PERSONAL INFORMATION

Vittoria Bruni

Via Antonio Scarpa 16, 00161, Rome, Italy

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Vittoria.Bruni@uniroma1.it

Sex Female | Date of birth [redacted] | Nationality Italian

WORK EXPERIENCE

Sept. 2019- present

Associate Professor (SSD MAT/08)

Sapienza Rome University

Department of Basic and Applied Sciences for Engineering --- Civil and Industrial Engineering

Research Topics: Applied Mathematics, Signal and Image Processing

Teaching: Numerical Methods and Programming

Nov. 2010- 2019

Researcher (SSD MAT/08)

Sapienza Rome University

Department of Basic and Applied Sciences for Engineering --- Civil and Industrial Engineering

Research Topics: Applied Mathematics, Signal and Image Processing

Teaching: Numerical Methods and Programming

2002- 2010

PostDoctoral Research Fellow

National Research Council of Italy - Istituto per le Applicazioni del Calcolo “M.Picone”

Research Topics: Multiscale models and novel methodologies for image and signal processing and their applications in the field of Cultural Heritage

EDUCATION AND TRAINING

Nov. 2002- Jan. 2006

PhD degree in Applied Mathematics

Sapienza University of Rome --- Department of Mathematical Methods and Models for Applied Sciences

Thesis title: A Wavelet based Model for Image Denoising and Compression
Supervisor: Dr. Domenico Vitulano (CNR)

2002

CNR scholarship

National Research Council of Italy (CNR) --- Istituto per le Applicazioni del Calcolo “M. Picone”, Rome, Italy

Research Topics: Mathematical models and algorithms for Digital Restoration of Archived Material

1995- 2001

Degree in Mathematics

Sapienza University of Rome

Thesis title: A model for scratch detection in archived movies
Supervisor: Prof. Paola Marchioro (Sapienza, Rome University)
Co-Supervisor: Dott. Patrizia Ciarlini (CNR)

TEACHING EXPERIENCE

2022 - **Mathematical models for engineering (numerical calculus)**
University of Rome La Sapienza --- Chemical Engineering "Laurea Magistrale" Degree

2019- 2022 **Numerical Calculus**
University of Rome La Sapienza --- Mechanical Engineering Bachelor Degree

2013-present **Introduction to wavelet transform and applications**
University of Rome La Sapienza --- Aerospace Engineering Bachelor Degree

2014- 2015 **Numerical Analysis**
University of Rome La Sapienza --- Civil Engineering Bachelor Degree

2011- present **Numerical Methods and Programming**
University of Rome La Sapienza --- Aerospace Engineering Bachelor Degree

2007-2008 **Mathematical image processing Laboratory**
Rome University "Tor Vergata" - Dept. of Mathematics - Master Degree in Signal and Image Mathematical Processing

2007- 2008 **Wavelet Theory 2**
Rome University "Tor Vergata" - Dept. of Mathematics - Master Degree in Signal and Image Mathematical Processing

2005-2010 **Wavelets and signal compression**
Rome University "Tor Vergata" - Dept. of Mathematics - Bachelor Degree in Scienze dei Media e delle Comunicazioni

2001- 2004 **Numerical Calculus Laboratory**
Sapienza - Rome University - Bachelor Degree in Telecommunications Engineering

THESIS SUPERVISION

2021- present **Thesis title: HYPER ABC: HYPERspectral imaging through Artificial intelligence for Building Control**
PhD Student: Dr. Giuseppina Monteverde
University of Rome La Sapienza
Phd in MATHEMATICAL MODELS FOR ENGINEERING, ELECTROMAGNETICS AND NANOSCIENCES
PhD is funded by Regione Lazio and Superlectric srl

2017-2020 **Thesis title: Analysis and decomposition of frequency modulated multicomponent signals**
PhD Student: Dr. Michela Tartaglione
University of Rome La Sapienza
Phd in MATHEMATICAL MODELS FOR ENGINEERING, ELECTROMAGNETICS AND NANOSCIENCES

2017-2020

Thesis title: Differential Entropy Based Methods for Thresholding in Wavelet Bases and Other Applications

