

SIMONE CAMMARASANA

Curriculum Vitae



Il sottoscritto Simone Cammarasana ai sensi degli art.46 e 47 DPR 445/2000, consapevole delle sanzioni penali previste dall'art.76 del DPR 445/2000 e successive modificazioni ed integrazioni per le ipotesi di falsità in atti e dichiarazioni mendaci, dichiara sotto la propria responsabilità quanto segue

Contacts

Address
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Date of birth 31 October 1987
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Affiliation and Contact Information

Affiliation **CNR-Italian National Research Council, IMATI-Institute for Applied Mathematics and Information Technologies**
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Research interest

ERC Sector **PE6 Computer science and informatics:**
PE6_8 Computer graphics, computer vision, multi media, computer games
PE6_11 Machine learning, statistical data processing and applications using signal processing (e.g. speech, image, video)
PE6_12 Scientific computing, simulation and modelling tools
ERC Sector **LS7 Applied Medical Technologies, Diagnostics, Therapies and Public Health:**
LS7_1 Imaging for medical diagnosis
Keywords Signal processing, Image processing, Biomedical imaging, Ultrasound imaging, Artificial intelligence, High-performance computing

Research contracts and activities

2 Nov. 2022 – **Research fellowship, BANDO IMATI-005-2022-GE**
contract **CNR IMATI - Genova.**
expiry: 31 *Study and development of innovative methods for extracting information from biomedical image*
Oct. 2023 *repositories and medical records for the enrichment of the patient's electronic health record with*
quantitative parameters, for the optimisation of the treatment path and patient management in
hospitals and/or home

Description

Several transformations (e.g., the Fourier, Laplace, and Fuzzy transform) have been applied to signal analysis. In particular, the Fuzzy transform is widespread for signal and image analysis, as it converts a real, continuous, and bounded function into a finite vector of components, which can be applied to reconstruct the input signal up to arbitrary precision. In this context, I have developed a novel method for signals sampling and reconstruction, through the computation of the optimal centres and supports of the membership functions of the Fuzzy transform. The solution of the minimisation problem for the Fuzzy Transform requires the application of a non-linear optimisation method (PRAXIS) that has been applied on the CINECA Marconi100 cluster and will be subsequently tested on the CINECA Leonardo cluster.

The method has been applied to synthetic and biomedical 2D images. Image sampling and reconstruction is relevant in biomedical imaging for several tasks, e.g., segmentation, super-resolution, and edge enhancement; in particular, 2D ultrasound images from different anatomical districts (e.g., muscle-skeletal, abdominal) has been tested.

Finally, signal processing on high-resolution data with high-performance computing (HPC) techniques is widespread in image analysis and graphs processing, with applications in medicine and computer vision. Depending on the data and the type of application, solving these problems can require significant computational effort. Nowadays, modern computing architectures allow us to take advantage of HPC methodologies to solve complex problems. It becomes relevant to analyse the characteristics and performance of HPC hardware and software for solving classes of signal processing problems. I have compared and discussed the application of several optimisation solvers with different signal processing problems. In particular, I have tested signal approximation on regular and irregular grids (e.g., 2D images, graphs) and signal denoising on 2D images. The optimisation solvers have been compared in terms of convergence, HPC properties (e.g., scalability), and accuracy.

Expertise

- Programming skills: Matlab, Python, C++
- High Performance Computing tools on the CINECA cluster
- Ultrasound signals (2D/3D images) analysis and processing
- Parallel scientific libraries: PETSc, SuperLU
- DICOM data structures

Scientific responsible

- Principal Investigator of an ISCRA-C project (ID. US-SAMP) with CINECA, computational budget on the LEONARDO cluster.

1 Nov. 2019 – **Research activities during the Ph.D. in Computer Science & System Engineering: Curriculum in Computer Science.**
31 Oct. 2022
(3 years) **CNR IMATI - Genova.**

Analysis and development of innovative methods for the processing of ultrasounds images to support medical diagnoses

Description: I have designed a novel method for the real-time denoising of ultrasound images, that combines spectral transformation and deep-learning [SNP22c], [SNP21]. The spectral transformation has been tested and validated with Matlab, while the network architecture have been developed through Tensorflow2 in Python. To improve the framework, I have developed a learning-based low-rank denoising method that improves speckle reduction, edges and features preservation [SP22a], [SNP22d], [SP22b]. I have specialised the proposed framework to different anatomical districts (e.g., muscle-skeletal for neurological diseases, cardiac) and extended to 3D US images and 2D videos [SNP22a], [SNP22b].

