

Curriculum vitae

Personal information

Enrico Cambiaso



Nationality

Last update March 30, 2023

WORK EXPERIENCE

Technologist

June 2017 - present

Consiglio Nazionale delle Ricerche (CNR-IEIIT)

Genoa (Italy)

Research technologist working on research activities on the network security field and with involvement on European, national and local research projects.

February 2016 - May 2017

Research Fellow

Consiglio Nazionale delle Ricerche (CNR-IEIIT)

Genoa (Italy)

Research activities in the network security field, concerning the study of innovative cyberthreats, design of novel intrusion detection systems, and implementation of attacks testing and distribution infrastructures. Involvement in European, national and local research projects.

January 2015 - June 2015

External collaborator

Selex ES

Genoa (Italy)

Development of a project focused on security for cloud based services (Device as a Service, DaaS).

January 2013 - January 2016

Research Fellow

Consiglio Nazionale delle Ricerche (CNR-IEIIT)

Genoa (Italy)

Research activities in the network security field, concerning the study of innovative cyber-threats, design of novel intrusion detection systems, and implementation of attacks testing and distribution infrastructures. Involvement in European, national and local research projects.

January 2013 - January 2015

External collaborator

Ansaldo STS

Genoa (Italy)

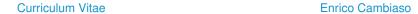
Study and development of a software and hardware virtual patching system identifying and preventing malware spread on non updated ICT networks.

2008 Software and web developer

Planet HT S.r.l.

Genoa (Italy)

For three months, computer programmer for the development of a management software in Microsoft Visual Studio environments, with support to both mobile and web clients.





2004 Software developer

Genoa (Italy)

For two months, computer programmatore for the development of a management software written in Visual Basic programming language.

TEACHING ACTIVITIES

Teacher

April 4, 2023 - June 30, 2023

ITS-ICT Accademia Digitale Liguria

Genoa (Italy)

Teacher for the following courses: 1) "Tecnico superiore per la gestione della cyber security con specializzazione per l'Industria 4.0": module 1.19 Scripting; 2) "Tecnico superiore per i metodi e le tecnologie per la gestione di sistemi hardware/software con specializzazione per l'Industria 4.0": module 2.2.2 Scripting, module 2.3.2 Gestione Windows Server, module 2.3.3 Gestione Linux Server. All courses are held by Fondazione ITS-ICT Accademia Digitale Liguria of Genoa, for a total duration of 62 hours. Prot. Accademia Digitale Liguria n. 211 del 27/02/2023, Prot. n. 232 dated 01/03/2023. CNR communication n. 13586/2023.

September 2022 - June 2023

University teacher

Università degli Studi di Genova (DITEN, Scuola Politecnica, Ingegneria Informatica) Genoa (Italy)

University teacher for the course "STRATEGOS - Strategies for Telecommunications" (2022/2023), by Università degli Studi di Genova, for a total duration of 10 hours. Selection prot. UNIGE n. 3430/2022 dated June 8, 2022. CNR communication n. 12162/2022.

May 12, 2022 - June 16, 2022

Teacher

ITS-ICT Accademia Digitale Liguria

Genoa (Italy)

Teacher for the course module M9 - IT Service Management - 9.2 – Scripting, by Fondazione ITS-ICT Accademia Digitale Liguria of Genoa, for a total duration of 16 hours. Prot. Accademia Digitale Liguria n. 261 dated March 14, 2022. CNR communication n. 11061 dated April 8, 2022.

November 2021 - March 2022

Master thesis supervisor

Università degli Studi di Genova (DAD, Dipartimento di Architettura e Design) Genova (Italy)

Supervision of the master thesis titled "Alla scoperta del linguaggio incomprensibile" by Dr. Erijon Ademi.

September 2021 - June 2022

University teacher

Università degli Studi di Genova (DITEN, Scuola Politecnica, Ingegneria Informatica) Genoa (Italy)

University teacher for the course "STRATEGOS - Strategies for Telecommunications" (2021/2022), by Università degli Studi di Genova, for a total duration of 10 hours. Selection prot. UNIGE n. 3016/2021 dated May 26, 2021. CNR communication n. 8703/2021.

October 2020 - June 2021

University teacher

Università degli Studi di Genova (DITEN, Scuola Politecnica, Ingegneria Informatica) Genoa (Italy)

University teacher for the course "STRATEGOS - Strategies for Telecommunications" (2020/2021), by Università degli Studi di Genova, for a total duration of 10 hours. CNR communication n. 5768 dated August 18, 2020.





September 4-10, 2020

University master teacher

Università degli Studi di Genova

Genoa (Italy)

Teaching activities of the second grade university master on "Cybersecurity and Critical Intrastructure Protection" (2019/2020), by Università degli Studi di Genova, relatively to the Network Security module, for a total duration of 4 hours. CNR SIPER assignment n. 5852/2020.

September 2020 - November 2020

External Ph.D. thesis reviewer

International Institute of Information Technology Bangalore (Deemed University) Bangalore (India)

External reviewer for the Ph.D. thesis titled "Feedback manipulation in next generation transport layer protocols: emerging threats and counter measures", submitted by V. Anil Kumar (student enrollment n. PH2011006), under the supervision of Prof. Debabrata Das, IIITB. CNR communication n. 6213 dated September 30, 2020.

September 2019 - September 2020

University teacher

Università degli Studi di Genova

Genoa (Italy)

University teacher for the course "STRATEGOS - Strategies for Telecommunications" (2019/2020), by Università degli Studi di Genova, for a total duration of 10 hours. CNR communication n. 4904 dated February 21, 2020,

June 2019

University master teacher

Università degli Studi di Genova

Genova (Italy)

Teaching activities of the second grade university master on "Cybersecurity and critical infrastructure protection" (2018/2019), by Università degli Studi di Genova, relatively to the Network Security module, for a total duration of 4 hours. CNR communication n. 3050 dated June 11, 2019

October 2017 - May 2021

Ph.D. thesis supervisor

Università degli Studi di Genova (DIBRIS, Scuola Politecnica, Ingegneria Informatica) Genoa (Italy)

Supervision of the Ph.D. thesis titled "Security aspects about Internet of Things networks, devices and communication protocols" by Dr. Ivan Vaccari.

