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.

[10] **PAST-AI: Physical-layer Authentication of Satellite Transmitters via Deep Learning**, *G. Oligeri, S. Sciancalepore, S. Raponi, R. Di Pietro*, IEEE Transactions on Information Forensics and Security (TIFS), 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, D. Caldarola, R. Di Pietro*, International Conference on Information and Communications Security (ICICS), 2022.

Submitted Papers

[1] **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.