PhD Student: Dr. Lorenzo Della Cioppa

University of Rome La Sapienza

Phd in MATHEMATICAL MODELS FOR ENGINEERING, ELECTROMAGNETICS AND NANOSCIENCES

2005- present

Supervisor and co-supervisor of several bachelor, master thesis

PhD BOARD

2021- present

PhD Course in “Mathematical Models for Engineering, Electromagnetics and Nanoscience” --- Sapienza Rome University

2019 - 2020

PhD Course in “Engineering and Applied Science for Energy and Industry” --- Sapienza Rome University

RESEARCH PROJECTS and CONTRACTS

2022- present

Research contract

Topic: “Machine learning and AI-based image processing methods for facial micro-expressions spotting and recognition”

Funding Program: CYBER 4.0

Project Title: ISHealth – Improved Security

E-HealthContract holder: Sigma Consulting srl

Role: Participant

2021 - present

Research Project

Project title: IMAGO – Imaging Multispettrale per l’Arte, Gamification e realtà Olografica

Funding Program: Regione Lazio – Technological District Cultural Heritage and Activities

Scientific Coordinator: Dr. Anna Candida Felici

Role: Participant

2021-present

Research Project

Project Title: Wavelets, frames e basi multiscala. Nuove costruzioni, sviluppi e applicazioni nell'analisi numerica, nella probabilità e nella statistica.

Funding Program: Sapienza Research Funding Program

Scientific Coordinator: Prof. Claudio Durastanti

Role: Participant

2021 **Research contract**

Topic: “Sensor model -based Image fusion”

Funding Program: Provision of Consultancy Services for Exploiting Motion Imagery Content” SATCEN-NP-16/21

Contract holder: Superelectric srl

Role: Scientific coordinator

2020 **Research contract**

Topic: “2D/3D registration of multispectral images”

Funding Program: POR FESR 2014-2020 Beni Culturali e Turismo, Regione Lazio

Project Title: IPER3D - Procedure e sistemi per rilievi Iperspettrali 3D di Beni Culturali

Contract holder: IAC/CNR

Role: Scientific coordinator

2019 **Research contract**

Topic: Data analysis and fusion (multi-sensor, multiresolution) for the definition of quick and early warning systems for security purposes”

Contract holder: SIGMA Integrated Systems srl

Role: Scientific coordinator

2019- present **Research Project**

Project Title: Inter-fractional Monitoring with charged particles

Funding Program: Sapienza Research Funding Program

Scientific Coordinator: Prof. Vincenzo Patera

Role: Participant

2019 **Research contract**

Topic: Definition of methodologies for data acquisition and processing

Project Title: LogON (Logistic Open Network)

Funding Program: MISE (Ministry of Economic Development) Industrial Innovation Funding Program

Contract holder: SBAI- SIGMA Consulting srl

Role: Scientific coordinator

2018-2019 **R&D Project**

Project title: MiCoTED: Microscopio Confocale TeraHertz per diagnostica tumori della pelle

Funding Program: POR FESR 2014-2020 Life, Regione Lazio Funding Program

Topic: Development of image processing algorithms for skin cancer recognition

Contract holder Crisel Instruments srl

Scientific coordinator: Dr. Domenico Vitulano

Role: Participant

2018 **Research contract**

Topic: Feasibility study on digital tailoring from two static images

Contract holder: CMSquare srl

Role: Scientific coordinator

2018 **R&D Project**

Project title: “Clinair Tech” (Clean Indoor Air Technologies)
Funding Program: POR FESR 2014-2020 Life – Regione Lazio
Topic: Indoor air quality prediction methods
Role: Partecipant

2018 **Research contract**

Topic: Source camera identification and image forgery detection
Project title: “COURIER - COUntering RadIcalism InvEstigation platform
Funding Program: POR FESR 2014-2020 Aerospace and Security – Regione Lazio
Contract holder: IAC-CNR
Role: Scientific Coordinator

2018 **Research Project**

Project Title: Development of models and methods for signal and image processing
Funding Program: INdAM - GNCS
Scientific Coordinator: Prof. Francesca Pitolli
Role: Participant