July 2016 - March 2017

Master thesis supervisor

Università degli Studi di Genova (DIBRIS, Scuola Politecnica, Ingegneria Informatica) Genova (Italy)

Supervision of the master thesis titled "Analisi di sicurezza in ambienti IoT implementati attraverso il protocollo Wi-Fi" by Dr. Federico Pastorino.

July 2016 - March 2017

Master thesis supervisor

Università degli Studi di Genova (DIBRIS, Scuola Politecnica, Ingegneria Informatica) Genova (Italy)

Supervision of the master thesis titled "Studio delle problematiche di sicurezza su reti ZigBee in riferimento al fenomeno Internet of Things" by Dr. Ivan Vaccari.

January 2013 - July 2013

Master thesis supervisor

Università degli Studi di Genova (DIBRIS, Dipartimento di Informatica) Genova (Italy)

Supervision of the master thesis titled "Analisi e Sviluppo di una Rete Cooperativi per attacchi di tipo 'Slow DoS' Utilizzando Dispositivi Mobili" by Dr. Paolo Farina.

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RESPONSIBILITIES

from May 2022 - ongoing

Access Port Manager (APM) for Stazione Marina headquarters of the CNR-IAS institute

CNR, Sede Secondaria di Genova dell'Istituto per lo studio degli impatti Antropici e sostenibilità in ambiente marino

Member of the "Gruppo di Lavoro Identità, collaborazione digitale e si-

Network manager for institute location

August 1, 2022 - July 31, 2024

CNR, IEIIT institute

Network manager for the headquarter

August 1, 2022 - July 31, 2024

CNR, headquarters of Corso Perrone in Genoa

November 17, 2022 - November 16, 2023

curezza" group

Consiglio Nazionale delle Ricerche (CNR)

Access Port Manager (APM) for Area della Ricerca di Genova

from June 2019 - ongoing CNR. Area della Ricerca di Genova

EDUCATION AND TRAINING

Ph.D

2013 - 2016

Università degli Studi di Genova (DIBRIS)

Genoa (Italy)

Obtained Ph.D in computer science (network and cyber security field), with thesis titled "Development and Detection of Slow DoS Attacks". The research work was accomplished in collaboration with Consiglio Nazionale delle Ricerche (CNR-IEIIT) of Genoa, Italy.

2010 - 2012 Master Degree

Università degli Studi di Genova (DIBRIS)

Genoa (Italy)

Obtained master degree in computer science, curriculum "Software development", with thesis titled "Analysis of Slow DoS Attacks". The research work was accomplished in collaboration with Consiglio Nazionale delle Ricerche (CNR-IEIIT) of Genoa, Italy. Final score: 110/110 with honour.

2004 - 2009 **Bachelor Degree**

Università degli Studi di Genova (DIBRIS)

Genoa (Italy)

Obtained bachelor degree in computer science, curriculum "Software development", with thesis titled "Tipologie di attacchi a reti wireless protette". The research work was accomplished in collaboration with Consiglio Nazionale delle Ricerche (CNR-IEIIT) of Genoa, Italy.

High School Degree 1998 - 2003

Istituto Tecnico Superiore Giuseppe Cesare Abba

Genoa (Italy)

Obtained high school degree as accountant, computer science program.



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PROFESSIONAL CERTIFICATIONS

eLearnSecurity Network Defense Professional (eNDP) Obtained certificate of the eLearnSecurity Network Defense Professional (eNDP) course, issued by eLearnSecurity and relative to the security of an ICT network. Course completed on January 15, 2021 (Certificate n. 9224207). URL: https://elearnsecurity.com/product/endp-certification/

eLearnSecurity Certified Incident Responder (eCIR) Obtained certificate of the eLearnSecurity Certified Incident Responder (eCIR) course, issued by eLearnSecurity and relative to incident handling procedures and processes. Course completed on March 20, 2021 (Certificate n. 3240953). URL: https://elearnsecurity.com/product/ecir-certification/

Splunk 7.x Fundamentals Part 1 (eLearning)

Obtained certificate of the Splunk 7.x Fundamentals Part 1 (eLearning) course, issued by Splunk and relative to the use of the Splunk SIEM tool. Course completed on March 22, 2021. URL: https://www.splunk.com/en_us/training/free-courses/splunk-fundamentals-1.html

Rulex Academy Certification – Level 1 – Rulex Basic Training Obtained Rulex Academy Certification – Level 1 – Rulex Basic Training certificate, issued by Rulex Inc. and relative to the use of the big data processing software Rulex Analytics. Course completed on May 8, 2020. URL: https://www.rulex-inc.com

Mind Mapping: Unlock Your Brain Power with Mind Mapping Obtained certificate of the Mind Mapping: Unlock Your Brain Power with Mind Mapping course, issued by Udemy and relative to mind mapping techniques. Course completed on March 17, 2020 (Certificate n. UC-5c035e83-6691-4246-8846-d4d171beb3c0). URL: https://ude.my/UC-5c035e83-6691-4246-8846-d4d171beb3c0

Cybersecurity Essentials

Obtained certificate of the Cybersecurity Essentials course, issued by Cisco Networking Academy - ASSINT - Associazione per lo sviluppo dell'Innovazione e delle Nuove Tecnologie. Course completed on April 9, 2020. URL: https://www.netacad.com/courses/cybersecurity/cybersecurity-essentials

AWS Innovate Online Conference - Machine Learning and AI edition

Obtained certificate of the AWS Innovate Online Conference - Machine Learning and AI edition course, issued by Amazon. Course completed on October 17, 2019. URL: https://aws.amazon.com/it/events/aws-innovate/machine-learning/

CISSP Security

Obtained certificate of the CISSP Security course, issued by IT Masters. Course completed on October 23, 2019. URL: https://www.itmasters.edu.au/free-short-course-cissp-security/

eLearnSecurity Mobile Application Penetration Tester (eMAPT) Obtained eLearnSecurity Mobile Application Penetration Tester certificate, issued by eLearnSecurity and relative to the study of security aspects for the development of mobile apps. Course completed on January 28, 2018 (Certificate ID: EMAPT-6753). URL: https://www.elearnsecurity.com/certification/emapt/