Then, I have proposed a novel method for the spatial super-resolution of 2D US videos, improving the approximation accuracy while reducing blurring artefacts [SNP23b], [cammarasana2023superresolution]. The method exploits kernel-based interpolation and deep learning-based approach. Both the methods are developed in collaboration with the industrial partner Esaote, whose quality group provided the industrial validation as part of their contribution. Experimental tests have been performed on the CINECA Marconi100 cluster, exploiting parallel computation on both CPUs and GPUs, with more than 30K hours of tests. Finally, I have developed some preliminary results on the the segmentation and extraction of quantitative and morphological descriptors from 2D and 3D US images, for the predictive analysis on benign/malignant breast tumours.

Partners

- CNR-IMATI, Genova (Research partner)
- Esaote S.p.A., Genova (Industrial partner)

Expertise

- Programming skills: Matlab, Python
- Deep Learning libraries: Tensorflow
- High Performance Computing tools on the CINECA cluster
- Ultrasound signals (2D/3D images, 2D videos) analysis and processing
- DICOM data structures

Scientific responsible

- Principal Investigator of two ISCRA-C projects (ID. US-ML-SR and ID. IMG-DEN) with CINECA, computational budget on the MARCONI100 cluster

- 3 Apr. 2018 – **Research fellowship, BANDO IMATI-002-2018-GE**
 31 Oct. 2019 **CNR IMATI - Genova.**
(1 year, 7 months) *Study and development of spatio-temporal methods for the fusion and analysis of 3D data acquired by heterogeneous sensors for augmented and virtual reality applications*
3D video analysis This project research was focused on the analysis of point clouds 3D video data, acquired with Microsoft Kinect sensors. The overall goal was the analysis of the action of a subject in a 3D video, e.g., the action of a human or the movement of its sub-parts. To this end, I have achieved the action classification through the analysis of the temporal variation of geometric (e.g., centroid path, volume variation, activated voxels) and kinematic (e.g., speed, speed histogram) properties in consecutive frames. Then, these descriptors and the corresponding histograms have been used to search a frame in a 3D video and to compare 3D videos [SP22c].
Image sampling The goal of this work was to approximate an input 2D image with a set of sampling points, which positioning visually recreates the original image. Through the sampling points, I have reconstructed the input image on the original grid [SP21b]. Finally, I have applied the reconstruction on a finer grid, to up-sample the input image. The work has been extended also to 3D data analysis and reconstruction [SP20], [SP21a]. In particular, I have applied the proposed method to 2D and 3D biomedical images (e.g., US, MRI) and 3D point clouds extracted from MRI.
- Expertise**
- Programming skills: C++, Matlab
 - Data processing: PCL, VTK, Meshlab
 - Linux environment
 - Image/video analysis and processing
- 1 Sep. 2017 – **Research stage during the 2nd level Master in Scientific Calculus**
 31 Mar. 2018 **CNR IMATI - Genova.**
(7 months) *High-performance computing for the efficient solution of PDE on arbitrary domain*
 I have analysed the performance of several libraries and methods on a parallel environment, in terms of execution time, scalability, approximation error, and memory consumption, for the solution of linear systems with large sparse matrices [Gal+22]. The linear systems were defined as discretisation of PDEs onto regular and irregular grids, on both 2D and 3D domains. The analysis has been performed on the HPC cluster MARCONI, Cineca.
- Expertise**
- Parallel scientific libraries: PETSc
 - Programming skills: C++, Fortran90
 - High Performance Computing: Marconi cluster, CINECA
- Scientific responsible**
- Principal Investigator of an ISCRA-C project (ID. HPC-PDE) with CINECA, computational budget on the MARCONI cluster.

