

Giampaolo Bovenzi

Curriculum Vitæ et Studiorum

Personal Information

Name **Giampaolo**

Surname **Bovenzi**

Nationality **Italian**

Contacts

Email giampaolo.bovenzi@unina.it

LinkedIn <https://www.linkedin.com/in/giampaolo-bovenzi/>

Web Site <http://wpage.unina.it/giampaolo.bovenzi/>

GitHub <https://github.com/jmpr0/>

Affiliation

**Department of Electrical Engineering and Information Technology (DIETI),
University of Napoli Federico II, Via Claudio 21, 80125, Napoli, Italy**

Current Position

Oct 2023 – Present **Assistant Professor (RTD-a)**, *University of Napoli Federico II*, enrolled in the research project approved under the National Recovery and Resilience Plan (PNRR) titled: “RESearch and innovation on future Telecommunications systems and networks, to make Italy more smART” (RESTART) PE14

Work Experience

Jun 2022 – Jun 2023 **Post-Doctoral Researcher**, *University of Napoli Federico II*, analysis and development of techniques for modeling, generation, and prediction of network application traffic

Education

Academic Qualifications

May 2022 **PhD in Information Technology and Electrical Engineering (XXXIV Cycle)**, *University of Napoli Federico II*

Oct 2018 **Master's Degree in Computer Engineering**, *University of Napoli Federico II*, specialization in Networks and Internet. Final grade: 110/110 summa cum laude

Jan 2016 **Bachelor's Degree in Computer Engineering**, *University of Napoli Federico II*. Final grade: 101/110

Jul 2012 **Scientific High School Diploma National Informatics Plan (PNI)**, *Scientific High School "L. Garofano", Capua (CE)*. Final grade: 87/100

Theses

- O-3 **Giampaolo Bovenzi**, "A Hierarchical Learning Framework for Network Traffic Analysis: Design, Implementation, and Use Cases", Doctoral Thesis in Information Technology and Electrical Engineering, University of Napoli Federico II. Feb 2022
- O-2 **Giampaolo Bovenzi**, "A Framework for Hierarchical Traffic Classification of Anonymity Networks", Master's Thesis in Computer Engineering, University of Napoli Federico II. Oct 2018
- O-1 **Giampaolo Bovenzi**, "Hypergraph Database", Bachelor's Thesis in Computer Engineering, University of Napoli Federico II. Jan 2016

Languages

Italian, native language

English, fluent

Internship Activities

Nov 2020 – **At Huawei R&D Center France**, *Huawei Technologies France S.A.S.U.*. Focused

May 2021 on participating in work groups dedicated to research and review activities, this internship materializes in publication C-4.

Mar – Jul 2018 **At ARCLAB**, *University of Napoli Federico II*, DIETI. Focused on participating in work

groups dedicated to research and review activities, this internship materializes in publication C-1, particularly in the Master's Thesis (O-2), from which J-1 is developed.

Academic and Research Activities

Indicators of Scientific Production

Google Scholar¹

Citations **604**

Max Citations **187**, (C-3)

h-index **12**

i10-index **12**

Scopus²

Citations **453**

Max Citations **143**, (C-3)

h-index **10**

Journal Publications

- J-9 **Giampaolo Bovenzi, Davide Di Monda, Antonio Montieri, Valerio Persico, and Antonio Pescapè**, "Classifying attack traffic in IoT environments via few-shot learning", Elsevier Journal of Information Security and Applications. 2024