Introduction to Cybersecurity by Cisco Networking Academy

Obtained Introduction to Cybersecurity certificate, issued by Cisco Networking Academy and relative to the cyber-security context. Certification achieved on January 29, 2018. URL: https://www.netacad.com/courses/intro-cybersecurity/

HTML Fundamentals course

Obtained certificate of the HTML Fundamental course, issued by SoloLearn and relative to the HTML mark-up language. Course completed on September 30, 2018 (Certificate n. 1014-11060174). URL: https://www.sololearn.com/Course/HTML/

100W - Operational Security (OPSEC) for Control Systems

Obtained certificate of the 100W - Operational Security (OPSEC) for Control Systems course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 1, 2018. URL: https://us-cert.cisa.gov

210W-01 Cybersecurity for Industrial Control Systems -Differences in Deployments of ICS Obtained certificate of the 210W-01 Cybersecurity for Industrial Control Systems - Differences in Deployments of ICS course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 4, 2018. URL: https://us-cert.cisa.gov

210W-02 Cybersecurity for Industrial Control Systems -Influence of Common IT Components on ICS Obtained certificate of the 210W-02 Cybersecurity for Industrial Control Systems - Influence of Common IT Components on ICS course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 5, 2018. URL: https://us-cert.cisa.gov



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210W-03 Cybersecurity for Industrial Control Systems - Common ICS Components

Obtained certificate of the 210W-03 Cybersecurity for Industrial Control Systems - Common ICS Components course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 7, 2018. URL: https://us-cert.cisa.gov

210W-04 Cybersecurity for Industrial Control Systems -Cybersecurity within IT & ICS Domains Obtained certificate of the 210W-04 Cybersecurity for Industrial Control Systems - Cybersecurity within IT & ICS Domains course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 8, 2018. URL: https://us-cert.cisa.gov

210W-05 Cybersecurity for Industrial Control Systems -Cybersecurity Risk Obtained certificate of the 210W-05 Cybersecurity for Industrial Control Systems - Cybersecurity Risk course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 9, 2018. URL: https://us-cert.cisa.gov

210W-06 Cybersecurity for Industrial Control Systems -Current Trends (Threats) Obtained certificate of the 210W-06 Cybersecurity for Industrial Control Systems - Current Trends (Threats) course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 10, 2018. URL: https://us-cert.cisa.gov

210W-07 Cybersecurity for Industrial Control Systems -Current Trends (Vulnerabilities) Obtained certificate of the 210W-07 Cybersecurity for Industrial Control Systems - Current Trends (Vulnerabilities) course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 11, 2018. URL: https://us-cert.cisa.gov

210W-08 Cybersecurity for Industrial Control Systems -Determining the Impacts of a Cybersecurity Incident Obtained certificate of the 210W-08 Cybersecurity for Industrial Control Systems - Determining the Impacts of a Cybersecurity Incident course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 12, 2018. URL: https://us-cert.cisa.gov

210W-09 Cybersecurity for Industrial Control Systems - Attack Methodologies in IT & ICS Obtained certificate of the 210W-09 Cybersecurity for Industrial Control Systems - Attack Methodologies in IT & ICS course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 13, 2018. URL: https://us-cert.cisa.gov

210W-10 Cybersecurity for Industrial Control Systems -Mapping IT Defense-In-Depth Security Solutions to ICS Obtained certificate of the 210W-10 Cybersecurity for Industrial Control Systems - Mapping IT Defense-In-Depth Security Solutions to ICS course, issued by Industrial Control Systems Cyber Emergency Response Team - U.S. Department of Homeland Security. Course completed on October 15, 2018. URL: https://us-cert.cisa.gov

eLearnSecurity Junior Penetration Tester (eJPT) Obtained eLearnSecurity Junion Penetration Tester certificate, issued by eLearnSecurity and relative to the study of vulnerability assessment e penetration testing activities. Course completed on August 16, 2017 (Certificate ID: EJPT-200555). URL: https://www.elearnsecurity.com/certification/ejpt/

IBM Blockchain Essentials

Obtained IBM Blockchain Essentials badge, issued by IBM and relative to the study of basic information for the implementation of a software system based on the blockchain technology. Course completed on November 27, 2017. URL: https://www.youracclaim.com/badges/437902f3-8c2d-4565-abd0-c2675ca19ff6

Blockchain Foundation Developer

Obtained IBM Blockchain Foundation Developer badge, issued by IBM and relative to the implementation of a software system based on the Hyperledger platform. Course completed on November 30, 2017. URL: https://www.youracclaim.com/badges/b59b0137-e092-42c0-8f77-909aa26cd3ae

Bitcoin and Cryptocurrency Technologies Student of the Bitcoin and Cryptocurrency Technologies course, issued by Princeton University and distributed online through Coursera service. The course describes in detail the blockchain and crypto-currencies fields. Course completed on December 28, 2016, with the final score of 92/100. URL: https://www.coursera.org/learn/cryptocurrency

The Basic Rulex Training Course

Obtained The Basic Rulex Training Course certificate, issued by Rulex Inc. and relative to the use of the big data processing software Rulex Analytics. Course completed on October 9, 2015. URL: https://www.rulex-inc.com





Nessus Vulnerability and Compliance Auditing – On Demand

Obtained certificate of the Nessus Vulnerability and Compliance Auditing - On Demand course, issued by Teenable Network Security and relative to the use of the vulnerability assessment software Nessus. Course completed on August 8, 2013. URL: https://www.tenable.com/products/nessus-vulnerability-scanner



