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|  | **Emerging Security Challenges Division**  **Science for Peace and Security Programme**  **Curriculum Vitae** |

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| Family Name | | First Name | | | Title | Job Title | | | |
| GHIO | | SELENIA | | | Dr. | Researcher | | | |
| Institution | | | Address | | | | | Country | |
| CNIT-RaSS | | | Galleria G.B. Gerace Pisa | | | | | Italy | |
| Telephone | Fax | | | Email | | | Nationality | | Date of Birth |
| +39 050 0801556 | ████ | | | selenia.ghio@cnit.it | | | IT | | 08/01/1991 |

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| Education | degrees, universities, and dates |

Ph.D. in Information Engineering, Department of Information Engineering (DII), University of Pisa, PISA, 11/2015-05/2018

Master’s degree in Telecommunication Engineering, University of Pisa, PISA, 10/2012-06/2015

Bachelor’s degree in Telecommunication Engineering, University of Pisa, PISA, 09/2009-09/2012

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| Employment | employers, positions, and dates |

Researcher (permanent position), CNIT (National Inter-University Consortium for Telecommunications), PISA, Italy, NOV 2019- PRESENT.

Teaching activity in the field of radar signal processing for a company client (4 Hours), SEPT. 2022.

Research Fellow, Department of Information Engineering (DII), University of Pisa, PISA, Italy, NOV 2018- NOV 2019.

Teaching activity for the systems and networks course (5 Hours), ITIS Galilei, Avenza (MS), JULY 2018.

6 months Traineeship at EUROPEAN SPACE AGENCY (ESA)/ EUROPEAN SPACE OPERATIONS CENTRE (ESOC), Darmstadt, Germany, SEPT. 2017- MARCH 2018.

Ph.D. in Information Engineering,Department of Information Engineering (DII), University of Pisa, PISA, Italy, November 2015- May 2019.

Internship for Master ‘s Thesis at MetaSensing B.V. Noordwijk, Netherlands, November 2014- May 2015

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| Research | brief description of past and current research and the field(s) of specialization |

My current research interests are in the field of 3D ISAR imaging, deep learning applied to radar for target classification and feature extraction, radar signal processing, SSA, time-frequency analysis and cognitive radar.

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| Current Research Activities | titles of ongoing activities; please give the names and institutions of any international collaborators |

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| *Ongoing research activity* | *Institution of affiliation* | *Main international collaborations* |
| 3D ISAR image formation and classification  Micro Doppler analysis and features extraction  Image Classification using Deep Learning | CNIT-RASS | Rheinmetall, Onerea, Indra, Hensoldt, Fraunhofer, Norvegian FFI and others |
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| Role/Activity | Please describe the project-specific role and activity(ies) you will undertake |

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| *Project-specific role* | *Main tasks* |
| Research on Radar processing | * Development of algorithms and techniques for radar signal and image processing * Development of algorithms and techniques for target detection and classification based on micro-Doppler effects * Architectural design of radar components |

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| Period of Involvement (estimated) | The period/dates for which you will be involved and receive a stipend |

From March 25, 2024 to September 25, 2026

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| Publications | up to three recent publications relevant to this project plan |

