Simone **Raponi**

SENIOR AI/ML CYBERSECURITY ENGINEER
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Summary

Dedicated AI/ML Cybersecurity Engineer at Equixly with a Ph.D. in Computer Science, specializing in Cybersecurity and Artificial Intelligence. Boasting over 5 years in R&D, I've contributed to over 20 scientific articles, authored a book, and hold multiple patents. Passionate about innovation and lifelong learning in the tech frontier.

Work Experience

Equixly — *Remote, Florence*
SENIOR AI/ML CYBERSECURITY ENGINEER — *Jul. 2023 –*
- Responsible for the Artificial Intelligence division in Equixly.
- Design and deployment of multiple AI microservices to optimize continuous security testing for APIs.

Undisclosed — *Rome, Italy*
SENIOR MACHINE LEARNING ENGINEER — *Mar. 2023 - Jun. 2023*
- Design and deployment of AI-based Cybersecurity-related solutions for a defense sector enterprise, collaborating closely with institutions and government entities.

NATO-STO Center for Maritime Research and Experimentation (CMRE) — *La Spezia, Italy*
MACHINE LEARNING SCIENTIST — *Jul. 2021 - Mar. 2023*
- Main contributor of the PROMENADE European project.
- Development of Encoder-Decoder Seq2Seq models with LSTMs to forecast vessel trajectories using AIS data.

Iberdrola Innovation Middle East — *Doha, Qatar*
MACHINE LEARNING SCIENTIST INTERN IN THE SMART GRID LAB — *(Jun. - Aug. 2019) (Mar - Apr. 2021)*
- Design and deployment of LSTM-based noise prediction models to optimize noise management in Power Line Communication (PLC) systems.
- Development distributed algorithms for data acquisition across geographically dispersed PLC devices, enhancing system reliability.

Telefonica Research — *Barcelona, Spain*
MACHINE LEARNING AND BIG DATA SCIENTIST INTERN — *Jul. 2018 - Aug. 2018*
- Analysis and Experimentation of AI's impact on the privacy of users while interacting with Internet services.

Hamad Bin Khalifa University — *Doha, Qatar*
TEACHING ASSISTANT — *Jan. 2018 - Apr. 2021*
- TA for a suite of specialized courses: Security Risk Analysis, Multimedia Security, Distributed Systems Security, Computer Engineering Winter Program, and Open Source Intelligence in Cyberspace.
- Delivery of interactive lectures, design and evaluation of examinations, projects, and lab assignments to advance practical and theoretical understanding in cybersecurity.

Education

Hamad Bin Khalifa University — *Doha, Qatar*
PH.D. IN COMPUTER SCIENCE AND ENGINEERING — *Jan. 2018 - Apr. 2021*
- Awards: Best Ph.D. in Computer Science and Engineering.
- Thesis: AI-driven Detection of Cybersecurity-related Patterns.
- Outcomes: 1 book, 11 Int. conference papers, 10 Int. journal papers, 2 patents, 1 encyclopedia entry.
- Granted funds of $120.000.

Sapienza University of Rome — *Rome, Italy*
MASTER'S DEGREE IN COMPUTER SCIENCE — *Jan. 2016 - Oct. 2017*
- Thesis: Geographical De-anonymization of Crowds in the Dark Web.
- Final Mark: 110/110 summa cum laude.
- Publication of thesis dissertation to IEEE International Conference on Distributed Computing Systems.
- Publication of thesis dissertation extension to IEEE Transactions on Services Computing.

Sapienza University of Rome — *Rome, Italy*
BACHELOR'S DEGREE IN COMPUTER SCIENCE — *Sep. 2012 - Jan. 2016*
- Thesis: An Administrative Model for Attribute-Based Access Control.
- Final Mark: 110/110 summa cum laude.

Publications

Patents

US Patent App. 16/657,088, Methods and Systems for Verifying the Authenticity of a Remote Service
US Patent App. 16/880,525, Online Account Access Recovery System and Method Utilizing Secret Splitting

Books

2021   **New Dimensions of Information Warfare**, *R. Di Pietro, S. Raponi, M. Caprolu, S. Cresci*, Springer Nature

Journal Papers

2023   **Monitoring of Critical Undersea Infrastructures: the Nord Stream and Other Recent Case Studies**, *G. Soldi, D. Gaglione, S. Raponi, N. Forti, E. D'Afflisio, P. Kowalski, L. M. Millefiori, D. Zizzis, P. Braca, P. Willet, A. Maguer, S. Carniel, G. Sembenini, C. Warner*, IEEE Aerospace and Electronic Systems Magazine.