2017 **Research Project**

Project Title: Approximation methods in fractional multiresolution spaces
Funding Program: Sapienza Research Funding Program
Scientific Coordinator: Prof. Francesca Pitolli
Role: Participant

2016 **Research Project**

Project Title: Glacier Surface Velocity Measurement (GSVM) Platform: an Open Resource for Understanding Climate Change
Funding Program: Sapienza Research funding Program
Scientific Coordinator: Prof. Mattia Crespi
Role: Participant

2016 **Research contract**

Topic: Definition of innovative spinning disk patterns in confocal microscopy
Contract holder: Crestoptics srl
Scientific Coordinator: Dr. Domenico Vitulano (IAC-CNR)
Role: Participant

2013-2016 **Research contract**

Topic: Development of image and video processing algorithms (compression, segmentation, fusion, super-resolution, classification) for anti IED monitoring actions
Project Title: MILDAR-Sistema di Sistemi a Supporto Operazioni anti IED
Funding Program: Italian Defence Ministry
Scientific Coordinator: Dr. Domenico Vitulano
Role: Participant

2015 **Research project**

Project title: Numerical and probabilistic models for information management
Funding Program: Sapienza Research Funding Program
Scientific Coordinator: Prof.ssa Barbara Vantaggi
Role: Participant

2015 **Research contract**

Topic: Development of image and video processing algorithms for environmental monitoring
Project Title: Project S3T-Sistema di Supervisione per la Sicurezza del Territorio (Monitoring System for Land Monitoring)
Funding Program: POR FESR Lazio 2007-2013 Asse I
Contract holder: Sigma Consulting srl
Scientific Coordinator: Dr. Domenico Vitulano
Role: Participant

2014 **Research Project**
Project Title: Non-stationary wavelets based methods for image processing
Funding Program: INdAM GNCS Research Funding Program
Scientific Coordinator: Dr. Mariantonia Cotronei
Role: Participant

2014 **Research contract**
Topic: Software development for spinning disk output design
Contract holder: Crestoptics srl
Scientific Coordinator: Dr. Domenico Vitulano (IAC-CNR)
Role: Participant

2014 **Research Project**
Project Title: Bayesian Inference, probability envelopes and their applications
Funding Program: Sapienza Research Funding Program
Scientific Coordinator: Prof.ssa Barbara Vantaggi
Role: Participant

2013-2015 **Research Project**
Project Title: ACTIVITI: Attrattori Culturali e Tecnologie Informatiche per la Valorizzazione Interattiva e per il Turismo Innovativo
Funding Program: Campus Projects Regione Campania
Scientific Coordinator: Dr. Umberto Amato
Topic: Development of algorithms for the digital restoration of archived photos
Role: Participant

2013-2014 **Research Project**
Project Title: Studio di configurazioni bistatiche con radar ad apertura sintetica (SAR) satellitare e transponder attivo per il monitoraggio ambientale (SBISCAM) --- SAR-based environmental monitoring
Funding Program: International partnership CNR/FCT Italy-Portugal
Scientific Coordinator: Dr. Giovanni Nico
Role: Participant

2013-2014 **Research contract**
Topic: Design of an innovative pattern for spinning disks in confocal microscope and relative image processing methods --- Patented
Contract holder: Crestoptics srl
Scientific Coordinator: Dr. Domenico Vitulano (IAC-CNR)
Role: Participant

2013 **Research Project**
Project Title: Bayesian and multiscale methods for multimodal analysis
Funding Program: INdAM-GNCS Research Funding Program
Role: Scientific coordinator

2013 **Research Project**

Project Title: Mathematical methods for data dimensionality reduction
Funding Program: Sapienza Research Funding Program
Scientific Coordinator: Prof.ssa Vittoria Bruni
Role: Scientific Coordinator

2013 Research contract
Project Title: Business Simulation for Healthcare (Bus-4H)
Funding Program: Regione Lazio
Contract holder: SiliconDev srl
Scientific Coordinator: Prof.ssa Francesca Pitolli
Role: Participant

2012 Research Project
Project Title: Multiscale models and methods for information processing
Funding Program: Sapienza Research funding Program
Role: Scientific Coordinator