Professional activities

- Jun. 2014 – **Product and Application Engineer – Research & Development – Engine System**
 Dec. 2016 **Continental Automotive S.p.A., San Piero a Grado (PI).**
(2 years, 7 months) *Product design of fuel rail systems*
 I was the technical responsible for the product design of electro-injection systems on several General Motors applications.
- Expertise**
- Matlab
 - Microsoft Office
- Aug. 2013 – **Process Engineer – Production – Engine System**
 Jun. 2014 **Continental Automotive S.p.A., Fauglia (PI).**
(11 months) *Management of material flow*
 I worked on the analysis and optimisation of the material flow for sub-components production of electro-injection systems.
- Expertise**
- Microsoft Office

Nov. 2012 – **Stage for Master Degree's thesis – Production – Engine System**

Jul. 2013 **Continental Automotive S.p.A., Fauglia (PI).**

(9 months) *Uncompliant analysis*

I have implemented a methodology for the quantification and the analysis of non-compliant parts during the productive process of electro-injection systems.

Expertise

- Microsoft Office

Relevant expertise

Programming: C/C++, Python, Matlab, Fortran90

Deep learning: Tensorflow

HPC: Cineca Marconi and Marconi100

Data processing: PCL, VTK, Meshlab

Medical data structures: DICOM

Medical image analysis: Matlab, Esaote MyLab Desk

Numerical libraries: Eigen, PETSc, BLAS

Education

Nov. 2019 – **Ph.D. in Computer Science & System Engineering: Curriculum in Computer Science**
Oct. 2022 **(Dottorato di Ricerca in Informatica e Ingegneria dei Sistemi: Curriculum in Informatica)**
(3 years) **XXXV Cycle.**

Università degli studi di Genova. Dipartimento di Informatica, Bioingegneria, Robotica e Ingegneria dei Sistemi DIBRIS.

Thesis title: Real-time Ultrasound Signals Processing: Denoising and Super-resolution [Sim23]

Thesis defence: 07 February 2023.

Description: Ultrasound images are widespread in medical diagnosis for muscular-skeletal, cardiac, and obstetrical complications, due to the efficiency and non-invasiveness of the acquisition methodology. However, this technique introduces a speckle noise in the acquired signal, which corrupts the resulting image. Furthermore, spatially low-resolution images are acquired, to increase the temporal frequency of the acquisition. In this context, I focused my research work on the development of real-time denoising and up-sampling methods, that are relevant to improve the visual analysis of the physician and post-processing operations, e.g., segmentation, features extraction, quantitative measurements. I applied Artificial intelligence and HPC methodologies to account large and heterogeneous ultrasound data set.

Jan. 2017 – **Post-lauream 2nd level Master in Scientific Calculus (Master di II livello in Calcolo**
Jun. 2018 **Scientifico)**

(1 year, Università degli Studi di Roma "La Sapienza" - Dipartimento di Matematica.

7 months) *Thesis title:* High-performance Computing for the Efficient Solution of PDE on Arbitrary Domain [Sim18]

Thesis discussion: 25 June 2018

Grade: 110/110 cum Laude

Award: Best thesis winner

Description: Partial Differential Equations (PDEs) are used to describe several problems relevant in many fields, such as engineering, physics, biology, finance, social science. In all these problems, the input data are a 2D or 3D domain and the PDE to be solved, while the expected output is the solution on the domain. Since most of the PDEs cannot be solved in their analytic form, these are discretised on a finite domain (with regular or irregular grids) and with approximate techniques (such as Finite Element or Finite Differences); the corresponding discrete formulation typically reduces to the solution of a sparse linear system. In this context, I focused my research work on the analysis of HPC methods for the efficient solution of a large sparse linear system.

