2020.
- [6] **Cryptomining Makes Noise: Detecting Cryptojacking via Machine Learning**, M. Caprolu, S. Raponi, G. Oliveri, R. Di Pietro, *Computer Communications (COMCOM)*, 2021.
- [7] **Long-Term Noise Characterization of Narrowband Power Line Communications**, S. Raponi, J. Fernandez, A. Omri, G. Oliveri, *IEEE Transactions on Power Delivery*, 2021.
- [8] **Sound of Guns: Digital Forensics of Gun Audio Samples meets Artificial Intelligence**, S. Raponi, I. Ali, G. Oliveri, *Springer Nature Multimedia Tools and Applications*, 2022.
- [9] **Fake News Propagation: A Review of Models, Datasets, and Insights**, S. Raponi, Z. Khalifa, G. Oliveri, R. Di Pietro, *ACM Transactions on the Web*, 2022.
- [10] **PAST-AI: Physical-layer Authentication of Satellite Transmitters via Deep Learning**, G. Oliveri, S. Sciancalepore, S. Raponi, R. Di Pietro, *IEEE Transactions on Information Forensics and Security (TIFS)*, 2022.

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## SCIENTIFIC PUBLICATIONS IN CONFERENCES

- [1] **A Spark is Enough in a Straw World: a Study of Websites Password Management in the Wild**, S. Raponi, R. Di Pietro, *14th International Workshop on Security and Trust Management (ESORICS - STM)*, 2018.
- [2] **Time-Zone Geolocation of Crowds in the Dark Web**, M. La Morgia, A. Mei, S. Raponi, J. Stefa, *IEEE International Conference on Distributed Computing Systems (ICDCS)*, 2018.
- [3] **Edge Computing Perspectives: Architectures, Technologies, and Open Security Issues**, M. Caprolu, R. Di Pietro, F. Lombardi, S. Raponi, *IEEE International Conference on Edge Computing*, 2019.
- [4] **Intrusion Detection at the Network Edge: Solutions, Limitations, and Future Directions**, S. Raponi, M. Caprolu, R. Di Pietro, *International Conference on Edge Computing*, 2019.
- [5] **BrokenStrokes: On the (in)Security of Wireless Keyboards**, G. Oliveri, S. Sciancalepore, S. Raponi, R. Di Pietro, *ACM Conference on Security and Privacy in Wireless and Mobile Networks (WISEC)*, 2020.
- [6] **Next Generation Information Warfare: Rationales, Scenarios, Threats, and Open Issues**, S. Raponi, M. Caprolu, R. Di Pietro, *International Conference on Information Systems Security and Privacy (ICISSP)*, 2020.
- [7] **KaFHCa: Key-establishment via Frequency Hopping Collisions**, M. Usman, S. Raponi, M. Qaraqe, G. Oliveri, *IEEE Conference on Communications (ICC): Communication and Information Systems Security Symposium*, 2021.
- [8] **New Dimensions of Information Warfare: The Economic Pillar-Fintech and Cryptocurrencies**, M. Caprolu, S. Cresci, S. Raponi, R. Di Pietro, *International Conference on Risks and Security of Internet and Systems (CRISIS 2021)*.

- [9] *Beyond SolarWinds: The Systemic Risks of Critical Infrastructures, State of Play, and Future Directions*, S. Raponi, M. Caprolu, R. Di Pietro, *Italian Conference on Cybersecurity (ITASEC)*, 2021.
- [10] *Road Traffic Poisoning of Navigation Apps: Threats and Countermeasures*, S. Raponi, S. Sciancalepore, G. Oligeri, R. Di Pietro, *IEEE Security & Privacy*, 2021.
- [11] *FRCTAL: single-channel multi-FactoR transaction Authentication through a Compromised TerminAL*, S. Sciancalepore, S. Raponi, D. Caldarola, R. Di Pietro, *International Conference on Information and Communications Security (ICICS)*, 2022.
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## FUNDED GRANTS