2012 Research Project
Project Title: Development of algorithms for neuromagnetic data processing
Funding Program: INdAM-GNCS Research Funding Program
Scientific Coordinator: Dr. Annalisa Pascarella
Role: Participant

2012 Research Project
Project Title: Clean-Air
Funding Program: Provincia di Roma
Scientific Coordinator: Dr. Domenico Vitulano
Topic: Development of an indoor air quality monitoring method --- Patented
Role: Participant

2009-2010 Research Project
ProjectTitle: Blu-Archeosys - Tecnologie Innovative e Sistemi Avanzati a Supporto dell'Archeologia Subacquea (Innovative Technologies for Underwater Archaelogy)
Funding Program: FAR funding Program
Scientific Coordinator: Dr. Laura Moltedo
Topic: Image compression
Role: Participant

2008-2009 Research Project
Project Title: Multiscale analysis for complex shapes recognition
Funding Program: CNR Research funding Program
Scientific Coordinator: Dr. Domenico Vitulano
Role: Participant

2005 Research contract
Topic: Novel methodologies for the detection of degraded areas in historical buildings using image processing techniques
Contract holder: Superintendence of Cultural Heritage Regione Autonoma Valle d'Aosta
Scientific Coordinator: Dr. Laura Moltedo
Role: Participant

2003-2005 Research Project

Project Title: Un modello basato sulla conoscenza per il restauro e la valorizzazione digitale di immagini del patrimonio archeologico e monumentale dell'area costiera del Mediterraneo --- A knowledge based model for digital restoration and enhancement of images concerning archaeological and monumental heritage of the Mediterranean coast
Funding Program: Basic Research Funding Program of Ministry of University and Research (FIRB Program)
Scientific Coordinator: Dr. Laura Moltedo
Topic: Innovative image processing methods for digital restoration of archived photographs
Role: Participant

2004-2005 **Research Project**
Project Title: SIINDA Project: Ricerche e Sviluppi di Sistemi Innovativi di Indagine e Diagnosi Assistita (Development of innovative systems for computer aided analysis and diagnosis of Cultural Heritage)
Funding Program: National Research Funding (PARNASO)
Scientific Coordinator: Dr. Laura Moltedo
Topic: Innovative image processing-based methodologies for computer-aided degradation monitoring of historical buildings
Role: Participant

2003 **Research Project**
Project Title: MURST "Settore Multimediale: Applicazioni ai Beni Culturali"
Funding Program: applied research project 5% MURST
Scientific Coordinator: Dr. Laura Moltedo
Topic: Recovering and representation of geometric properties of historical buildings
Role: Participant

REVIEWER and EDITORIAL ACTIVITY

2022- present **Associate Editor**
IET Image Processing - Wiley

2022 **Workshop Organizing Committee**
*1st Workshop on "**MAT**hematical **CH**allenges to and from new technologi**ES**"*
23-24 June 2022
Sala del Chiostro, University of Rome "La Sapienza" --- via Eudossiana 18 Rome – Italy
Co-organizers: Domenico Vitulano, Francesca Pitolli

2022- present **Topic Editor**
Fractal and Fractional - MDPI

2021- present **Topic Editor**
Mathematics - MDPI

2020- present **Topic Editor**
Sensors - MDPI

2021 **Guest Editor for the Special Issue**
"Application of Artificial Intelligence in Signal Processing" to be published on *Applied Sciences* – MDPI
Co-Guest Editor: Prof. D. Vitulano (Sapienza, Rome University)

2021 **Guest Editor for the Special Issue**
"Numerical Methods for Solving Fractional Differential Problems" published on *Fractal and Fractional* – MDPI
Co-Guest Editor dr. Laura Pezza (Sapienza Rome University)

2020 **Guest Editor for the Special Issue**
"Mathematical Methods in Image and Signal Processing", published on *Mathematics* – MDPI
Co-Guest Editor: Prof. D. Vitulano (Sapienza, Rome University)

2019 **Special Track Organizer**
"ViT - Visual Tracking: Models, Methods and Applications" --- International Conference VISUAL 2019, Rome –Italy, July 2019