- 2010 – **Master Degree, Management Engineering (Laurea Magistrale in Ingegneria Gestionale)**
 2013 **Università di Pisa, Facoltà di Ingegneria.**
(2 years, 10 months) *Thesis title:* Implementation of a system for managing the production wastes on a production line of high-pressure electro-injectors [Sim13]
Thesis discussion: 17 July 2013
Grade: 110/110
Description: The injection system in the motor vehicle field guarantees the correct fuel flow to the combustion chamber; here the reaction takes place between the fuel introduced and an oxidizing agent (oxygen) which allows the conversion of energy chemistry possessed by the mixture into mechanical work available to the crankshaft. In my thesis, I discuss the methodologies and results of the implemented system for the management of the production wastes on a production line of high-pressure electro-injectors.
- 2006 – **Bachelor Degree, Management Engineering (Laurea di Primo Livello in Ingegneria Gestionale)**
 2010 **Università degli Studi di Firenze. Facoltà di Ingegneria.**
(3 years, 10 months) *Thesis title:* Analysis of a refrigeration system for food sector
Thesis discussion: 21 July 2010
Grade: 102/110
- 2001 – **High School diploma - Liceo Scientifico**
 2006 **Liceo Scientifico Statale Guglielmo Marconi, Grosseto.**
(5 years) *Grade:* 96/100

Project responsibility

- Apr. 2023 **Principal Investigator and Scientific responsible for the ISCRA-C project:**
Sampling and approximation of biomedical images
 Leonardo cluster, CINECA
 Assigned budget: 40,000 hours
 Project ID. HP10CXLQ1S (US-SAMP)
- Jan. 2022 **Principal Investigator and Scientific responsible for the ISCRA-C project:**
Learning-based super-resolution of 2D ultrasound images
 Marconi100 cluster, CINECA
 Assigned budget: 20,000 hours
 Project ID. HP10C5AMB7 (US-ML-SR)
- Jun. 2020 **Principal Investigator and Scientific responsible for the ISCRA-C project:**
Denosing Ultrasound Images with Spectral Methods & Deep Learning
 Marconi100 cluster, CINECA
 Assigned budget: 20,000 hours
 Project ID. HP10CVHIXD (IMG-DEN)
- Feb. 2018 **Principal Investigator and Scientific responsible for the ISCRA-C project:**
High Performance Computing for the Efficient Solution of PDEs on Arbitrary Domains
 Marconi cluster, CINECA
 Assigned budget: 15,000 hours
 Project ID. HP10C1SH1C (HPC-PDE)

Supervision activities

- Sep. 2021 – **Supervision of international collaboration with the Institute for Research and Applications of Fuzzy Modeling of the University of Ostrava.**
 Dec. 2021
(3 months) I have supervised the 3-months visiting period of the 3rd year Ph.D. student Hana Zamecnikova. The visiting has focused on training, theoretical and experimental tests on the Nonlocal Laplace Operator in image processing.

Teaching support

- 2022-2023 **Algebra and Logics for Computer Science**
(30 hours) *Computer Science, DIBRIS, University of Genova*
Bachelor's Degree course
Rep. n. 3804, 19/9/2022
- 2022-2023 **Introduction to programming**
(30 hours) *Computer Science, DIBRIS, University of Genova*
Bachelor's Degree course
Rep. n. 5546, 17/10/2022
- 2021-2022 **Algebra and Logics for Computer Science**
(30 hours) *Computer Science, DIBRIS, University of Genova*
Bachelor's Degree course
n. 98-Rep. 3726/2021
- 2021-2022 **Concurrent programming and distributed algorithms**
(20 hours) *Computer Science, DIBRIS, University of Genova*
Bachelor's Degree course
n. 98-Rep. 3726/2021
- 2021-2022 **Algorithms and data structures**
(10 hours) *Computer Science, DIBRIS, University of Genova*
Bachelor's Degree course
n. 98-Rep. 3726/2021

International conferences organisation

- Sep. 2021 **Meet in Italy for Life Sciences, Genova**
Support to the organisation
- May 2019 **Eurographics 2019, Genova**
Student volunteer, support to the organisation

Awards

- May 2020 **Best paper at the ESCO2020 conference**
- Jun. 2018 **Best thesis at the 2nd level Master in Scientific Computing**

Participation to national research projects

DIT.AD009.029.001 Biannual Project FAR - TEDIG

Tecnologie per la diagnostica ecografica, l'interventistica e la gestione del paziente
FAR - Fondo Agevolazioni per la Ricerca, art. 13 del D.M. 593. Project supported by MIUR and Regione Liguria (SIIT)
Principal Investigator: Dr. Giuseppe Patanè, CNR-IMATI, Genova.
Prot. 0121525, 21/04/2023