1. Serrano, A., et al.: Long baseline bistatic radar imaging of tumbling space objects for enhancing space domain awareness. IET Radar Sonar Navig. 1–22 (2023). <https://doi.org/10.1049/rsn2.12511>
2. F. Uysal et al., "Large Baseline Bistatic Radar Imaging for Space Domain Awareness," 2023 IEEE International Radar Conference (RADAR), Sydney, Australia, 2023, pp. 1-6, doi: 10.1109/RADAR54928.2023.10371127.
3. A. H. Oveis, E. Giusti, S. Ghio, G. Meucci and M. Martorella, "LIME-Assisted Automatic Target Recognition With SAR Images: Toward Incremental Learning and Explainability," in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, vol. 16, pp. 9175-9192, 2023, doi: 10.1109/JSTARS.2023.3318675.
4. A. H. Oveis, E. Giusti, S. Ghio, G. Meucci and M. Martorella, "Credible Recognition of Radar Images: Interpretability Metric and Classification Score," IGARSS 2023 - 2023 IEEE International Geoscience and Remote *Sensing Symposium*, Pasadena, CA, USA, 2023, pp. 1084-1087, doi: 10.1109/IGARSS52108.2023.10281648.
5. A. H. Oveis, E. Giusti, S. Ghio, G. Meucci and M. Martorella, "Incremental Learning in Synthetic Aperture Radar Images Using Openmax Algorithm," 2023 IEEE Radar Conference (RadarConf23), San Antonio, TX, USA, 2023.
6. G. Meucci, F. Mancuso, E. Giusti, A. Kumar, S. Ghio and M. Martorella, "Point Cloud Transformer (PCT) for 3D-InISAR Automatic Target Recognition," 2023 IEEE Radar Conference (RadarConf23), San Antonio, TX, USA, 2023.
7. E. Giusti, S. Ghio and M. Martorella, "Drone-based 3DInISAR: Experimental Results," 2023 IEEE Radar Conference (RadarConf23), San Antonio, TX, USA, 2023, pp. 1-6, doi: 10.1109/RadarConf2351548.2023.10149656.
8. C. Y. Pui, S. Ghio, B. Ng, E. Giusti, L. Rosenberg and M. Martorella, "Robust 3D ISAR Ship Classification," 2023 IEEE Radar Conference (RadarConf23), San Antonio, TX, USA, 2023, pp. 1-6, doi: 10.1109/RadarConf2351548.2023.10149643.
9. A. Kumar, E. Giusti, F. Mancuso, S. Ghio, A. Lupidi and M. Martorella, "Three-Dimensional Polarimetric InISAR Imaging of Non-Cooperative Targets," in IEEE Transactions on Computational Imaging, 2023, doi: 10.1109/TCI.2023.3248942.
10. Giusti, E.; Ghio, S.; Oveis, A.H.; Martorella, M. Proportional Similarity-Based Openmax Classifier for Open Set Recognition in SAR Images. Remote Sens. 2022, 14, 4665.
11. S. Ghio, E. Giusti, M. Martorella, “Low-cost database-free automatic target classification using 3D-ISAR”, IRS 2022, 12-15 September 2022.
12. E. Giusti, A. Kumar, F. Mancuso, S. Ghio, M Martorella “Fully polarimetric multi-aspect 3D InISAR” , IRS 2022, 12-15 September 2022.
13. M.Martorella, E. Giusti, S. Ghio, P. Samczynski, J. Drozdowicz, M.K. Baczyk, M. Wielgo, K. Stasiak, J. Julczyk, M. Ciesielski, M. Soszka, R. Mularzuk, G. Pizziol, D. Staglianò, and S. Lischi. "3D Radar Imaging for Non-Cooperative Target Recognition", IRS 2022, 12-15 September 2022.
14. F. Mancuso, E. Giusti, A. Kumar , S. Ghio, M Martorella,"COMPARATIVE ASSESSMENT OF POLARIMETRIC FEATURES ESTIMATION IN FULLY POLARIMETRIC 3D-ISAR IMAGING SYSTEM",, IET Conference 2022 , October 2022.
15. G. Meucci, S.Ghio , E. Giusti , M.Martorella, “RADAR TARGET RECOGNITION BASED ON OPEN SET YOLO”, IET Conference 2022 , October 2022.
16. A. H. Oveis, E. Giusti, S. Ghio and M. Martorella, 'Open Set Recognition in SAR Images Using the Openmax Approach: Challenges and Extension to Boost the Accuracy and Robustness',Eusar 22.
17. A. H. Oveis, E. Giusti, S. Ghio and M. Martorella, "Extended Openmax Approach for the Classification of Radar Images with a Rejection Option," in IEEE Transactions on Aerospace and Electronic Systems, 2022, doi: 10.1109/TAES.2022.3183953.