¹<https://scholar.google.com/citations?user=XkAQSCkAAAAJ>

²<https://www.scopus.com/authid/detail.uri?authorId=57205422691>

- J-8 **Francesco Cerasuolo, Alfredo Nascita, Giampaolo Bovenzi, Giuseppe Aceto, Domenico Ciuonzo, Antonio Pescapè, and Dario Rossi**, *MEMENTO: A novel approach for class incremental learning of encrypted traffic*, Elsevier Computer Networks. 2024
- J-7 **Giampaolo Bovenzi, Giuseppe Aceto, Valerio Persico, Antonio Pescapè**, “*Blockchain Performance in Industry 4.0: Drivers, use cases, and future directions*”, Elsevier Journal of Industrial Information Integration. 2023
- J-6 **Giampaolo Bovenzi, Alfredo Nascita, Lixuan Yang, Alessandro Finamore, Giuseppe Aceto, Domenico Ciuonzo, Antonio Pescapè, Dario Rossi**, “*Benchmarking Class Incremental Learning in Deep Learning Traffic Classification*”, IEEE Transactions on Network and Service Management. 2023
- J-5 **Giampaolo Bovenzi, Giuseppe Aceto, Domenico Ciuonzo, Antonio Montieri, Valerio Persico, Antonio Pescapè**, “*Network Anomaly Detection Methods in IoT Environments via Deep Learning: A Fair Comparison of Performance and Robustness*”, Elsevier Computers & Security. 2023
- J-4 **Antonio Montieri, Giampaolo Bovenzi, Giuseppe Aceto, Domenico Ciuonzo, Valerio Persico, Antonio Pescapè**, “*Packet-Level Prediction of Mobile-App Traffic using Multitask Deep Learning*”, Elsevier Computer Networks. 2021
- J-3 **Giuseppe Aceto, Giampaolo Bovenzi, Domenico Ciuonzo, Antonio Montieri, Valerio Persico, Antonio Pescapè**, “*Characterization and Prediction of Mobile-app Traffic Using Markov Modeling*”, IEEE Transactions on Network Service and Management. 2021
- J-2 **Giampaolo Bovenzi, Giuseppe Aceto, Domenico Ciuonzo, Valerio Persico, Antonio Pescapè**, “*A Big Data-enabled Hierarchical Framework for Traffic Classification*”, IEEE Transactions on Network Science and Engineering. 2020
- J-1 **Antonio Montieri, Domenico Ciuonzo, Giampaolo Bovenzi, Valerio Persico, Antonio Pescapè**, “*A Dive into the Dark Web: Hierarchical Traffic Classification of Anonymity Tools*”, IEEE Transactions on Network Science and Engineering. 2019

Conference/Workshop Publications

- C-14 **Francesco Cerasuolo, Giampaolo Bovenzi, Vincenzo Spadari, Domenico Ciuonzo, and Antonio Pescapè**, “*Explainable Few-Shot Class Incremental Learning for Mobile Network Traffic Classification*”, IEEE Global Communications Conference (GLOBECOM'24), Cape Town, South Africa. 2024
- C-13 **Vincenzo Spadari, Francesco Cerasuolo, Giampaolo Bovenzi, and Antonio Pescapè**, “*An MLOps Framework for Explainable Network Intrusion Detection with MLflow*”, IEEE Symposium on Computers and Communications (ISCC), Paris, France. 2024
- C-12 **Davide Di Monda, Giampaolo Bovenzi, Antonio Montieri, Valerio Persico, and Antonio Pescapè**, “*IoT Botnet-Traffic Classification Using Few-Shot Learning*”, IEEE International Conference on Big Data (BigData), Sorrento, Italy. 2023