2018 **Special Session Organizer**
"Signal and data processing: theory and applications", International Conference MASCOT 2018, Rome –Italy, October 2018
Co-organizers: Dr. Mariantonia Cotronei (Reggio Calabria University), Dr. Milvia Rossini (Milan University)

2016-present **Member of the Programme Committee of the following International Conferences**

- Advanced Concepts for Intelligent Vision Systems (ACIVS)
- Computer Vision Theory and Applications (VISAPP)
- Applications and Systems of Visual Paradigms (VISUAL)
- workshop on Multimedia Information Retrieval and Applications (MIRA)
- Signal Image and Vision Technologies (SIVT) track of SITIS 2019
- CHItaly, the biannual Conference of the Italian SIGCHI Chapter

2012 **Guest Editor for the Special Issue**
"Human Vision and Information Theory" published on *Signal, Image and Video Processing – Springer* Vol. 7, No. 3, May 2013
Co-Guest Editors: Dr. D. Vitulano (IAC-CNR) and Prof. Z. Wang (Univ. di Waterloo - Canada)

2003- present **Reviewer for the following international journals:**

IEEE: *Transactions on Signal Processing, Transactions on Image Processing, Signal Processing Letters, Transactions on Systems Man and Cybernetics Part A, Transactions on Cybernetics, Selected Topics in Signal Processing, Transactions in Audio Speech and Language Processing, IEEE Access*

Elsevier*: Signal Processing, Journal of Computational and Applied Mathematics, Pattern Recognition Letters, Image and Vision Computing, Applied Mathematics and Computation, Applied Numerical Mathematics, Mathematics and Computers in Simulation, Computer Methods and Programs in Biomedicine, Journal of Cultural Heritage, Information Sciences, Digital Signal Processing*

Springer: *Signal Image and Video Processing, PLUS, Multimedia Tools and Applications, Mediterranean Journal of Mathematics*

Hindawi: *Journal of Applied Mathematics, Journal of Industrial Mathematics, Advances in Optical Technologies, Mathematical Problems in Engineering*

Eurasip: *Journal on Advances on Signal Processing*

IET: *IET Image Processing, IET Signal Processing*

MDPI: *Entropy Journal, Axioms, Applied Sciences, Computation, Mathematics, Sensors,*

Ams: *Mathematical Reviews*

Others: *Journal of the Optical Society of America A, Journal of WSCG, TamKang Journal of Science and Engineering (TKJSE), International Journal of Physical Sciences-Academic Journals, Journal of Electronic imaging – SPIE, International Journal of General Systems-Taylor & Francis*

PERSONAL SKILLS

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Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	Enter level	Enter level	Enter level	Enter level	Enter level
	C1	C1	B2	B2	C1
French	Enter level	Enter level	Enter level	Enter level	Enter level
	A2	B1	A1	A1	A2

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

RESEARCH INTERESTS

Mathematical models and methods for signal and image processing:

Approximation theory and multiresolution analysis:

- Multiscale models and methods for sparse representation and applications in information processing (*denoising, compression, feature extraction, enhancement, superresolution, classification, etc.)*
- Computational methods for video processing (motion estimation and object tracking)

Numerical methods for the solution of inverse problems

- Visual perception-based digital restoration (image and video enhancement, digital restoration of ancient documents and movies, image segmentation)
- Image quality assessment metrics: definition of novel measures for image quality assessment based on human perception and information theory
- Numerical methods for inverse problems in magnetic tomography

Methodologies and algorithms for computer aided monitoring: cultural heritage, defense and security, forensics, environment.