2022   **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   **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   **Sound of Guns: Digital Forensics of Gun Audio Samples meets Artificial Intelligence**, *S. Raponi, I. Ali, G. Oligeri*, Springer Nature Multimedia Tools and Applications.

2021   **Long-Term Noise Characterization of Narrowband Power Line Communications**, *S. Raponi, J. Fernandez, A. Omri, G. Oligeri*, IEEE Transactions on Power Delivery.

2021   **Cryptomining Makes Noise: Detecting Cryptojacking via Machine Learning**, *M. Caprolu, S. Raponi, G. Oligeri, R. Di Pietro*, Computer Communications (COMCOM).

2020   **A Longitudinal Study on Web-Sites Password Management (in)Security: Evidence and Remedies**, *M. Caprolu, R. Di Pietro, S. Raponi, S. Sciancalepore, P. Tedeschi*, IEEE Access.

2020   **Vessels Cybersecurity: Issues, Challenges, and the Road Ahead**, *M. Caprolu, R. Di Pietro, S. Raponi, S. Sciancalepore, P. Tedeschi*, IEEE Communication Magazine.

2019   **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   **FORTRESS: An Efficient and Distributed Firewall for Stateful Data Plane SDN**, *M. Caprolu, S. Raponi, R. Di Pietro*, Security and Communication Networks.

2018   **Docker ecosystem – Vulnerability Analysis**, *A. Martin, S. Raponi, T. Combe, R. Di Pietro*, Computer Communications (COMCOM).

Conference Papers

2022   **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).

2021   **Road Traffic Poisoning of Navigation Apps: Threats and Countermeasures**, *S. Raponi, S. Sciancalepore, G. Oligeri, R. Di Pietro*, IEEE Security & Privacy.

2021   **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   **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).

2021   **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.

2020   **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   **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).

2019   **Intrusion Detection at the Network Edge: Solutions, Limitations, and Future Directions**, *S. Raponi, M. Caprolu, R. Di Pietro*, International Conference on Edge Computing.

2019   **Edge Computing Perspectives: Architectures, Technologies, and Open Security Issues**, *M. Caprolu, R. Di Pietro, F. Lombardi, S. Raponi*, IEEE International Conference on Edge Computing.

2018   **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   **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).

Extracurricular Activity

The Illustrated Machine Learning Website
Co-Founder and Technical Contributor

Remote

Jan. 2023 –

- https://illustrated-machine-learning.github.io/
- Creation of visual tools to demystify the elegance and intricate workings of machine learning concepts.

RedHotCyber
Technical Writer – Artificial Intelligence Team

Remote

Jul. 2023 –

- Author of insightful content exploring the synergies between Cybersecurity, Artificial Intelligence, and their practical applications.

Packt
Technical Reviewer

Remote

Apr. 2023 –

- Technical Reviewer of the book: 10 Machine Learning Blueprints you should know for Cybersecurity.

Funded Grants

2020	**Principal Investigator,** Project "Securing Online Transactions" funded within the Technology and Development Fund (TDF) - Cycle TDF-02, by the Qatar National Research Fund	*$90.627.90*
2019	**Principal Investigator,** Project "Detecting Cryptojacking in Corporate Network" funded within the Innovation Center's Idea Development Fund Grant - Cycle 02	*$13.700*
2020	**Principal Investigator,** 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	*$13.700*
2020	**Research Assistant,** Project "Extending Blockchain Technology – A Novel Paradigm and Its Applications to Cybersecurity and Fintech" funded within NPRP11S-0109-180242, by the Qatar National Research Fund	*$600.000*

Academic Activities

Technical Program Committee
Member of the Technical Program Committee

Jan. 2018 -

- International Conference on Database and Expert Systems Applications (DEXA 2024)
- International Conference on Database and Expert Systems Applications (DEXA 2023)
- International Conference on Information Fusion (FUSION 2023)
- 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
Official Reviewer

Jan. 2018 -

- 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
- Journal of Marine Science and Engineering (JMSE)
- Mathematical Biosciences and Engineering
- MDPI Applied Sciences

Session Chair
Chair

San Diego, USA

2019

- International Conference on Cloud Computing, Session VII: Cloud Resources Optimization

Co-Founder and Executive Assistant *Doha, Qatar*

2019

- Qatar International Cyber Security Contest

Mentor *Doha, Qatar*

Master Student's Mentor *2019*

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