DIT.AD004.084

Modellazione, analisi e visualizzazione di dati multidimensionali ed eterogenei
Principal Investigator: Dr. Giuseppe Patanè, CNR-IMATI, Genova.
Prot. 0121525, 21/04/2023

DIT.AD004.066.001

Metodi innovativi per la creazione, modifica e fruizione di modelli 3D e altre risorse digitali in ambienti immersivi e di realtà aumentata

Principal Investigator: Dr. Marina Monti, CNR-IMATI, Genova.

Prot. 0121525, 21/04/2023

Scientific committee

Patterns 2023 International Conference on Pervasive Patterns and Applications
Nice, Saint-Laurent-du-Var

Patterns 2022 International Conference on Pervasive Patterns and Applications
Barcelona

Patterns 2021 International Conference on Pervasive Patterns and Applications
Porto

Patterns 2020 International Conference on Pervasive Patterns and Applications
Nice

Collaboration

Esaote S.p.A.

Esaote is an Italian company located in Genova that operates in the biomedical sector, and which deals with the design, production, sale and maintenance of medical diagnostic equipment. Esaote is one of the world's leading manufacturers of diagnostic imaging systems, dedicated MR and US, and healthcare IT services. Esaote was the industrial partner during my Ph.D., providing the large ultrasound data set and the industrial validation of the results of the processing methods for US signals. During the collaboration, the industrial goal was to provide Esaote a prototype to be integrated within the processing chain of their ultrasound scanners. Main results in Publications Section: [SNP22c], [SNP21], [SNP22d], [SNP22a], [SNP22b], [SNP23b], [**cammarasana2023superresolution**].

Ospedale San Martino - HSM

HSM is an Italian hospital located in Genova that pertains to the organisation "Istituti di Ricovero e cura a carattere scientifico (IRCCS)". I have collaborated in the context of the agreement "Laboratorio di Neurologia Computazionale", with the departments "Dipartimento di Neuroscienze, Riabilitazione, Oftalmologia, Genetica e Scienze Materno-Infantili (DINOGLI)" and "Dipartimento di Scienze della Salute (DISSAL)".

University of Ostrava

I have collaborated with Prof. Irina Perfilieva on the analysis and development of novel methods on the Fuzzy Transform, with an application to 2D images.

Publications

Journal papers

- [SNP23b] **Simone Cammarasana**, Paolo Nicolardi, and Giuseppe Patanè. "Super-resolution of 2D ultrasound images and videos". In: *Medical & Biological Engineering & Computing* (2023), pp. 1–16. DOI: <https://doi.org/10.1007/s11517-023-02818-x>.
- [SNP22c] **Simone Cammarasana**, Paolo Nicolardi, and Giuseppe Patanè. "Real-time denoising of ultrasound images based on deep learning". In: *Medical & Biological Engineering & Computing* (2022), pp. 1–16. DOI: <https://doi.org/10.1007/s11517-022-02573-5>.
- [SP22a] **Simone Cammarasana** and Giuseppe Patanè. "Learning-based low-rank denoising". In: *Signal, Image and Video Processing* (2022), pp. 1–7. DOI: <https://doi.org/10.1007/s11760-022-02258-4>.
- [SP22c] **Simone Cammarasana** and Giuseppe Patanè. "Spatio-temporal analysis and comparison of 3D videos". In: *The Visual Computer* (2022), pp. 1–16. DOI: <https://doi.org/10.1007/s00371-022-02409-1>.

- [SP21a] **Simone Cammarasana** and Giuseppe Patané. “Localised and shape-aware functions for spectral geometry processing and shape analysis: a survey & perspectives”. In: *Computers & Graphics* 97 (2021), pp. 1–18. DOI: <https://doi.org/10.1016/j.cag.2021.03.006>.
- [SP21b] **Simone Cammarasana** and Giuseppe Patané. “Kernel-Based Sampling of Arbitrary Signals”. In: *Computer-Aided Design* 141 (2021), p. 103103. DOI: <https://doi.org/10.1016/j.cad.2021.103103>.