RESEARCH RESULTS

Scientific papers

- Preventing MQTT Vulnerabilities Using IoT-Enabled Intrusion Detection System. *Sensors*, 22(2), 2022. doi: 10.3390/s22020567
- Sensitivity of Logic Learning Machine for reliability in safety-critical systems. IEEE Intelligent Systems, 2022. ISSN 19411294. doi: 10.1109/MIS.2022.3159098
- On the Intersection of Explainable and Reliable AI for Physical Fatigue Prediction. *IEEE Access*, 10:76243–76260, 2022b. ISSN 2169-3536 VO 10. doi: 10.1109/ACCESS.2022. 3191907
- eXplainable and Reliable Against Adversarial Machine Learning in Data Analytics. *IEEE Access*, 10:83949–83970, 2022. ISSN 2169-3536 VO 10. doi: 10.1109/ACCESS.2022. 3197299
- Web security and data dumping: The Cookidump case. Software Impacts, 14:100426, 2022. ISSN 2665-9638. doi: https://doi.org/10.1016/j.simpa.2022.100426
- Analysis of the cyber-attacks executed during the Russia-Ukraine conflict. In International Scientific and Practical Internet Conference - Russia-Ukraine War: Consequences for the World (2022), page 9. WayScience, 2022
- A New XAI-based Evaluation of Generative Adversarial Networks for IMU Data Augmentation. In *2022 IEEE International Conference on E-health Networking, Application and Services (HealthCom)*, pages 167–172, 2022a. ISBN VO -. doi: 10.1109/HealthCom54947. 2022.9982780
- A Generative Adversarial Network (GAN) Technique for Internet of Medical Things Data. Sensors, 21(11):3726, may 2021c. ISSN 1424-8220. doi: 10.3390/s21113726
- Identifying and Mitigating Phishing Attack Threats in IoT Use Cases Using a Threat Modelling Approach. Sensors, 21(14):4816, jul 2021. ISSN 1424-8220. doi: 10.3390/ s21144816
- Exploiting Internet of Things Protocols for Malicious Data Exfiltration Activities. *IEEE Access*, 9:104261–104280, 2021b. ISSN 2169-3536. doi: 10.1109/ACCESS.2021.3099642
- Evaluating the possibility to perpetrate tunnelling attacks exploiting short-message-service. Journal of Internet Services and Information Security (JISIS), 11:30–46, 2021c. doi: 10. 22667/JISIS.2021.08.31.030
- DoS Attacks in Available MQTT Implementations: Investigating the Impact on Brokers and Devices, and Supported Anti-DoS Protections. In *The 16th International Conference on Availability, Reliability and Security*, ARES 2021. Association for Computing Machinery, 2021. ISBN 9781450390514. doi: 10.1145/3465481.3470049
- From Explainable to Reliable Artificial Intelligence. In Andreas Holzinger, Peter Kieseberg, A Min Tjoa, and Edgar Weippl, editors, *CD-MAKE 2021: Machine Learning and Knowledge Extraction*, pages 255–273, Cham, 2021a. Springer International Publishing. ISBN 978-3-030-84060-0. doi: 10.1007/978-3-030-84060-0 17
- On the feasibility of covert channels through Short-Message-Service. In Italian Conference on CyberSecurity (ITASEC21), 2021b
- Perpetrate cyber-attacks using IoT devices as attack vector: the ESP8266 use case. In *Italian Conference on CyberSecurity (ITASEC21)*, 2021d
- An Innovative 0-Day Attack against ZigBee: Exploitation and Protection System Analysis. In Theory and Practice of Mathematics and Computer Science Vol. 8, number SE Chapters, chapter 10, pages 146–166. feb 2021a. doi: 10.9734/bpi/tpmcs/v6/6969D
- SlowITe, a Novel Denial of Service Attack Affecting MQTT. Sensors, 20(10), 2020b. ISSN 1424-8220. doi: 10.3390/s20102932
- Innovative Protection System Against Remote AT Command Attacks on ZigBee Networks. *Computer Sciences*, 2(4):2–8, 2020a
- SlowTT: A slow denial of service against IoT networks. Information (Switzerland), 11(9), 2020e. ISSN 20782489. doi: 10.3390/INFO11090452





- MQTTset, a New Dataset for Machine Learning Techniques on MQTT. Sensors, 20(22): 6578. 2020c
- Challenges and Opportunities of IoT and AI in Pneumology. In 2020 23rd Euromicro Conference on Digital System Design (DSD), pages 285–292. IEEE, 2020. ISBN 1728195357
- Detection and Classification of Slow DoS Attacks Targeting Network Servers. In Proceedings of the 15th International Conference on Availability, Reliability and Security, ARES '20, New York, NY, USA, 2020a. Association for Computing Machinery. ISBN 9781450388337. doi: 10.1145/3407023.3409198
- Protecting the ESP8266 Module from Replay Attacks. In 2020 International Conference on Communications, Computing, Cybersecurity, and Informatics (CCCI), pages 1–6. IEEE, 2020d
- FINSTIX: A Cyber-Physical Data Model for Financial Critical Infrastructures. *Cyber-Physical Security for Critical Infrastructures Protection*, 12618:48, 2020a
- FINSTIX: A Security Data Model for the Financial Sector. In *CYBER-PHYSICAL THREAT INTELLIGENCE FOR CRITICAL INFRASTRUCTURES SECURITY*, chapter 3, page 34. 2020b
- Adaptive and Intelligent Data Collection and Analytics for Securing Critical Financial Infrastructure. In CYBER-PHYSICAL THREAT INTELLIGENCE FOR CRITICAL INFRASTRUCTURES SECURITY, chapter 7, page 104. 2020
- Detection of innovative low-rate denial of service attacks against critical infrastructures. In Cyber-Physical Threat Intelligence for Critical Infrastructures Security: A Guide to Integrated Cyber-Physical Protection of Modern Critical Infrastructures, chapter 19, page 346. 2020b. doi: 10.1561/9781680836875.ch19
- Introducing the SlowDrop Attack. *Computer Networks*, 150, 2019a. ISSN 13891286. doi: 10.1016/j.comnet.2019.01.007
- Evaluating Security of Low-Power Internet of Things Networks. International Journal of Computing and Digital Systems, 8(2):101–114, 2019. doi: 10.12785/ijcds/080202
- Darknet Security: A Categorization of Attacks to the Tor Network. In ITASEC19, Pisa, Italy, 2019b. CEUR Workshop Proceedings
- Key Innovations in ANASTACIA: Advanced Networked Agents for Security and Trust Assessment in CPS/IOT Architectures. In *Challenges in Cybersecurity and Privacy the European Research Landscape*, chapter 2, pages 23–53. River Publishers, 2019. ISBN 9788770220880. doi: 10.13052/rp-9788770220873
- Measuring the energy consumption of cyber security. *IEEE Communications Magazine*, 55 (7), 2017. ISSN 01636804. doi: 10.1109/MCOM.2017.1600955
- Slowcomm: Design, development and performance evaluation of a new slow DoS attack. *Journal of Information Security and Applications*, 35, 2017. ISSN 22142126. doi: 10.1016/j.jisa.2017.05.005
- Remotely Exploiting at Command Attacks on ZigBee Networks. Security and Communication Networks, 2017, 2017. ISSN 19390122. doi: 10.1155/2017/1723658
- A Network Traffic Representation Model for Detecting Application Layer Attacks. International Journal of Computing and Digital Systems, 5(1):31–42, 2016. doi: 10.12785/ijcds/050104
- Are mobile botnets a possible threat? the case of SlowBot Net. *Computers and Security*, 58, 2016. ISSN 01674048. doi: 10.1016/j.cose.2016.02.005
- Profiling DNS tunneling attacks with PCA and mutual information. *Logic Journal of IGPL*, pages 1–14, 2016. doi: 10.1093/jigpal/jzw056
- Feature transformation and Mutual Information for DNS tunneling analysis. In *International Conference on Ubiquitous and Future Networks, ICUFN*, volume 2016-Augus, 2016. ISBN 9781467399913. doi: 10.1109/ICUFN.2016.7536939





