

# Simone Raponi

## Curriculum Vitae

La Spezia  
Italy, 19123

☎ (+39) 375 5532 369  
☎ (+39) 393 0897 242  
✉ s.raponi.93@gmail.com

### Personal information

Birth date **July 28, 1993**

Nationality **Italian**

### Work Experiences

- Dec.'21–ongoing **Machine Learning Scientist at NATO STO-CMRE - Centre for Maritime Research and Experimentation**, La Spezia, IT.  
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.
- Jul.'21–Nov.'21 **Visiting Scientist at NATO STO-CMRE**, La Spezia, IT.
- Mar.'18–May'21 **Teaching Assistant**, *Teaching assistant at Hamad Bin Khalifa University*, Doha, QA.

### Internships

- Mar.'21–Apr.'21 **Iberdrola**, *Machine Learning Scientist in the Smart Grid Lab, Research Internship*, Doha, QA.  
Development and Implementation of a synchronous distributed data acquisition algorithm for the Power Line Communication devices located in geographically distant points. The data thus acquired allowed the creation of a rich database to study the communication delay of Power Line Communication devices adopted worldwide.
- Jun.'19–Aug.'19 **Iberdrola**, *Machine Learning Scientist in the Smart Grid Lab, Research Internship*, Doha, QA.  
Development and Implementation of an Artificial Intelligence-driven noise forecasting model (i.e., Recurrent Neural Network: Long-Short Term Memory) for Power Line Communication devices.
- Jul.'18–Aug.'18 **Telefonica Research**, *Machine Learning and Big Data Scientist, Research Internship*, Barcelona, ES.  
Analysis and Experimentation of the impact of Artificial Intelligence to the privacy of the users interacting with Internet Services.

### Education

- Jan.'18–Apr.'21 **Ph.D. in Computer Science and Engineering**, *Hamad Bin Khalifa University, Doha, Qatar*, Dissertation: AI-driven Detection of Cybersecurity-related Patterns.  
**Best Ph.D. in Computer Science and Engineering Award**. Publication of 1 Book, 10 international conference papers, 7 international journal papers, 2 patents, and 1 encyclopedia entry. Granted funds of approx. \$120,000.
- Jan.'16–Oct.'17 **Master's Degree in Computer Science**, *Sapienza University of Rome*, 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.
- Sep.'12–Jan.'16 **Bachelor's Degree in Computer Science**, *Sapienza University of Rome*, Thesis: "An Administrative Model for Attribute-Based Access Control", *Final mark – 110/110 Summa cum Laude*.

### Research Interests

Artificial Intelligence, Machine Learning, Deep Learning, Cyber Security, Privacy, Cyber Threat Intelligence, Big Data, Cloud and Distributed Systems, Coding and Programming, Technical Writing

### Language skills

Italian Native

English Fluent

Spanish Basic

---

## Patents

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

---

## Books

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

---

## 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. Oligeri, R. Di Pietro*, Computer Communications (COMCOM), 2021.
- [7] **Long-Term Noise Characterization of Narrowband Power Line Communications**, *S. Raponi, J. Fernandez, A. Omri, G. Oligeri*, IEEE Transactions on Power Delivery, 2021.
- [8] **Sound of Guns: Digital Forensics of Gun Audio Samples meets Artificial Intelligence**, *S. Raponi, I. Ali, G. Oligeri*, Springer Nature Multimedia Tools and Applications, 2022.
- [9] **Fake News Propagation: A Review of Models, Datasets, and Insights**, *S. Raponi, Z. Khalifa, G. Oligeri, R. Di Pietro*, ACM Transactions on the Web, 2022.

---

## 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. Oligeri, 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. Oligeri*, 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] **FRACTAL: single-channel multi-FactoR transaction Authentication through a Compromised TerminAL**, S. Sciancalepore, S. Raponi, R. Di Pietro, International Conference on Information and Communications Security (ICICS), 2022.

---

## Submitted Papers

- [1] **Past-AI: Physical-layer Authentication of Satellite Transmitters via Deep Learning**, G. Oligeri, S. Raponi, S. Sciancalepore, R. Di Pietro.
- [2] **Attack Strategies against Internet of Military Things**, S. Raponi, G. Oligeri.

---

## Encyclopedia Entries

- [1] **Communication Channel Anonymity**, S. Raponi, G. Oligeri, Encyclopedia of Cryptography, Security, and Privacy, 2021.