Book series

- [SNP22a] **Simone Cammarasana**, Paolo Nicolardi, and Giuseppe Patané. *Fast Learning Framework for Denoising of Ultrasound 2D Videos and 3D Images*. Ed. by Pier Luigi Mazzeo, Emanuele Frontoni, Stan Sclaroff, and Cosimo Distanto. Cham: Springer International Publishing. ICIAP 2022 Workshops. Lecture Notes in Computer Science, vol 13373, 2022, pp. 475–486. ISBN: 978-3-031-13321-3. DOI: https://doi.org/10.1007/978-3-031-13321-3_42.

Conference proceedings

- [SP20] **Simone Cammarasana** and Giuseppe Patané. “Kernel-Based Sampling of Arbitrary Data”. In: *Smart Tools and Apps for Graphics - Eurographics Italian Chapter Conference*. Ed. by Silvia Biasotti, Ruggero Pintus, and Stefano Berretti. The Eurographics Association, 2020. ISBN: 978-3-03868-124-3. DOI: 10.2312/stag.20201252.

Extended abstracts

- [SNP22b] **Simone Cammarasana**, Paolo Nicolardi, and Giuseppe Patané. *A General Framework for Smoothing Arbitrary Signals in Computer Graphics and Biomedicine*. https://cs2022.sciencesconf.org/data/pages/cs2022_abstracts.pdf. Curves and Surfaces, Arcachon, 2022.
- [SNP22d] **Simone Cammarasana**, Paolo Nicolardi, and Giuseppe Patané. *Signal despeckling with learned regularisation*. https://events.unibo.it/smart2022/program-and-abstracts/book_smart_2022.pdf/@download/file/book_SMART_2022.pdf. Subdivision, Geometric, Algebraic Methods, Isogeometric Analysis, and Refinability in Italy (SMART), Rimini, 2022.

Posters

- [SP22b] **Simone Cammarasana** and Giuseppe Patané. *Learning-based Low-Rank Denoising: An application to biomedical images*. <https://docs-dibris.github.io/assets/theme/posters/Cammarasana.pdf>. Computer Science Workshop (CSW), DIBRIS-University of Genova, 2022.

Technical reports

- [SNP23a] **Simone Cammarasana**, Paolo Nicolardi, and Giuseppe Patané. *Learning-based Framework for US Signals Super-resolution*. 2023.
- [Gal+22] Antonella Galizia, **Simone Cammarasana**, Andrea Clematis, and Giuseppe Patané. *Evaluating Accuracy and Efficiency of HPC Solvers for Sparse Linear Systems with Applications to PDEs*. arXiv preprint arXiv:2201.05413, 2022. DOI: <https://doi.org/10.48550/arXiv.2201.05413>.
- [SNP21] **Simone Cammarasana**, Paolo Nicolardi, and Giuseppe Patané. *A universal deep learning framework for real-time denoising of ultrasound images*. arXiv preprint arXiv:2101.09122, 2021. DOI: <https://doi.org/10.48550/arXiv.2101.09122>.

Conference talks and seminars

Conference

- Sep. 2022 **Signal despeckling with learned regularisation**
Subdivision, Geometric and Algebraic Methods, Isogeometric Analysis and Refinability in Italy (SMART) 2022, Rimini
- Jul. 2022 **A General Framework for Smoothing Arbitrary Signals in Computer Graphics and Biomedicine**
Curves and Surfaces 2022, Arcachon

- Jun. 2022 **Fast Learning Framework for Denoising of Ultrasound 2D Videos and 3D Images**
International Conference on Image Analysis and Processing (ICIAP) 2021, Lecce
- Nov. 2020 **Kernel-Based Sampling of Arbitrary Data**
Smart Tools and Applications in Graphics (STAG) 2020, Firenze
- May 2020 **High Performance Computing for the Efficient Solution of PDEs on arbitrary domains**
ESCO 2020 - 7TH European Seminar on Computing, Pilsen