PATENTS

1. International PCT (Pub. No.: WO/2015/052617, Application No.: PCT/IB2014/064943)
   Title: “Method for evaluating the cleaning state of an aeration and/or conditioning plant of a room”
   Applicants: CNR-Tagliaferri srl-Fabio Buccolini
   Inventors: V. Bruni, D. De Canditiis, D. Vitulano, E. Rossi, D. Pigozzi, F. Buccolini, S. Tagliaferri

2. International PCT (Pub. No.: WO/2016/199025 A1, Application No.: PCT/IB2016/053344),
   Title: “Confocal microscope and related process of acquiring and processing images”
   Applicants: CNR-Crestoptics srl
   Inventors: D. Vitulano, V. Bruni, V. Ricco, A. Santinelli

PUBLICATIONS

International Journals

- V. Bruni, M. Tartaglione, D. Vitulano, Skeleton-based reassignment of nonstationary signals spectrogram, Digital Signal Processing: A Review Journal, 128, 2022
- V. Bruni, M. L. Cardinali, D. Vitulano, A Short Review on Minimum Description Length: An Application to Dimension Reduction in PCA, Entropy – MDPI, 24(2), 2022
- V. Bruni, M. L. Cardinali, D. Vitulano, An MDL-Based Wavelet Scattering Features Selection for Signal Classification, Axioms - MDPI, 11(8), 2022
- Tanga, V. Giliberti, F. Vitucci, D. Vitulano, V. Bruni, A. Rossetti, G. C. Messina, M. Daniele, G. Ruocco, M. Ortolani, Terahertz scattering microscopy for dermatology diagnostics, JPhys Photonics, 3(3), 2021
- V. Bruni, D. Vitulano, A fast preprocessing method for micro-expression spotting via perceptual detection of frozen frames, Journal of Imaging MDPI, 7(4), 2021
- V. Bruni, M. Tartaglione, D. Vitulano, A pde-Based Analysis of the Spectrogram Image for Instantaneous Frequency Estimation, Mathematics MDPI, 9(3), pp. 1–33, 2021
- V. Bruni, M. Tartaglione, D. Vitulano, Coherence of PRNU weighted estimations for improved source camera identification, Multimedia Tools and Applications, Springer, 2021
- V. Bruni, M. Tartaglione, D. Vitulano, A signal complexity-based approach for AM–FM signal modes counting, Mathematics MDPI, 8(12), pp. 1–33, 2020
- V. Bruni, M. Tartaglione, D. Vitulano, Radon spectrogram-based approach for automatic IFs separation, Eurasip Journal on Advances in Signal Processing, Springer, 13, 2020
- V. Bruni, M. Cotronei, F. Pitolli, A family of level-dependent biorthogonal wavelet filters for image compression, Journal of Computational and Applied Mathematics, Elsevier, vol. 367, 2020
- V. Bruni, M. Tartaglione, D. Vitulano, An iterative approach for spectrogram reassignment of frequency modulated multicomponent signals, Mathematics and Computers in Simulation, Elsevier, vol. 176, pp. 96-119, 2020
- V. Bruni, L. Della Cioppa, D. Vitulano, An Automatic and Parameter-Free Information-Based Method for Sparse Representation in Wavelet Bases, Mathematics and Computers in Simulation, Elsevier, vol. 176, pp. 73-95, 2020
- V. Bruni, D. Vitulano, An entropy based approach for SSIM speed up, Signal Processing, Elsevier Science, vol. 135, pp. 198-209, June 2017.
- V. Bruni, M. Tartaglione, D. Vitulano, A fast and robust spectrogram reassignment method, Mathematics, MDPI, vol. 4 no. 4, 2019
- M. C. Basile, V. Bruni, F. Buccolini, D. De Canditiis, S. Tagliaferri, and D. Vitulano, Automatic and Noninvasive Indoor Air Quality Control in HVAC Systems, Journal of Industrial Mathematics, Hindawi, vol. 2016, 2016.
- V. Bruni, D. Vitulano, A robust perception based method for iris tracking, Pattern Recognition Letters, Elsevier Science, vol. 57, pp. 74-80, May 2015.
- V. Bruni, D. Vitulano, An Improvement of Kernel-based Object Tracking based on Human Perception, IEEE Transactions on Systems, Man and Cybernetics: Systems, vol. 44, no. 11, pp. 1474-1485, November 2014.

- V. Bruni, D. De Canditiis, D. Vitulano, Speed up of Video Enhancement based on Human Perception, Signal Image and Video Processing, Springer, vol. 8, Issue 7, pp. 1109-1209, October 2014.