- **Principal Investigator (PI)**, in the Project “Securing Online Transactions” funded within the Technology and Development Fund (TDF) - Cycle TDF-02, by the Qatar National Research Fund (QNRF). Amount: \$90.627.90
  - **Principal Investigator (PI)**, in the Project “Detecting Cryptojacking in Corporate Network” funded within the Innovation Center’s Idea Development Fund Grant - Cycle 02, by the Hamad Bin Khalifa University, Amount: \$13.700.
  - **Principal Investigator (PI)**, in the Project “Strong Server Authentication for Online Transactions” funded within the Innovation Center’s Idea Development Fund Grant - Cycle 03, by the Hamad Bin Khalifa University, Amount: \$ 13.700.
  - **Research Assistant (RA)**, in the Project “Extending Blockchain Technology – A Novel Paradigm and Its Applications to Cybersecurity and Fintech” funded within the National Priority Research Program (NPRP) - NPRP11S-0109-180242, by the Qatar National Research Fund (QNRF), Amount: \$600.000.
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## ACADEMIC ACTIVITIES

### TECHNICAL PROGRAM COMMITTEE (TPC)

- International Conference on Ambient Systems, Networks and Technologies (ANT 2022)
- International Conference on Database and Expert Systems Applications (DEXA 2022)
- International Conference on Ambient Systems, Networks and Technologies (ANT 2021)
- International Conference on Database and Expert Systems Applications (DEXA 2021)
- Symposium on Access Control Models and Technologies (SACMAT 2021)
- International Workshop on Cyber Crime (IWCC 2021)
- International Workshop on Cyber Crime (IWCC 2020)
- International Symposium on Foundations & Practice of Security (FPS 2020)
- International Conference on Ambient Systems, Networks and Technologies (ANT 2020)

### REVIEWER

- IEEE International Conference on Computer Communication (INFOCOM)
- ACM Conference on Security and Privacy in Wireless and Mobile Networks (WISEC)
- Transactions on Emerging Telecommunications Technologies
- Computer Communications (COMCOM)
- Computer Networks
- IEEE Internet of Things Journal
- Pervasive and Mobile Computing
- International Journal of Information Security
- Journal of Computer Security
- IEEE Access { IET Information Security
- Security and Communication Networks

### SESSION CHAIR

- International Conference on Cloud Computing (2019) – Session VII: Cloud Resources Optimization, San Diego (USA)

### CO-FOUNDER AND EXECUTIVE ASSISTANT

- Qatar International Cyber Security Contest (2019) – Doha (QA) (January 2019 – December 2019)

### MENTOR

- Master’s Thesis, Title: Terminator: a Termination Effect on Symmetric Key Encryption by Hybrid Ransomware, Student: Ahmad Nasser A. A. Alkuwari.
- Master’s Thesis, Title: Unikernels for Web Applications and Services: Analysis, Security Assessment, and Offensive Techniques, Student: Faher Bakri.
- Master’s Thesis, Title: Fake News Propagation Blueprint, Student: Zeinab Khalifa.

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## CERTIFICATIONS

### ARTIFICIAL INTELLIGENCE

- ***Fundamental course in AWS Machine Learning Scholarship***, granted by Amazon Web Services and offered through Udacity
- ***Artificial Intelligence Analyst 2019 Mastery Award***, granted by IBM.
- ***TensorFlow in Practice Specialization***, granted by deeplearning.ai and offered through Coursera, Teachers: Laurence Moroney, AI Advocate at Google Research, and Andrew Ng, VP & Chief Scientist of Baidu and Adjunct Professor at Stanford University.
- ***Deep Learning Specialization***, granted by deeplearning.ai and offered through Coursera, Teacher: Dr. Andrew Ng, VP & Chief Scientist of Baidu and Adjunct Professor at Stanford University.

### CYBERSECURITY

- ***Cybrary's Incident Responder Career***, granted by Cybrary.
- ***Open-Source Intelligence (OSINT) Fundamentals***, granted by TCM Security.
- ***DFIR Investigations and Witness Testimony***, granted by Cybrary.
- ***Phishing***, granted by Cibrary.
- ***Practical Ethical Hacking***, granted by TCM Security.
- ***Cybersecurity Engineering Principles, Process, and Standardization***, granted by 2019 Services Conference Federation (SCF 2019)

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## OTHER

- Research Interests: Artificial Intelligence, Machine Learning, Deep Learning, Cybersecurity, Privacy, Cyber Threat Intelligence, Big Data, Cloud and Distributed Systems, Coding and Programming, Technical Writing.
- Languages: Italian (native), English (fluent), Spanish (Basic), German (Basic).
- Hobbies: reading, writing, working out, playing guitar, chess.