---

## 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 of the Funding: \$ 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 of the Funding: \$ 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 of the Funding: \$ 13.700.

---

## Participation to Projects

**Research Assistant**, 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 of the Funding: \$ 600.000.

---

## Academic Activities

- Jan.'18–May'21 **Teaching Assistant**, Teaching assistant for the course “Security Risk Analysis”, held by Dr. Gabriele Oligeri, Hamad Bin Khalifa University, Doha, QA.
- Jan.'18–May'21 **Teaching Assistant**, Teaching assistant for the course “Multimedia Security”, held by Dr. Gabriele Oligeri, Hamad Bin Khalifa University, Doha, QA.
- Jan.'18–May'21 **Teaching Assistant**, Teaching assistant for the course “Distributed Systems Security”, held by Dr. Roberto Di Pietro, Hamad Bin Khalifa University, Doha, QA.
- Jan.'18–May'21 **Teacher**, Teacher for the “Computer Engineering Winter Program”, held by Hamad Bin Khalifa University, Doha, Qatar.
- Apr. 8–10 '18 **Teaching Assistant**, Teaching assistant for the module “Open Source Intelligence in CyberSpace”, held by Texas A&M University in Qatar, in collaboration with Hamad Bin Khalifa University, Doha.

---

## Certifications

### Artificial Intelligence

- Nov. 2021 **Data Visualization with Python**, *granted by cognitiveclass.ai, powered by IBM Developer Skills Network.*
- Nov. 2021 **Data Analysis with Python**, *granted by cognitiveclass.ai, powered by IBM Developer Skills Network.*
- July 2020 **Fundamental course in the AWS Machine Learning Scholarship**, *granted by Amazon Web Services and offered through Udacity.*
- Mar. 2020 **Artificial Intelligence Analyst 2019 Mastery Award**, *granted by IBM.*
- Apr. 2020 **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.
- Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning Certificate
  - Convolutional Neural Networks in TensorFlow Certificate
  - Natural Language Processing in TensorFlow Certificate
  - Sequences, Time Series and Prediction Certificate
- Nov. 2019 **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.
- Neural Networks and Deep Learning Certificate
  - Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization Certificate
  - Structuring Machine Learning Projects Certificate
  - Convolutional Neural Networks Certificate
  - Sequence Models Certificate

### Cybersecurity

- Jan. 2021 **Cybrary's Incident Responder Career**.
- Incident Response Steps
  - Incident Response Planning
  - Implementing an Incident Response Plan
  - Incident Response Recovery
  - Online Reconnaissance
  - Scanning and Enumeration with NMAP
  - Attacks and Persistence for Incident Handlers
  - Evasion for Incident Handlers
  - Stealth Techniques for Incident Handlers
  - Analyzing Attacks for Incident Handlers
- Nov. 2020 **Open-Source Intelligence (OSINT) Fundamentals**, *granted by TCM Security Inc. and offered through Academy*, Teacher: Heath Adams, Ethical Hacker, founder and CEO of TCM Security, Inc..
- Nov. 2020 **DFIR Investigations and Witness Testimony**, *granted by Cybrary.*
- Nov. 2020 **Phishing**, *granted by Cybrary.*
- June 2020 **Practical Ethical Hacking**, *granted by TCM Security Inc. and offered through Udemy*, Teacher: Heath Adams, Ethical Hacker, founder and CEO of TCM Security, Inc..
- July 2019 **Cybersecurity Engineering Principles, Process, and Standardization**, *granted by 2019 Services Conference Federation (SCF 2019).*

### Others

- Oct. 2020 **Learning How to Learn: Powerful mental tools to help you master tough subjects**, *granted by McMaster University and UC San Diego and offered through Coursera*, Teachers: Barbara Oakley, Ramon y Cajal Distinguished Scholar of Global Digital Learning at McMaster University, Terry Sejnowski, Francis Crick Professor at the Salk Institute for Biological Studies.
- July 2020 **Mathematical Thinking in Computer Science**, *granted by the University of California San Diego and National Research University Higher School of Economics and offered through Coursera.*
- July 2019 **Practical DataOps**, *granted by 2019 Services Conference Federation (SCF 2019).*

---

## Academic Services

### Technical (Program) Committee.

- 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)

### 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.