- C-11 **Francesco Cerasuolo, Giampaolo Bovenzi, Christian Marescalco, Francesco Cirillo, and Domenico Ciuonzo, and Antonio Pescapè**, “*Adaptive intrusion detection systems: Class incremental learning for IoT emerging threats*”, IEEE International Conference on Big Data (BigData), Sorrento, Italy. 2023
- C-10 **Giampaolo Bovenzi, Davide Di Monda, Antonio Montieri, Valerio Persico, and Antonio Pescapè**, “*META MIMETIC: Few-Shot Classification of Mobile-App Encrypted Traffic via Multimodal Meta-Learning*”, International Teletraffic Congress Proceedings (ITC'23), Turin, Italy. 2023
- C-9 **Giampaolo Bovenzi, Davide Di Monda, Antonio Montieri, Valerio Persico, and Antonio Pescapè**, “*Few Shot Learning Approaches for Classifying Rare Mobile-App Encrypted Traffic Samples*”, IEEE International Conference on Computer Communications (INFOCOM'23), New York, USA. 2023
- C-8 **Giampaolo Bovenzi, Valerio Persico, Antonio Pescapè, Anna Piscitelli, and Vincenzo Spadari**, “*Hierarchical Classification of Android Malware Traffic*”, International Workshop on Cyberspace Security and Artificial Intelligence (CAI'22), Wuhan, People's Republic of China. 2022
- C-7 **Idio Guarino, Giampaolo Bovenzi, Davide Di Monda, Giuseppe Aceto, Domenico Ciuonzo, and Antonio Pescapè**, “*On the use of Machine Learning Approaches for the Early Classification in Network Intrusion Detection*”, IEEE International Workshop on Measurements and Networking Proceedings (M&N'22), Padua, Italy. 2022
- C-6 **Giampaolo Bovenzi, Francesco Cerasuolo, Antonio Montieri, Alfredo Nascita, Valerio Persico, and Antonio Pescapè**, “*A Comparison of Machine and Deep Learning Models for Detection and Classification of Android Malware Traffic*”, IEEE Symposium on Computers and Communications (ISCC'22), Rhodes Island, Greece. 2022
- C-5 **Giampaolo Bovenzi, Alessio Foggia, Salvatore Santella, Alessandro Testa, Valerio Persico, and Antonio Pescapè**, “*Data Poisoning Attacks against Autoencoder-based Anomaly Detection Models: a Robustness Analysis*”, IEEE International Conference on Communications (ICC'22), Seoul, South Korea. 2022
- C-4 **Giampaolo Bovenzi, Lixuan Yang, Alessandro Finamore, Giuseppe Aceto, Domenico Ciuonzo, Antonio Pescapè, Dario Rossi**, “*A First Look at Class Incremental Learning in Deep Learning Mobile Traffic Classification*”, Network Traffic Measurement and Analysis Conference (TMA'21), Virtual. 2021
- C-3 **Giampaolo Bovenzi, Giuseppe Aceto, Domenico Ciuonzo, Valerio Persico, Antonio Pescapè**, “*A Hierarchical Hybrid Intrusion Detection Approach in IoT Scenarios*”, IEEE Global Communications Conference (GLOBECOM'20), Taipei, Taiwan. 2020
- C-2 **Gabriele Piantadosi, Giampaolo Bovenzi, Giuseppe Argenziano, Elvira Moscarella, Domenico Parmeggiani, Ludovico Docimo, Carlo Sansone**, “*Skin Lesions Classification: A Radiomics Approach with Deep CNN*”, International Conference on Image Analysis and Processing (ICIAP'19). Springer, Cham. 2019

C-1 **Giampaolo Bovenzi, Domenico Ciuonzo, Valerio Persico, Antonio Pescapè, Pierluigi Salvo Rossi**, “*IoT-Enabled Distributed Detection of a Nuclear Radioactive Source via Generalized Score Tests*”, Fourth International Symposium on Signal Processing and Intelligent Recognition Systems (SIRS’18), Bangalore, India. 2018

Book Chapters

B-1 **Ruggiero Bollino, Giampaolo Bovenzi, Francesco Cipolletta, Ludovico Docimo, Michela Gravina, Stefano Marrone, Domenico Parmeggiani, and Carlo Sansone**, “*Synergy-Net: Artificial Intelligence at the Service of Oncological Prevention*”, Springer Handbook of Artificial Intelligence in Healthcare. 2022

Conference Chair

Jul 2024 **Web Chair**, 1st IEEE International Workshop on Generative, Incremental, Adversarial, Explainable AI/ML in Distributed Computing Systems (AI-DCS), Jersey City, New Jersey (USA)

Member of Technical Program Committee (TPC) for International Conferences

- 2024 IEEE Future Networks World Forum (IEEE FNWF2024)
- 2024 IEEE/ACM International Symposium on Quality of Service (IEEE/ACM IWQoS2024)
- 2024 IFIP Networking Conference (IFIP NETWORKING2024)
- 2023 IEEE International Conference on Microwaves, Communications, Antennas, Biomedical Engineering & Electronic Systems (IEEE COMCAS2023)
- 2023 IEEE Cyber Security and Resilience Workshop on Data Science for Cyber Security (IEEE CSR2023 DS4CS)