- Malware development on mobile environments. In Proceedings 2016 4th International Conference on Future Internet of Things and Cloud Workshops, W-FiCloud 2016, 2016. ISBN 9781509039463. doi: 10.1109/W-FiCloud.2016.62
- Implementation of SlowDroid: Slow DoS Attack Performed by a Smartphone. *International Journal of Computing and Digital Systems*, 4(3):165–173, 2015. doi: 10.12785/ijcds/040303
- Mobile executions of Slow DoS attacks. *Logic Journal of the IGPL*, 24(1), 2014. ISSN 13689894. doi: 10.1093/jigpal/jzv043
- Designing and modeling the slow next Dos attack, volume 369. 2015. ISBN 9783319197128. doi: 10.1007/978-3-319-19713-5 22
- Detection of DoS attacks through Fourier transform and mutual information. In *IEEE International Conference on Communications*, volume 2015-Septe, 2015. ISBN 9781467364324. doi: 10.1109/ICC.2015.7249476
- Perpetrate network attacks from mobile devices. In International Conference on Ubiquitous and Future Networks, ICUFN, volume 2015-Augus, 2015. ISBN 9781479989935. doi: 10.1109/ICUFN.2015.7182614
- Understanding DDoS Attacks from Mobile Devices. In *Proceedings 2015 International Conference on Future Internet of Things and Cloud, FiCloud 2015 and 2015 International Conference on Open and Big Data, OBD 2015*, 2015. ISBN 9781467381031. doi: 10.1109/FiCloud.2015.19
- Mobile Botnets Development: Issues and Solutions. *International Journal of Future Computer and Communication*, 3(6):385–390, 2014a. doi: 10.7763/IJFCC.2014.V3.333
- Slowreq: A weapon for cyberwarfare operations. Characteristics, limits, performance, remediations, volume 239. 2014. ISBN 9783319018539. doi: 10.1007/978-3-319-01854-6 55
- SlowDroid: Turning a smartphone into a mobile attack vector. In *Proceedings 2014 International Conference on Future Internet of Things and Cloud, FiCloud 2014*, 2014. ISBN 9781479943586. doi: 10.1109/FiCloud.2014.72
- An on-line intrusion detection approach to identify low-rate DoS attacks. In *Proceedings International Carnahan Conference on Security Technology*, volume 2014-Octob, 2014b. doi: 10.1109/CCST.2014.6987039
- Slow DoS attacks: definition and categorisation. *Int. J. Trust Management in Computing and Communications*, 1(3-4):300–319, 2013. ISSN 2048-8378. doi: 10.1504/IJTMCC.2013. 056440
- A similarity based approach for application DoS attacks detection. In *Proceedings International Symposium on Computers and Communications*, 2013. ISBN 9781479937554. doi: 10.1109/ISCC.2013.6754984
- Taxonomy of slow DoS attacks to web applications, volume 335 CCIS. 2012. ISBN 9783642341342. doi: 10.1007/978-3-642-34135-9 20