- V. Bruni, E. Rossi, D. Vitulano, Automated Restoration of Semi-Transparent Degradation via Lie Groups and Visibility Laws, Mathematics and Computers in Simulation, Elsevier Science, vol. 106, issue C, pp. 109-123, December 2014.

- V. Bruni, E. Rossi, D. Vitulano, A Model for the Restoration of Semi-transparent Defects Based on Lie Groups and Human Visual System, Computer Vision, Imaging and Computer Graphics. Theory and Application, Communications in Computer and Information Science serie, Springer, vol. 0359, pp. 354-368, 2013, selected paper in VISAPP 2012.

- V. Bruni, E. Rossi, D. Vitulano, Jensen Shannon Divergence for Visual Quality Assessment, Signal Image and Video Processing, Springer, Special Issue on Human Vision and Information Theory, Vol. 7, No. 3, pp. 411-421, May 2013.

- V. Bruni, S. Marconi, B. Piccoli, D. Vitulano, Instantaneous frequency estimation of interfering FM signals through time-scale isolevel curves, Signal Processing, Elsevier Science, vol. 93, no. 4, pp. 882-896, April 2013.

- V. Bruni, A. Crawford, A. Kokaram, D. Vitulano, Semi-transparent Blotches Removal from Sepia Images Exploiting Visibility Laws, Signal Image and Video Processing, Springer, vol. 7, no. 1, pp. 11-26, January 2013.

- V. Bruni, D. De Canditiis, D. Vitulano, Time-scale energy based analysis of contours of real-world shapes, Mathematics and Computers in Simulation, Elsevier, Vol. 12, Issue 12, pp. 2891-2907, August 2012.

- V. Bruni, E. Rossi, D. Vitulano, On the Equivalence between Jensen-Shannon Divergence and Michelson Contrast, IEEE Transactions on Information Theory, vol. 58, no. 7, pp. 4278-4288, July 2012.

- V. Bruni, D. Vitulano, Time Scale Similarities for Robust Image Denoising, Journal of Mathematical Imaging and Vision, vol. 44, no. 1, pp. 52-64, September 2012.

- V. Bruni, D. De Canditiis, D. Vitulano, Local Sorting for Adaptive Signal Regularization, IEEE Signal Processing Letters, vol. 17, no. 7, pp. 691 - 694, July 2010.

- V. Bruni, S. Marconi, D. Vitulano, Time-scale Atoms Chains for Transients Detection in Audio Signals, IEEE Transactions on Audio, Speech and Language Processing, vol. 18, no. 3, pp. 420-433, March 2010.

- V. Bruni, G. Ramponi, A. Restrepo, D. Vitulano, Context based Defading of Archive Photographs, EURASIP Journal on Image and Video Processing, Special Issue on Image and Video Processing for Cultural Heritage, vol. 2009, 2009.

- V. Bruni, B. Piccoli, D. Vitulano, A Fast Computation Method for Time-scale Signal Denoising, Signal Image and Video Processing, Springer, Vol. 3, Issue 1, pp. 63-83, May 2009.

- V. Bruni, D. De Canditiis, D. Vitulano, Phase Information and Space Filling Curves in Noisy Motion Estimation, IEEE Transactions on Image Processing, Vol. 18, No. 7, pp. 1660-1664, July 2009.

- V. Bruni, P. Ferrara, D. Vitulano, Removal of Color Scratches from Old Motion Picture Films Exploiting Human Perception, EURASIP Journal on Advances in Signal Processing, Special issue in Digital Automatic Restoration of Audiovisual Archives, vol. 2008, 2008.

- V. Bruni, B. Piccoli, D. Vitulano, Wavelets and Pde for Image Denoising, Electronic Letters on Computer Vision and Image Analysis (ELCVIA), Special Issue on Partial Differential Equations Methods in Graphics and Vision, Vol. 6, No. 2, pp. 36-53, January 2008.

- V. Bruni, D. Vitulano, Combined Image Compression and Denoising using Wavelets, Signal Processing: Image Communication, Elsevier Science, Vol. 22, Issue 1, pp. 86-101, January 2007.