Editorial and Revision Activities

Editorial Activities

Mar 2024 – **Associate Editor**, Elsevier Neurocomputing (NeuroCom)
Present

Reviewer for International Journals

- AIMS Mathematical Biosciences and Engineering
- Elsevier Computer Networks
- Elsevier Computers & Security
- Elsevier Neurocomputing
- Elsevier Journal of Network and Computer Applications
- IEEE/ACM Transactions on Networking
- IEEE Access
- IEEE Communications Letters

- IEEE Computer Networks
- IEEE Internet of Things Journal
- IEEE Open Journal of the Communications Society
- IEEE Transactions on Network and Service Management
- Springer Computing
- Wiley Concurrency and Computation: Practice and Experience
- Wiley Transactions on Emerging Telecommunications Technologies

Reviewer for International Conferences

- IEEE/ACM International Symposium on Quality of Service
- IEEE Sensors Applications Symposium
- IEEE INFOCOM WKSHPS: Integrating Edge Computing, Caching, and Offloading in Next Generation Networks
- IEEE JSAC Series on Machine Learning for Communications and Networks
- IEEE Global Communications Conference
- IEEE International Conference on Communications
- IEEE Symposium on Computers and Communications

Conference Presentations

Keynote Speaker at International Conferences

- Nov 2024: **2024 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT 2024)**, Presentation of the keynote “Toward Effective Network Intrusion Detection Systems: Incremental Learning with Few Attack Samples”, Nov 17–17, 2024, Virtual

Speaker at International Conferences

- May 2023: **Ital-IA, National CINI Conference on Artificial Intelligence (Ital-IA 2023)**, Presentation of the contribution “Few Shot Learning Approaches for Classifying Rare Mobile-App Encrypted Traffic Samples”, May 29–31, 2023 Pisa, Italy
- January 2023: **The 19th Italian Networking Workshop (INW 2023)**, Presentation of the contribution “Detection of Rare Attacks in Internet of Things Traffic via Few-Shot Learning”. January 16–18, 2023, Ponte di Legno, Italy
- October 2022: **The 14th International Workshop on Cyberspace Security and Artificial Intelligence (CAI 2022)**, Presentation of the paper “Hierarchical Classification of Android Malware Traffic”. October 28-30, 2022, Wuhan, People's Republic of China

- May 2022: ***The 2022 IEEE International Conference on Communications (ICC 2022) Communication QoS, Reliability and Modeling (CQRM) Symposium***, Presentation of the paper “Data Poisoning Attacks against Autoencoder-based Anomaly Detection Models: a Robustness Analysis” May 16-20, 2022, Seoul, South Korea
- January 2022: ***The 18th Italian Networking Workshop (INW 2022)***, Presentation of the contribution “A First Look at Class Incremental Learning in Deep Learning Mobile Traffic Classification” January 17–19, 2022, Courmayeur, Italy
- September 2021: ***The 2021 Network Traffic Measurement and Analysis Conference (TMA 2021)***, Presentation of the paper “A First Look at Class Incremental Learning in Deep Learning Mobile Traffic Classification”. September 14-15, 2021, Virtual
- December 2020: ***The 2020 IEEE Global Communications Conference (GLOBECOM 2020)***, Communication QoS, Reliability and Modeling (CQRM) Symposium, Presentation of the paper “A Hierarchical Hybrid Intrusion Detection Approach in IoT Scenarios”. December 7–11, 2020, Virtual
- January 2020: ***The 17th Italian Networking Workshop (INW 2020)***, Presentation of the contribution “Know your Big Data Trade-offs when Classifying Encrypted Mobile Traffic with Deep Learning”. January 29–31, 2020, Cavalese, Italy
- March 2019: ***Ital-IA, National CINI Conference on Artificial Intelligence (Ital-IA 2019)***, Presentation of the contribution “Classificazione Gerarchica del Traffico di Reti Anonime con Machine Learning”, March 18–19, 2019 Roma, Italy

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