Technical reports

- ESP-01 Programming Instructions Using the Arduino IDE. Technical report, IEIIT-CNR n. 2118/2022, 2022a
- Utilizzo e manutenzione della piattaforma di registrazione delle ore lavorate dal personale.
 Technical report, 2022b
- Hosting services listening on all available ports with UFW. Technical report, 2022c
- Utilizzo del software implementato in grado di importare le timbrature orarie del personale all'interno dei relativi fogli presenza. Technical report, IEIT-CNR n. 1197/2021, 2021
- IoT-Flock: guida all'installazione ed utilizzo di un tool per generare traffico IoT attraverso i protocolli MQTT e CoAP. Technical report, IEIIT-CNR n. 924/2020, 2020
- Esecuzione di attacchi Denial of Service su apparati per l'ufficio ed IoT. Technical report, IEIIT-CNR-190313, 2019a
- Controllo di una pompa peristaltica Marlow Watson 323du attraverso creazione di hardware e software ad-hoc. Technical report, IEIIT-CNR Prot. 1094, 2019b
- Protezione di dati a fronte di attacchi di tipo ransomware, attraverso utilizzo di soluzioni cloud-based. Technical report, IEIIT-CNR Prot. 1420, 2019c
- Progettazione e costruzione di un sito di gruppo IEIIT attraverso un approccio "dynamic-tostatic". Technical report, IEIIT-CNR-180911, 2018a
- Processo di stampa 3D con FormLabs Form 2. Technical report, IEIIT-CNR-181029, 2018b
- Survey su algoritmi di encryption, hashing e HMAC. Technical report, IEIIT-CNR-141217, 2017a
- Analisi del ransomware WannaCry. Technical report, IEIIT-CNR-170517, 2017b
- Analysis of the ESP8266 Chip. Technical report, IEIIT-CNR-160822, 2016a
- Analysis of the ZigBee protocol. Technical report, IEIIT-CNR-160822, 2016b
- Analysis of an Android Suspect Application. Technical report, IEIIT-CNR-160906, 2016c
- Analysis of Wireless Attacks using Kali Distribution. Technical report, IEIIT-CNR-160908, 2016d
- Analysis of Dirty COW Exploit. Technical report, IEIIT-CNR-161103, 2016e
- Analysis of the Mirai botnet. Technical report, IEIIT-CNR-161116, 2016f
- Soluzioni innovative per la progettazione di un'infrastruttura di telecomunicazioni affidabile.
 Technical report, IEIIT-CNR-150212, 2015a
- Scelta dei protocolli di rete per la progettazione di una rete affidabile. Technical report, IEIIT-CNR-150213, 2015b
- Analisi degli aspetti di sicurezza, affidabilità, riservatezza (SAR) negli Intelligent Transportation Systems (ITS). Technical report, IEIIT-CNR-150216, 2015c
- Analysis of the Logiam attack. Technical report, IEIIT-CNR-150608, 2015d
- Tecnologie Wi-Fi ed Utilizzo nelle Reti Cittadine. Technical report, IEIIT-CNR-120615, 2015e
- Infrastruttura Informatica Virtualizzata attraverso VMware. Technical report, IEIIT-CNR-150824, 2015f
- DDoS Botnets: Operations and Toolkits. Technical report, IEIIT-CNR-01/2014-GE, 2014a
- Analysis of the Heartbleed Bug. Technical report, IEIT-CNR-02/2014-GE, 2014b
- The Insider Threat Problem. Technical report, IEIIT-CNR-03/2014-GE, 2014c
- Users Authentication Security. Technical report, IEIIT-CNR-04/2014-GE, 2014d
- Database Security. Technical report, IEIIT-CNR-05/2014-GE, 2014e





- An Approach for Structuring and Organizing Scientific Results. Technical report, IEIIT-CNR-06/2014-GE. 2014f
- Implementation of the isDown Federated Network. Technical report, IEIIT-CNR-07/2014-GE, 2014q
- Performance Analysis of DNS Tunneling Methodologies. Technical report, IEIIT-CNR-08/2014-GE, 2014h
- A Survey on Current Tunneling Techniques. Technical report, IEIIT-CNR-09/2014-GE, 2014i
- Analysis of the Shellshock bug. Technical report, IEIIT-CNR-10/2014-GE, 2014j
- Design and Development of an Intrusion Detection System for Detecting Tunneling Attacks. Technical report, IEIIT-CNR-11/2014-GE, 2014k
- IT Communications Security Fundamentals. Technical report, IEIIT-CNR-12/2014-GE, 2014I
- Panoramica delle Implementazioni di Attacchi di Tipo "Slow DoS Attacks" e Relativi Algoritmi di Intrusion Detection. Technical report, IEIIT-CNR-13/2014-GE, 2014m
- Introducing the SlowNext Attack. Technical report, IEIIT-CNR-09/2013-GE, 2013
- Analisi delle problematiche di sicurezza in ambiente Cloud. Technical report, IEIIT-CNR-02/2012-GE, 2012

Keynote speechs

■ International Conference on Intelligent Systems and Computation (ICISC-2022), 2022, "The evolution of Denial of Service attacks"

Other speechs

■ NFT: La tecnologia al servizio della certificazione di autenticità, 2022, "NFT: la tecnologia alla base dei non-fungible token"

Discovered CVEs

- CVE-2020-138549
- CVE-2017-18868

Conference and workshop chair

- The 3rd International Workshop on Cyber-Physical Security for Critical Infrastructures Protection (CPS4CIP 2022), 2022
- The 2nd International Workshop on Cyber-Physical Security for Critical Infrastructures Protection (CPS4CIP 2021), 2021
- 1st International Workshop on Cyber-Physical Security for Critical Infrastructures Protection (CPS4CIP 2020), 2020

Editorial Board

- IIETA, International Journal of Safety and Security Engineering, 2020
- Acta Scientific Computer Sciences, 2019
- SCIREA, Journal of Computer, 2019
- Science Publishing Group Communications, 2018



Journals reviewer

- Computers & Security, Elsevier, 2021
- MDPI Electronics, 2021
- MDPI Network, 2021
- Computers & Security, Elsevier, 2020
- Computers & Security, Elsevier, 2019
- International Journal of Computing and Digital Systems (IJCDS), 2019
- Computer Modeling in Engineering & Sciences (CMES), 2019
- Advances in Systems Science and Applications (ASSA), 2019
- Springer Human-centric Computing and Information Sciences (HCIS), 2019
- Elsevier Computers and Electrical Engineering, 2019
- MDPI Sensors, 2019
- ScienceDomain International Archives of Current Research International (ACRI), 2018
- Applied Sciences, 2018
- ScienceDomain International Asian Journal of Research in Computer Science (AJRCoS), 2018
- ScienceDomain International Asian Journal of Advanced Research and Reports (AJARR), 2018
- Journal of Computer and System Sciences (JCSS), 2018
- ScienceDomain International Current Journal of Applied Science and Technology (CJAST), 2018
- IET Information Security, 2018
- ScienceDomain International Journal of Advances in Mathematics and Computer Science (JAMCS), 2018
- Cluster Computing, 2018
- Journal of Information Technology and Management, 2017
- IEEE Security & Privacy, 2017
- Future Internet, MDPI, 2017
- IEEE Communication Letters, 2017
- International Journal of Computing and Digital Systems (IJCDS), 2017
- Computers & Security, Elsevier, 2017
- Energies, MDPI, 2017
- International Journal of Computing and Digital Systems (IJCDS 2016), 2016
- Logic Journal of the IGPL, 2016
- International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE), 2016
- MDPI Electronics, 2016
- Journal of Computer and System Sciences (JCSS), 2016
- Computer Communication & Collaboration, 2016
- Applied Sciences, 2016
- International Journal of Computing and Digital Systems (IJCDS' V3), 2013



