

## PERSONAL INFORMATION

## Giovanni Pecoraro



Sex Male | Date of birth 04/01/1990 | Nationality Italian

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 Google Scholar <https://scholar.google.com/citations?user=JSM2EcoAAAAJ&hl=it>

 GitHub <https://github.com/Peco602>

 ORCID <https://orcid.org/0000-0003-2888-113X>

## CANDIDATE SUMMARY

I have attended the Italian Air Force Academy from 2008 to 2013 and I have received my university degree cum laude in Telecommunications Engineering at the University of Naples "Federico II" in 2013. I received a M.Sc. Degree in "Advanced Communication and Navigation Satellite Systems" in 2015 and I got a Ph.D. in Electronic Engineering both at the University of Rome "Tor Vergata" in 2019. Since 2013 I have worked at the Italian Space Control Center firstly as Head of Spacecraft Operations and then as responsible of Space Platform Engineering. I am qualified as Spacecraft Operations Engineer for SICRAL 1, 1B and 2 GEO satellites and for OPTSAT3000 LEO satellite. Since 2019 I have been employed by the Italian Ministry of Defence firstly as a Cyber Security Engineer and then as Head of Cyberspace Operations at the Joint Command for Cyberspace Operations. I have obtained the GIAC Certified Incident Handler (GCIH) and the Certified Red Team Expert (CRTE) certifications and joined the GIAC Advisory Board. I am currently working for RHEA Group as a Senior Security Engineer and as Cyber Security Manager in the Security Cyber Center of Excellence (SCCoE) project of the European Space Agency (ESA). I also work on personal projects as a full stack developer, and I conduct research on cyber operations and network security.

## WORK EXPERIENCE

June 2021 - Present date

**Senior Security Engineer**RHEA System SA - <https://www.rheagroup.com/>

- Cyber Security Manager in the Space Security Cyber Center of Excellence (SCCoE) project of the European Space Agency (ESA).
- Design and development of SCCoE Security Validations Functionalities (SVF)
- Design and development of SCCoE Space System Emulation capability
- Support to the SCCoE Security Risk Analysis based on ESA HLRA approach
- Support to design and development of SCCoE external interfaces and Security Test and Vulnerability Assessment (STAVA)
- Support to SecOps and DevSecOps activities

January 2020 - Present date

**Scientific Journals Reviewer**Multidisciplinary Digital Publishing Institute - <https://www.mdpi.com/>

- Active reviewer for MDPI journals (Applied Sciences, Computers, Electronics, Journal of Cyber Security and Privacy, Sensors, Sustainability)
- Official Reviewer Board member for MDPI "Signals"

December 2017 - Present date

**Full Stack Developer**

Independent Developer

- RedHerd Framework
  - A collaborative and serverless framework for orchestrating a geographically distributed group of assets capable of simulating complex offensive cyberspace operations.

- Presented at BlackHat Europe Arsenal in November 2021
- Bullet Bet Predictions
- Android and iOS mobile app for football predictions based on machine learning models
- More than 1.5 millions downloads

March 2020 - June 2021

**Head of Cyberspace Operations**

Joint Network Operations Command - Italian Ministry of Defense - Rome (Italy)

- Responsible for all cyberspace operations (defensive and offensive)
- Technical lead also for threat hunting, incident handling, forensics and malware analysis

February 2020 - June 2021

**NATO CCDCOE Red Team Member**NATO Cooperative Cyber Defence Centre of Excellence - Tallinn (Estonia) - <https://ccdcoe.org/>

- Italian representative at NATO Cooperative Cyber Defence Centre of Excellence
- Responsible for all client-side attacks through multiple platforms (Cobalt Strike, Covenant)

March 2019 - June 2021

**Head of Offensive Cyberspace Operations**

Joint Cyber Operations Command - Italian Ministry of Defense - Rome (Italy)

- Winner of the national recruiting call for military cyber experts
- Responsible for offensive cyberspace operations
- Technical lead for penetration testing and red teaming activities
- Directly trained the team of Italian MoD ethical hackers

February 2018 - March 2019

**Head of GEO Satellite Engineering and Performance Analysis**

SICRAL Joint Management and Control Center - Italian Ministry of Defense - Bracciano (Italy)

- Responsible for all technical analysis on the Italian military GEO satellite platforms
- Designed, developed and uploaded an OBSW patch for SICRAL 1B
- Re-engineered and re-written all the Flight Operation Procedures (FOP) for SICRAL 2

July 2015 - January 2017

**Head of GEO Satellite Operations and Control Center**

SICRAL Joint Management and Control Center - Italian Ministry of Defense - Bracciano (Italy)

- Responsible for Italian military satellites control centers (STORM, SCOS-2000)
- Manager of the spacecraft controllers
- "Hacked" the systems to maintain full capability after satellite end of life

October 2013 - February 2018

**Head of Satellite Mission Control and Operational Training**

SICRAL Joint Management and Control Center - Italian Ministry of Defense - Bracciano (Italy)

- Technical manager of all the spacecraft technicians
- Responsible for the space operations related to the Italian military satellites
- Responsible for personnel operational training
- On call 24h/7d in case of satellite and ground station anomalies