- L. Appolonia, V. Bruni, R. Cossu, D. Vitulano, Computer-aided Monitoring of Buildings of Historical Importance based on Color, Journal of Cultural Heritage, Elsevier Science, Vol. 7, Issue 2, pp. 85-91, April/June 2006.

- V. Bruni, B. Piccoli, D. Vitulano, Time Scale Dependencies for Image Compression, Journal of Multimedia, Academic Press, Vol.1, Issue 1, pp. 44-55, April 2006.

- V. Bruni, D. Vitulano, Wavelet based Signal De-noising via Simple Singularities Approximation, Signal Processing Journal, Elsevier Science, Vol. 86, Issue 4, pp. 859-876, April 2006.

- V. Bruni, U. Maniscalco, D. Vitulano, Fast Segmentation and Modeling of Range Data via Steerable Pyramid and Superquadrics, Journal of WSCG, Vol. 12, no.1, pp. 73-80, ISSN 1213-6972, February 2004.

- V. Bruni, D. Vitulano, Old Movies Noise Reduction via Wavelets and Wiener Filter, Journal of WSCG, Vol. 12, no.1, pp. 65-72, February 2004.

- V. Bruni, D. Vitulano, A Generalized Model for Scratch Detection, IEEE Transactions on Image Processing, Vol. 13, No. 1, pp. 44-50, January 2004.

- D. Vitulano, V. Bruni, P. Ciarlini, Line Scratch Detection on Digital Images: An Energy Based Model, Journal of WSCG, Special Issue, vol. 10, no. 2, pp. 447-484, ISSN 1213-6972, February, 2002.

Chapters in International Books

- V. Bruni, D. Vitulano, Methods and perspectives in face tracking based on human perception, invited chapter in "Face recognition in adverse conditions", IGI Global 2014.

- A. Kokaram, D. Vitulano, D. Corrigan, V. Bruni, F. Pitie, A. Crawford, "Advances in Automated Restoration of Archived Video", invited chapter in Digital Imaging for Cultural Heritage Preservation, CRC Press, 2011.

- V. Bruni, A. Crawford, A. Kokaram, D. Vitulano, "Visual perception of semi-transparent blotches: detection and restoration", invited chapter in I-Tech Book: Brain, Vision and AI, chapter 1, 2008.

Chapters in National Books

- V. Bruni, M.R. Romano, D. Vitulano, "Estrazione di regioni di interesse nelle immagini dei Beni Culturali", in Comunicazione Multimediale per i Beni Culturali, pp. 169-180 , Addison-Wesley ed., 2003.

Editorials

- V. Bruni, D. Vitulano, Z. Wang, "Special Issue on Human Vision and Information Theory", Signal Image and Video Processing, Springer, Vol. 7, No. 3, pp. 389-390, May 2013.

International Conferences

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Invited Session Chair

2020 ICIAR 2020, the 17th International Conference on Image Analysis and Recognition, June 2020, Virtual Conference Session title: "Computer Vision 3"

2016 VISAPP 2016, the 11th International Conference on Computer Vision Theory and Applications, Rome, Italy, 27 Febbraio 2016, Session title: "Applications and Services, Motion, Tracking and Stereo Vision and Image Formation and Preprocessing"

2015 EUSIPCO 2015, the 23th European Signal Processing Conference, Nice, France, 3 Settembre 2015, Poster Session title: "Image Processing 3"

2013 ISPA 2013, the 8th International Symposium on Image and Signal Processing and Analysis, Trieste, Italy, 4 Settembre 2013, Session title: "Image Enhancement and Denoising"

Honours and awards

2017 National Scientific Qualification as Assistant Professor in Numerical Analysis SC 01/A5: (28 March 2017-28 March 2023)
2017 Research grant FABBR-ANVUR "Fondo per il finanziamento delle attività base di ricerca – funded by MIUR.
2019 Best paper award at VISUAL 2019. Title "The Rational Dilation Wavelet Transform: A Flexible Tool for Perception-inspired Signal and Image Processing".

Evaluation boards

Member of several evaluation boards
External referee and member of the Jury for the Ph.D. defenses

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

Date 28 October 2022

Vittoria Bruni