18. E. Giusti, S. Ghio, A. H. Oveis and M. Martorella, "Transfer Learning-Based Fully-Polarimetric Radar Image Classification with a Rejection Option," 2021 18th European Radar Conference (EuRAD), 2022, pp. 357-360, doi: 10.23919/EuRAD50154.2022.9784584.
19. Giusti, E., Ghio, S.,Oveis, A. H., & Martorella, M.,”Open Set Recognition in Synthetic Aperture Radar Using the Openmax Classifier”, RadarConf2022
20. Oveis, A. H., Giusti, E., Ghio, S., & Martorella, M. ,“Moving and Stationary Targets Separation in SAR Data Using Parallel Convolutional Autoencoders with RPCA Loss”, IEEE RADAR conference 2022
21. H. Oveis, E. Guisti, S. Ghio and M. Martorella, "A Survey on the Applications of Convolutional Neural Networks for Synthetic Aperture Radar: Recent Advances," in IEEE Aerospace and Electronic Systems Magazine, doi: 10.1109/MAES.2021.3117369.
22. Giusti, E., Ghio, S.,Oveis, A. H., & Martorella, M.,”Transfer Learning-Based Fully-Polarimetric Radar Image Classification with a Rejection Option", EuMW 2021 ,(ACCEPTED)
23. Giusti, Elisa, Selenia Ghio, and Marco Martorella. "Drone-based 3D interferometric ISAR Imaging." 2021 IEEE Radar Conference (RadarConf21). IEEE, 2021.
24. Oveis, A. H., Giusti, E., Ghio, S., & Martorella, M., CNN for Radial Velocity and Range Components Estimation of Ground Moving Targets in SAR. In 2021 IEEE Radar Conference (RadarConf21) (pp. 1-6). IEEE.
25. Ghio, S.; Martorella, M.; Staglianò, D.; Petri, D.; Lischi, S.; Massini, R. Experimental Comparison of Radon Domain Approaches for Resident Space Object’s Parameter Estimation. Sensors 2021, 21, 1298. https://doi.org/10.3390/s21041298
26. S. Ghio and M. Martorella, "Size estimation of space debris models from their RCS measured in anechoic chamber," 2020 17th European Radar Conference (EuRAD), 2021, pp. 421-424, doi: 10.1109/EuRAD48048.2021.00113.
27. S. Ghio and M. Martorella, "A comparison of Radon domain approaches for resident space object’s parameter estimation" 2020 21st International Radar Symposium (IRS), 2020, pp. 318-322, doi: 10.23919/IRS48640.2020.9253833.
28. D. Cataldo, L. Gentile, S. Ghio, E. Giusti, S. Tomei and M. Martorella, "Multibistatic Radar for Space Surveillance and Tracking," in IEEE Aerospace and Electronic Systems Magazine, vol. 35, no. 8, pp. 14-30, 1 Aug. 2020, doi: 10.1109/MAES.2020.2978955.
29. S.Ghio, M.Martorella, D.Staglianò, D.Petri, S.Lischi, R. Massini: " Time-Frequency analysis for feature extraction of rotating resident space object: an experimental test.’’, IEEE Radar Conference 2019, April 2019, Boston.
30. S.Ghio, M.Martorella: " Inverse Radon transform scaling via spin rate estimation for resident space object size assessment’’, IET Radar, Sonar & Navigation, January 2019.
31. S.Ghio, M.Martorella, D.Staglianò, D.Petri, S.Lischi, R. Massini: " Practical implementation of the Spectrogram-Inverse Radon Transform based Algorithm for RSO parameter estimation”, IET Science, Measurement & Technology, August 2019.
32. S.Ghio, M.Martorella: " Multi-Bistatic Radar for Resident Space Objects Feature Estimation”, International Radar Symposium (IRS 2018), Bonn, Germany, June, 2018.
33. S.Ghio, M.Martorella: "Estimation of Rotating RSO Parameters using Radar Data and Joint Time-Frequency Transforms", 7th European Conference on Space Debris ESA/ESOC, April 2017.

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| Honours | awards, fellowships, professional societies, etc. |

• 2018 Zonta International Amelia Earhart Fellowship for exceptional women pursuing Ph.D./doctoral degrees in aerospace-related sciences or aerospace-related engineering.

• 2015 graduates with honors.