EUROPEAN CURRICULUM VITAE FORMAT

EDUCATION AND TRAINING

2020-2023 **PhD in Science and Technologies for Electronic and Telecommunication Engineering, INRIA, Université Côte d'Azur and University of Genoa**
PhD in Signal and Image Processing, in particular on remote sensing, artificial intelligence and stochastic models, with the research project "Probabilistic graphical models and deep learning methods for the analysis of remote sensing images".

2020 **Internship, INRIA, Université Côte d'Azur and University of Genoa** (April – September) "Probabilistic graphical models and machine learning methods for remote sensing image analysis".
The research topics proposed in this project are meant to bridge between and combine different ideas from Convolutional Neural Networks (CNNs) and Probabilistic Graphical Models (PGMs) to develop novel methods for remote sensing image classification. Within the project, we shall develop a novel formulation that aims at combining the feature representation capabilities of CNN architectures and the probabilistic modeling capabilities of PGMs to optimize classification accuracy in challenging applications such as those associated with the aftermath of natural disasters.

2019-2020 **Master SISEA (Double Degree), Mathematical and Computational Engineering, IMT Atlantique (Ecole Mines-Télécom)**
Joint curriculum between the Master Degree in Internet and Multimedia Engineering of the University of Genoa and the SISEA and Engineering Master Programs of IMT-Atlantique. IMT Atlantique is a French graduate engineering school (Grande Ecole). This Master is a collaboration with the University of Rennes-1 and it awards the Research Master Degree SISEA (Master2 "STS", Mention EEEA, parcours "Signal Image Systemes Automatique"). I followed the SISEA program through the advanced courses of TAF "Mathematical and Computational Engineering" at IMTA, and I ranked fifth out of 42 students in 2020.

2018-2020 **Master Degree in Internet and Multimedia Engineering, University of Genoa**
110/110 cum laude and right of publication ("dignità di stampa") (27TH October 2020) with the thesis "A Novel Method for Semantic Segmentation of Remote Sensing Images Combining Hierarchical Probabilistic Graphical Models and Deep Convolutional Neural Networks".

2018-2020 **STSI Master Level, IANUA**
IANUA-ISSUGE is the Institute of Higher Studies of the University of Genoa. It supports the best 10% of the students of each faculty of the University of Genoa (http://www.ianua.unige.it). STSI stands for "Sciences and Technologies for Information Science".

2016-2018 **STSI First Level, IANUA-ISSUGE**
First Level during the second and the third year of the Bachelor Degree.)

2015-2018 **Bachelor's degree in Electronic Engineering and Information Technology, University of Genoa**
110/110 cum laude (24TH July 2018) with the thesis "Regularization Methods for Image Restoration".
2010-2015 **High School Diploma**, Scientific High School "Blaise Pascal" Ovada (AL)

PROJECTS

2022-2024 **PRISMALearn, "Tecniche avanzate di machine learning per la fusione dati e l'analisi di immagini della missione PRISMA"**
Funded by ASI and coordinated by Professor S. B. Serpico, University of Genoa, Italy.

2021-2022 **MultiBigSARData, "Semi-automatic information extraction from time series of multifrequency and multimission SAR data"**
Funded by ASI and coordinated by Professor P. Gamba, University of Pavia, Italy.

2018-2020 **TIAMO, "IoT technologies for the marine environment"**
Coordinated by SITEM S.r.l., Genoa, and funded by Regione Liguria (European Regional Development Fund, ERDF).

2020 **Semantic Segmentation of Remote Sensing images combining Hierarchical Probabilistic Graphical Models and Deep Learning, University of Genoa, INRIA Université Côte d'Azur, and IMT Atlantique**
Development, implementation, and experimental validation of a novel method combining deep learning techniques and stochastic models for the task of image classification of satellite images of urban areas. The objective was to envision a new model that allowed to obtain accurate results in the classification of remote sensing images by exploiting the advantages of both of the aforementioned techniques (state-of-the-art accuracy for deep learning and predictions with spatial consistency for stochastic models) while avoiding the use of the huge amount of data needed for deep learning models to work. Programmed in Python and Pytorch.

2019 **Multimodal Image Registering for the biodistribution of a gene therapy drug in the brain of a non-human primate, IMT Atlantique**
The project aims to adapt a segmentation approach to identify fluorescent background noise cells and define the appreciation criteria for registration of biomedical images.

2018 **Regularization Methods for Image Restoration, University of Genoa**
Treatment of ill-posed problems in the context of Image Restoration. The study focuses on iterative methods to solve systems of linear equations. In particular, the Landweber, Steepest Descent and Conjugate Gradient methods are discussed in detail and implemented using MatLab code.

PUBLICATIONS

International Journals

M. Pastorino, G. Moser, S. Serpico, and J. Zerubia, "Semantic Segmentation of Remote Sensing Images through Fully Convolutional Neural Networks and Hierarchical Probabilistic Graphical Models," IEEE Transaction on Geoscience and Remote Sensing, vol. 60, pp. 1-16, 2022, Art no. 5407116, doi: 10.1109/TGRS.2022.3141996.

M. Pastorino, F. Gallo, A. Di Febbraro, G. Moser, and S. B. Serpico, "Multimodal fusion of mobility demand data and remote sensing imagery for urban land-use and land-cover mapping," Remote Sensing, vol. 14, no. 14, 3370, Jul. 2022, doi: 10.3390/rs14143370.