Conferences reviewer

- International Conference on Cybernetics & Informatics (CYBI 2020), 2020
- ITASEC20, 2020
- 2020 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT2020), 2020
- 2020 International Conference on Decision Aid Sciences and Application (DASA'20), 2020
- ITASEC2019, 2019
- IEEE Middle East and North Africa Communication Conference (MENACOMM 2019), 2019
- 2019 8th International Conference on Modeling, Simulation and Applied Optimization (ICM-SAO'19), 2019
- 2019 10th IEEE-GCC Conference and Exhibition (IEEE-GCCCE 2019), 2019
- 2019 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT'19), 2019
- 1st International Workshop on Security for Critical Infrastructures and Services (FINSEC 2019), 2019
- 2018 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT'18), 2018
- International Conference on Social Networking and Computational Intelligence (SCI-2018), 2018
- The Sustainability and Resilience 2018 (SRC'18), 2018
- International Conference on Advances in Computing, Communications and Informatics (ICACCI-2017), 2017
- Mobile Applications (MobiApps 2017), 2017
- The 2nd International Conference on Computer Science and Technology (CST2017), 2017
- International Symposium on Cloud Computing and Cyber-Security (SCCCS-17), 2017
- International Workshop on Cyber-Security in IoT-based Healthcare Systems & Cloud Computing (CS-HSC'17), 2017
- IEEE-GCC Conference and Exhibition (IEEE-GCC 2017), 2017
- 2017 3rd Advanced Research in Material Sciences, Manufacturing, Mechanical and Mechatronic Engineering Technology International Conference (AR4MET'2017), 2017
- 2017 3rd International Conference on Education (ICOED'2017), 2017
- Fifth International Symposium on Security in Computing and Communications (SSCC'17), 2017
- Design and Performance of Networks on Chip 2016 (DPNoC'2017), 2017
- International Information Security and Privacy Conference (IFIPSEC2017), 2017
- International Conference on Advances in Computing, Communications and Informatics (ICACCI-2016), 2016
- 2016 Advanced Research in Material Sciences, Manufacturing, Mechanical and Mechatronic Engineering Technology International Conference (AR4MET'2016), 2016
- Fourth International Symposium on Security in Computing and Communications (SSCC'16), 2016
- Mobile Applications (MobiApps 2016), 2016
- 2016 International Symposium on Web of Things and Big Data (WoTBD 2016), 2016
- Design and Performance of Networks on Chip 2016 (DPNoC 2016), 2016





- 9th IEEE-GCC Conference and Exhibition 2016 (IEEE-GCC 2016), 2016
- IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems 2015 (IEEE SPICES 2015), 2015
- International Conference on Advances in Computing, Communications and Informatics (ICACCI-2015), 2015
- International Conference on Computing in Mechanical Engineering (ICCME-2015), 2015
- 2015 Advanced Research in Material Sciences, Manufacturing, Mechanical and Mechatronic Engineering Technology International Conference (AR4MET'2015), 2015
- The 2nd International Workshop on Mobile Applications (MobiApps 2015), 2015
- 2015 International Symposium on Web of Things and Big Data (WoTBD 2015), 2015
- 15th IEEE International Symposium on Signal Processing and Information Technology 2015 (ISSPIT-2015), 2015
- International Conference of Security in Computer Networks and Distributed Systems (SNDS 2014), 2014
- The 2014 International Workshop on the Design and Performance of Networks on Chip (DPNoS 2014), 2014
- The 2014 International Conference on Electronic Publishing and Information Technology (ICEPIT 2014), 2014
- Mobile Applications (MobiApps 2014), 2014

Selected software

- **Dynamic W3C Validator**. Design and development of a sistem based on the HTML iframe tag to dynamically validate a web page..
- **H2020 Database and Website**. Design and development of an internal website to retrieve information on teh results of Horizon 2020 research projects..
- isDown. Design and development of a federated network to distributely check the reachability of a remote Internet service..
- Mail Logger. Design and development of a system used to log emails opening without asking for confirmation to the recipient..
- SlowDroid Report. Design and development of a system used to monitor and analyse the users of the SlowDroid app..
- Conference. Design and development of a web platform able to autonomously retrieve upcoming conferences events and journals special issues on the ICT research field.. http://conference.ieiit.cnr.it (private)
- DNS Crawler. Design and development of an Internet crawler to find DNS services vulnerable to amplification denial of service attacks..
- Heartbleed Crawler. Design and development of an Internet crawler looking for services vulnerable to the Hearthbleed bug..





- Tor Network Analyzer. Design and development of a Tor analysis system able to periodically retrieve information on the nodes belonging to the Tor network..
- Assets and Research Data Wiki. Design and development of an extension for the MediaWiki platform able to simplify network assets and research projects categorization.. http://wiki.ge.cnr.it (private)
- CNR-IEIIT Template for Drupal. Design and development of the Drupal template of the (former version of the) CNR-IEIIT website..
- Messenger (Unofficial). Design and development of a public extension for the Google Chrome browser adopted by more than 350.000 users..
- SlowDroid. Design and development of a network stress testing tool known as SlowDroid and available as an Android mobile app..
- CallI. Design and development of an Android app used to reduce the electromagnetic exposure of the user during calls.. https://github.com/auino/callI
- cnr-cv. Design and development of a software able to build a curriculum vitae from raw data.. https://github.com/auino/cnr-cv
- cookidump. Design and development of a software able to dump data of the Cookidoo web platform.. https://github.com/auino/cookidump

Awards

- Selection of the research paper titled "MQTTset, a New Dataset for Machine Learning Techniques on MQTT" as Editor's Choice Article for the MDPI Sensors journal. Protocollo CNR-IEIIT n. 2070/2022. 2022
- Selection of the research paper titled "SlowTT: A Slow Denial of Service against IoT Networks" as Editor's Choice Article for the MDPI Information journal. Protocollo CNR-IEIIT n. 2431/2022. 2022

Other

Co-author of the document "Il Futuro della Cyber Security in Italia" (2015) by Laboratorio Nazionale di Cyber Security Consorzio Interuniversitario Nazionale per l'Informatica (CINI).