Seminars

- Apr. 2022 **Learning-Based Low-Rank Denoising: Computer graphics applications**
DIBRIS, Unige: PhD Seminar in Computer Science, Genova
- May 2021 **Real-time Denoising of Ultrasound data based on Deep Learning**
CNR IMATI, Genova
- Nov. 2020 **Kernel-Based Sampling of Arbitrary Data**
DIBRIS, Unige: PhD Seminar in Computer Science, Genova
- May 2020 **Denoising of Ultrasound Images with Spectral and Deep Learning Approaches**
CNR IMATI, Genova

Reviewing activities

Journals

IEEE Transactions on Biomedical Images, IEEE Transactions on Human-Machine Systems, Medical & Biological Engineering & Computing, MDPI

Conferences

Pacific Graphics 2023, Shape Modeling International 2023, Computer Graphics International 2023, Computer Graphics International 2022, Eurographics 2022, Computer Graphics International 2021, IEEE-EMBS International Conference on Biomedical and Health Informatics 2021, Eurographics Symposium on Geometric Processing 2020

Specialisation courses

Certified courses

- Jul. 2023 **Data or Specimens Only Research**
CITI program
- Sep. 2021 **Divide and conquer, sorting and searching, and randomized algorithms**
Coursera online lectures
- Dec. 2020 **Python programming: a concise introduction**
Coursera online lectures

Other courses

- Jul. 2022 **Theory and practice of virtual reality systems**
Ph.D. course, DIBRIS Unige
- Feb. 2022 **Matematica discreta e applicazioni**
Minicorso, DIMA Unige
- Sep. 2021 **Theatrical presentation**
Ph.D. course, DIBRIS Unige
- May. 2021 **Machine learning: a computational intelligence approach**
Ph.D. course, DIBRIS Unige
- May. 2021 **Capturing human time**
Qualisys online lectures

- Mar. 2021 **Applicazioni della matematica alla medicina**
Master's Degree course, DIMA Unige
- Feb. 2021 **Regularization methods for machine learning**
Online lectures, DIBRIS
- Jul. 2020 **Introduction to convex optimization**
DIBRIS Unige, Ph.D. course
- Jul. 2020 **Deep learning: a hands-on introduction**
DIBRIS Unige, Ph.D. course
- Mar. 2020 **Image analysis class**
Online lectures, Heidelberg University
- Feb. 2020 **An introduction to optimization over time and its application to online machine learning and reinforcement learning**
DIBRIS Unige, Ph.D. course
- Nov. 2019 **Alle soglie di un mondo nuovo. Etica e sviluppo tecnologico nelle scienze della vita**
Scuola di Scienze Mediche e Farmaceutiche

Conferences and seminars - Partecipation

Conferences

- SMART 2022 - Subdivision, Geometric and Algebraic Methods, Isogeometric Analysis and Refinability in ITaly, September 2022, Rimini
- Curves & Surfaces 2022, June 20-24 2022, Arcachon
- ICIAP 2021 - International Conference on Image Analysis and Processing, May 23-27, 2022
- Eurographics 2022, April 25-29 2022, Reims
- Meet in Italy for Life Sciences (MI4LS2021) 29 September-1 October 2021, Genova
- 3D Object Retrieval (3DOR) 2021, September 2-3 2021, online
- Eurographics 2021, May 3-7 2021, online
- Smart Tools and Applications in Graphics (STAG) 2020, November 12-13 2020, online
- German Conference on Pattern Recognition (GCPR), Sept. 28-Oct. 1, 2020, online
- Eurographics Symposium on Geometry Processing (SGP) 2020, July 2 2020, online
- Shape Modeling International (SMI), June 2-4, 2020, online
- Eurographics 2019, May 6-10 2019, Genova

Seminars

- CNR-IMATI seminars (2020-2022)
- Malga-UNIGE seminars (2021-2022)
- DIBRIS-UNIGE seminars (2020-2023)

Skills

Languages

Italian: Mother tongue

English: Proficient

French: Basic

Informatics

Editing: Microsoft Office, LaTeX

OS: Microsoft Windows, Linux

Open source hosting: GitHub

Personal

Footballer

Chess player

Piano and guitar player

Date

Signature

August 4, 2023