S. Pensieri, F. Viti, G. Moser, S. B. Serpico, L. Maggiolo, M. Pastorino, D. Solarna, A. Cambiaso, C. Carraro, C. Degano, I. Mainenti, S. Seghezza, and R. Bozzano, "Evaluating LoRaWAN Connectivity in a Marine Scenario," Journal of Marine Science and Engineering, vol. 9, no. 11, 1218, Nov. 2021, doi: 10.3390/jmse9111218.

M. Pastorino, A. Montaldo, L. Fronda, I. Hedhli, G. Moser, S. B. Serpico, and J. Zerubia, "Multisensor and Multiresolution Remote Sensing Image Classification through a Causal Hierarchical Markov Framework and Decision Tree Ensembles," *Remote Sensing*, vol. 13, no. 5, p. 849, Feb. 2021, doi: 10.3390/rs 13050849.

International Conferences

M. Pastorino, G. Moser, S. B. Serpico, and J. Zerubia, "Fully convolutional and feedforward networks for the semantic segmentation of remotely sensed images," ICIP 2022 - IEEE International Conference in Image Processing, Bordeaux, France, October 2022, URL: https://hal.inria.fr/hal-03720693.

M. Pastorino, G. Moser, S. B. Serpico, and J. Zerubia, "Semantic segmentation of SAR images through fully convolutional networks and hierarchical probabilistic graphical models," IGARSS 2022 - IEEE International Geoscience and Remote Sensing Symposium, Kuala Lumpur, Malaysia, July 2022. URL: https://hal.inria.fr/hal-03655029.

M. Pastorino, G. Moser, S. B. Serpico, e J. Zerubia, "Hierarchical Probabilistic Graphical Models and Deep Convolutional Neural Networks for Remote Sensing Image Classification," EUSIPCO 2021 - 29th IEEE European Signal Processing Conference, Dublin / Virtual, Ireland, Aug. 2021. URL: https://hal.inria.fr/hal-03252999.

M. Pastorino, G. Moser, S. B. Serpico, and J. Zerubia, "Semantic Segmentation of Remote Sensing Images Combining Hierarchical Probabilistic Graphical Models and Deep Convolutional Neural Networks," *IGARSS 2021 - IEEE International Geoscience and Remote Sensing Symposium,* Brussels, Belgium, July 2021. URL: https://hal.inria.fr/hal-03253006. (First Best Paper Award).

National Conferences

M. Pastorino, G. Moser, S. B. Serpico, and J. Zerubia, "Hierarchical Probabilistic Graphical Models and Deep Convolutional Neural Networks for Semantic Segmentation of Remote Sensing Images," (poster),CIRM (Centre International de Rencontres Mathématiques) Workshop on Apprentissage Automatique et Traitement du Signal sur Graphes / Machine Learning and Signal Processing on Graphs, Marseille, France, 7-11 Nov. 2022.

M. Pastorino, G. Moser, S. B. Serpico, e J. Zerubia, "Segmentation Sémantique d'Images de Télédétection Combinant Modèles Graphiques Probabilistes Hiérarchiques et Réseaux de Neurones Convolutifs Profonds," ORASIS 2021, Sep 2021, Saint-Ferréol, France. URL: https://hal.archives-ouvertes.fr/hal-03339665.

PRIZES

IEEE GRSS Mikio Takagi Student Prize (best Student Paper Award at IEEE International Geoscience and Remote Sensing Symposium (IGARSS)), 2021.

Prix d'excellence, Université Côte d'Azur (France), 2021.

Prize for Talent and Merit, Orientamenti 2021, Regione Liguria (Italy), 2021.

IEEE-GRSS Italian Chapter Master Thesis Prize, 2021.

Vinci Project funding to support joint PhD projects, Université Franco-Italienne, 2022.

Finalist to the Prix Laffitte, 6th edition, Ecole Mines Paris-PSL, 2022.

OTHER ACTIVITY

Reviewing activity for MDPI Remote Sensing and IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing since 2021, and for IEEE International Geoscience and Remote Sensing Symposium (IGARSS), and IEEE Transactions on Geoscience and Remote Sensing in 2022. Co-supervised one Master Thesis at the University of Genoa, 2022. Teaching support activities for the Machine Learning for Pattern Recognition course, University of Genoa, (2020-2021). Teaching activities for the Remote Sensing for Hydrography course, Master in Geomatics, Istituto Idrografico della Marina / University of Genoa, (2022-2023). Visiting student at the laboratories of Professor Sébastien Lefèvre, Université Bretagne Sud, Vannes, France in November 2022.

"Cultore della materia" for the courses Machine Learning for Pattern Recognition, Master in Internet and Multimedia Engineering, University of Genova and Remote Sensing of Natural Disasters, Master in Engineering for Natural Risk Management, University of Genoa.

PERSONAL SKILLS AND COMPETENCES

MOTHER TONGUE **Italian**

OTHER LANGUAGES **English, French, Spanish**

Cambridge English Level 2 Certificate in ESOL International (Advanced C1)
Cambridge Assessment Language, Reference n: 185IT0090004
Grade B (199/210) – May 2018

French course (C1), Inria Université Côte d'Azur, France
2021-2022

Diplôme D'Études en Langue Française (DELF B1)
Ministère de l'Éducation Nationale et de la Jeunesse – Republique Française
N° de diplôme: 039011-201811T-4184085
November 2018

ORGANISATIONAL SKILLS 2019-2020 **Representative of the Students, STSI Master Level, IANUA, University of Genoa**