Co-author of the document "Il Futuro della Cybersecurity in Italia: Ambiti Progettuali Strategici" (2018) by Laboratorio Nazionale di Cyber Security Consorzio Interuniversitario Nazionale per l'Informatica (CINI). URL https://www.consorzio-cini.it/index.php/it/labcs-home/libro-bianco

Contributor of the book "Mastering Ethereum - Implementing Digital Contracts" (2018) by Andreas M. Antonopoulos and Gavin Wood, distributed by ÓAeilly Media. ISBN: 978-1491971949 - URL https://github.com/ethereumbook/ethereumbook/blob/develop/preface.asciidoc

FINANCED RESEARCH PROJECTS

Participant of the following research projects.

Main investigator

- Long Life Power Platforms for Internet of Things (LoLiPoP IoT), 2023
- Cybersecurity delle infrastrutture critiche, analisi e definizione di framework metodologici (CYBIC) GFT agreement, 2020
- Cybersecurity delle infrastrutture critiche, analisi e definizione di framework metodologici (CYBIC) - SEASTEMA agreement, 2020
- Cybersecurity delle infrastrutture critiche, analisi e definizione di framework metodologici (CYBIC) CETENA agreement, 2019



■ My Health - My Data (MH-MD), WP9 "Penetration and Re-Identification Challenge", 2017

Participant

- REXASIPRO Reliable & Explainable Swarm Artificial Intelligence for People with Reduced mObility, 2022
- ANalisi del risCHio e crOwd modelling di teRminal portuali (ANCHOR), 2021
- MObility REgulation THinking ANd Thoroughly Innovative inSpired (More Than This), 2021
- Smart Stop, 2021
- Advances in pneumology via ICT and data analytics (PNEULYTICS), 2020
- 5G Genova, 2020
- CASTORE Componente di intelligenza Artificiale per l'integrazione Sicura Terminalportuale/terminal-pubblico per Ottimizzare l'operatività e la Relazione e l'analisi rispetto ad Eventi e stati legati ai flussi di passeggeri tra spazio urbano e porto, 2020
- Integrated Framework for Predictive and Collaborative Security of Financial Infrastructures (FINSEC), 2018
- Advanced Networked Agents for Security and Trust Assessment in CPS/IOT Architectures (ANASTACIA), 2017
- Maturing and Extending the FREETOOL Tool development Initiative (FreeTool v2.0), 2016
- My Health My Data (MHMD), 2016
- Educational plan for environmentally sustainable smart mobility Mobilità Intelligente Ecosostenibile (MIE), 2014
- Piattaforma per la mobiLità Urbana con Gestione delle INformazioni da sorgenti eterogenee (PLUG-IN), 2014
- Manufacturing Execution Systems (MES) basati su tecnologia Cloud (CMES), 2014
- Analisi ed integRazione di soluzIoni per la soprAvvivenza di sistemi complessi in preseNza di gravi eveNti accidentAli (ARIANNA), 2014
- Vulnerability and Risk Assessment (VaRA), 2014
- Soluzioni e tecnologie avanzate per le reti di telecomunicazioni ecosostenibili (START-ECO), 2013
- Tecnologie orientate ai servizi per lo sviluppo e per l'integrazione di piattaforme ICT (GESTEC), 2013
- Monitoring And Rescue Automation (MAREA), 2013

LANGUAGES

Mother tongue(s)

Italian

Other language(s)

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
B2	B2	B2	B2	B2

English

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2: Proficient user Common European Framework of Reference (CEF) level





IT SKILLS

Software development Experience of procedural (Ansi C), object oriented (C++, Java, C#, Visual Basic, Python),

functional (CaML) and logic (Prolog) programming languages.

Web development #WebServices #PHP #Asp.Net #HTML5 #CSS3 #Javascript #Ajax #Django #VbScript

Mobile development Experience of development on the following environments: Android, iOS, Firefox OS.

Database Experience on both relational and NoSQL database management systems.

Data analysis Adoption of the following software tools: MathWorks Matlab, WaveMetrics Igor Pro, Rulex

Analytics.

Advanced knowledge of Unix systems: bash, configuration, dynamic libraries replacement,

kernel level packets management and interception, etc.

Virtualization environments Virtualization environments like VMWare, VirtualBox or Synology Virtual Machine Manager,

creation and management of Docker containers.

Network security Advanced exprience in the network security topic, result of years of experience in the research

field.

Blockchain Experience of design and implementation on the following blockchain based platforms: Hy-

perledger, Ethereum, MultiChain.

Productivity Experience on the following techniques: Getting Things Done (GTD), Pomodoro technique.

Project samples are available at the following GitHub page: github.com/auino

ADDITIONAL INFORMATION

Obtained European driving license, B level.

Driving license

Other licenses Obtained boat licence for motor boats up to 12 miles from the coast.

Obtained drone driving license, A1/A3 levels.

Membership Member of Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT) since 29/03/2017, with affiliation to Laboratorio Nazionale di Smart, Sustainable and Secure Internet

Technologies and Infrastructures (S3ITI).

IEEE member from 2013 to 2020, Italian section (membership n. 92486754).

Web Online interview for L'Androide Minimalista, as computer software developer for the Android

mobile platform. URL http://bit.ly/androideminimalista

Online interview for *Il Setup*, as computer scientist. URL (archive) http://bit.ly/ilsetup_

archive

Online interview for *ProntoPRO*, as owner and ideator of the Italia Webcam website. URL

 $\verb|http://bit.ly/italiawebcam_prontopro|\\$

Mention inside of the Italian podcast "Digitalia" (episodes 164, 344), as expert in the cyber-security topic and as supporter of the podcast.

Mention inside of the Italian podcast "EasyApple" (episode 294).

Mention inside of the international magazine "Linux Format", as computer software developer

(June 2016). URL $http://bit.ly/linuxformat_uk_062016$

Mention inside of the magazine "Master Linux", as computer software developer (November-

December 2018).

Photography Photographer hobbyist, with publication on the website http://500px.com/auino.

Classified 3^{rd} over about 800 candidates for the premiation of the Italia Photo Marathon of

Genoa, Italy (April 2, 2017, for the "Fonte di vita" topic.)



Curriculum Vitae Enrico Cambiaso

In compliance with the Italian legislative Decree no. 196 dated June 30, 2003, I hereby authorize you to use and process my personal details contained in this document.