September 2008 - October 2013

**Air Force Cadet**

Air Force Academy - Italian Air Force - Pozzuoli (Italy)

September 2005 - July 2008

**Navy Cadet**

"F. Morosini" Naval Military School - Italian Navy - Venice (Italy)

**EDUCATION AND TRAINING**

- Ongoing **Machine Learning Zoomcamp**  
*DataTalks.Club*
- September 2022 **MLOps Zoomcamp**  
*DataTalks.Club*
- Practical aspects of productionizing Machine Learning services
  - Requirements collection, model deployment and monitoring
- January 2022 **ITIL® 4 Foundation - IT Service Management Certification**  
*AXELOS*
- November 2021 **CPA - C++ Certified Associate Programmer**  
*C++ Institute*
- March 2021 **Online Degree™ in Blockchain**  
*Blockchain Council*
- February 2021 **Advanced IP Routing**  
*Armed Forces Institute of Telecommunications – Chiavari*
- January 2021 **Certified Red Team Expert (CRTE)**  
*Pentester Academy*
- Practice various attacks in a fully patched real-world Windows environment
  - Understand concepts of well-known Windows and Active Directory attacks
  - Execute and visualize the attack path used by the modern adversaries
  - Use Windows as an attack platform and using trusted features of the OS like PowerShell and others for attacks.
  - Try scripts, tools and new attacks in a fully functional AD environment
- December 2020 **Professional Scrum Master I (PSM I)**  
*Scrum.org*
- November 2020 **AWS Certified Cloud Practitioner**  
*Amazon Web Services (AWS)*
- November 2020 **Microsoft Certified: Azure Fundamentals**  
*Microsoft*
- January 2020 **GIAC Certified Incident Handler (GCIH)**  
*SANS Institute*
- SEC 504 Course - Hacker Tools, Techniques, Exploits, and Incident Handling
  - Member of GIAC Advisory Board
  - 96% Overall Score
- May 2019 **INFOSEC Course - Evaluation Common Criteria/ITSEC**  
*Armed Forces Institute of Telecommunications - Chiavari*
- April 2019 **PhD in Electronic Engineering**  
*University of Rome “Tor Vergata”*
- Thesis: "CSI-based Fingerprinting for Localization using LTE Signals"
  - Final mark: Excellent
  - Application of machine learning techniques to analyze LTE and Wi-Fi signals of opportunity for people counting, localization and activity recognition
  - Hacked the OpenLTE and LTE-Cell-Scanner software to extract the Channel State Information (CSI) from the LTE signal

- March 2019 **SICRAL 2 Spacecraft Operation Engineer**  
*Armed Forces Institute of Telecommunications - Chiavari*  
*Thales Alenia Space Italy - Rome*
- November 2018 **OPTSAT3000 Spacecraft Operation Engineer**  
*Telespazio S.p.A. – Rome*
- April 2017 **Advanced TT&C/Network Operator OPTSAT 3000**  
*Telespazio S.p.A.- Rome*
- March 2017 **Mission Manager OPTSAT 3000**  
*Telespazio S.p.A. - Rome*
- March 2017 **Flight Dynamics Systems Engineer OPTSAT 3000**  
*Telespazio S.p.A. - Rome*
- November 2016 **Primary Course OPTSAT 3000**  
*Telespazio S.p.A. - Rome*
- April 2016 **II Level Post-graduated Course in Advanced Communications and Navigation Satellite Systems**  
*University of Rome “Tor Vergata”*
  - Thesis: "Preliminary design of a small tracking RADAR for LEO space objects"
  - Final mark: 110/110 cum Laude and Special Mention
- February 2014 **License as Professional Information Engineer**  
*University of Naples "Federico II"*
- May 2014 **SICRAL 1B Spacecraft Operation Engineer**  
*Armed Forces Institute of Telecommunications - Chiavari*  
*Thales Alenia Space Italy - Rome*
- March 2014 **SICRAL 1 Spacecraft Operation Engineer**  
*Armed Forces Institute of Telecommunications - Chiavari*  
*Thales Alenia Space Italy - Rome*
- July 2013 **Master's Degree in Telecommunications Engineering**  
*University of Naples "Federico II"*
  - Thesis: "New artifact detection measures for the assessment of SAR despeckling techniques"
  - Final mark: 110/110 cum Laude
- September 2012 **Advanced English Course in Homestay**  
*British Study Centre - London*
- September 2011 **Bachelor's Degree in Telecommunications Engineering**  
*University of Naples "Federico II"*
  - Thesis: "SAR Image Registration"
  - Final mark: 110/110 cum Laude
- September 2010 **Advanced Military English Course**  
*Italian Air Force Language School*

July 2009 **Advanced Naval Training**  
*Amerigo Vespucci School Ship - Italian Navy*

July 2008 **High School Scientific Area**  
*"F. Morosini" Naval Military School - Italian Navy*

- Final mark: 100/100 cum Laude

June 2006, June 2007 **Advanced Naval Training**  
*Amerigo Vespucci School Ship - Italian Navy*

## PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
	Key English Test (KET), Preliminary English Test (PET), First Certificate in English (FCE), Joint Forces Language Test (JFLT)				
French	A2	B1	A2	A2	A2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user  
[Common European Framework of Reference for Languages](#)

**Communication skills**

- Large experience as a team leader gained as responsible of operations in both space and cyber security sectors
- Great ability to interface with the higher management

**Organisational / managerial skills**

- Large experience as manager of several (more than 30) highly-specialized engineers and technicians in both space and cyber security sectors

**Job-related skills**

- Space systems technical and contractual management
- Signal Processing and Machine Learning techniques
- Desktop, mobile and web coding
- Penetration testing and red teaming
- Network defense and threat hunting
- Malware and Forensic Analysis

**Digital Competence**

- European Computer Driving License (ECDL)
- Operating systems: Windows, Mac OS and Linux
- Operating systems management without GUI: PowerShell and Bash
- Desktop languages: Visual Basic, C, C++, C#, Java, Python
- Mobile languages: Java, Swift
- Web languages: HTML, CSS, PHP, Javascript, Angular
- Statistical languages: MATLAB, Octave, R
- Databases: MySQL, MSSQL, MongoDB
- Penetration testing expert on both Linux and Windows environments
- Red Teaming and Advanced Adversary Simulation frameworks (e.g. Cobal Strike)
- Knowledge of Arduino and Raspberry Pi boards

## ADDITIONAL INFORMATION

## Publications

- L. Di Biase; P. M. Pecoraro; G. Pecoraro; M. L. Caminiti; V. Di Lazzaro. Markerless 3D, through the wall radar indoor monitoring for telemedicine: gait analysis, indoor positioning, fall detection, tremor analysis, vital signs and sleep monitoring. (*Under publication*)
- G. Pecoraro; M. D'Amico; S.P. Romano. RedHerd: Offensive Cyberspace Operations as a Service. *Signals* 2021, 2, 619-636. <https://doi.org/10.3390/signals2040038>
- G. Pecoraro, E. Cianca, M. De Sanctis, S. Di Domenico, LTE Signal Fingerprinting Device-Free Passive Localization in Changing Environments, *Journal of Multimedia*, 2020
- G. Pecoraro, E. Cianca, S. Di Domenico, M. De Sanctis, LTE Signal Fingerprinting Device-Free Passive Localization Robust to Environment Changes, *Global Wireless Summit (GWS)*, 2018, Best Paper Award
- G. Pecoraro, S. Di Domenico, E. Cianca, M. De Sanctis, CSI-based fingerprinting for indoor localization using LTE Signals, *EURASIP Journal on Advances in Signal Processing*, 2018
- G. Pecoraro, S. Di Domenico, E. Cianca, M. De Sanctis, LTE signal fingerprinting localization based on CSI, *IEEE 13th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, 2017
- G. Pecoraro, E. Cianca, G. Marino, M. Ruggieri, Preliminary design of a small tracking RADAR for LEO space objects, *IEEE Aerospace Conference*, 2017
- A. Greco, G. Pecoraro, A. Caponi, G. Bianchi, Advanced Widespread Behavioral Probes against Lateral Movements, *International Journal for Information Security Research (IJISR)*, Volume 6, Issue 2, June 2016
- S. Di Domenico, G. Pecoraro, E. Cianca, M. De Sanctis, Trained-once device-free crowd counting and occupancy estimation using WiFi: A Doppler spectrum based approach, *IEEE 12th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, 2016
- G. Di Martino G. Pecoraro, G. Poggi, D. Riccio and L. Verdoliva, Extracting compact information from image benchmarking tools: the SAR despeckling case, *International Conference on Image Analysis and Processing (ICIAP)*, 2013
- G. Benetello, D. Giacoia, N. Monaco, G. Pecoraro, La composizione chimica della nebulosa planetaria NGC2392, *Il cielo come laboratorio*, Edizione 2006/2007

## Honours and awards

- Several military commendations
- 2018 - Best Paper Award at the Global Wireless Summit 2018 conference of Chiang Rai (Thailand) for the paper "LTE Signal Fingerprinting Device-Free Passive Localization Robust to Environment Changes"
- 2016 - Best Paper Award at Technet 2016 conference of Rotterdam (Netherlands) for the paper "Device-free activity recognition using WiFi"
- 2012 - International Prize "Sebetia-Ter" as Best Military Cadet of the Italian Air Force Academy for Academic Year 2010/11
- 2011 - International Prize "Sebetia-Ter" as Best Military Cadet of the Italian Air Force Academy for Academic Year 2009/10
- 2007 - Best Military Cadet of "F. Morosini" Italian Naval Military

## Projects

- RedHerd Framework: Offensive Cyberspace Operations as a Service
  - GitHub Repository: <https://github.com/redherd-project/redherd-framework/>
  - Documentation: <https://redherd.readthedocs.io/>
- Bullet Bet Predictions
  - Google Play: <https://play.google.com/store/apps/details?id=com.pecoraro.bullet&hl=it>
  - App Store: <https://apps.apple.com/us/app/bullet-bet-predictions/id1355367427>

## Memberships

- GIAC Advisory Board