Curriculum Vitae

Personal information

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Date of birth	(omissis)
Gender	(omissis)

Summary

My research activity, developed over 30 years, has always involved the acquisition, processing and transmission of digital signals, with particular reference to voice, image and video and radio signals.
During my PhD years (1989-1991) I interacted with international research groups engaged in the standardization of digital video coding technologies known as MPEG-1 and MPEG-2. In particular, with the "Visual Communication Lab" of the AT&T Bell Labs of Holmdel directed by Barry Haskell, where I spent a research period of a few months in 1990. The main result of this collaboration was an international patent on an algorithm for coding of AT&T-owned MPEG video frames cited in many scientific publications.
The application contexts that I investigated in the early part of my research career have mainly concerned the development of advanced human-machine interfaces.
Through the European projects in which I participated as a partner or as a coordinator, RACE – HIVITS (1989-1992), Esprit-MIAMI (1994-1996), TIDE-SPLIT (1995-1997), ACTS-VIDAS (1996-1999), IST-Interface (1999-2002) and IST-Origami (2002-2005), I have developed technologies of speech signal processing and emotional analysis of human talking faces.
Through the processing of natural speech it was possible to estimate the articulatory movement of the speaker's mouth and then reproduce it in a synchronized manner through a synthetic model of the face. This type of interface has proved useful in pedagogical applications for language training of hearing impaired subjects.
Through the involvement in the Working Group on "Hybrid coding" within the international MPEG standardization process, my research has contributed to the inclusion of the "talking synthetic face" component in the MPEG-4 regulations allowing the integration of "virtual humanoids" within "natural video contents"
This result has revealed and is still revealing very interesting potential for supporting foreign language learning, for lip synchronization with speech, for the development of dialoguing interfaces through synthetic faces (avatars), for rehabilitation to the language of pathological subjects.
With the advent of digital mobile radio networks, the integration of new satellite services and the widespread diffusion of smartphones, my research subsequently turned to the development of applications (Apps) to support services oriented to people according to the environment in which they live. In particular, applications based on voice interaction, audio context analysis and localization. This research activity was mainly developed within the UniGe-Telecom Italia Joint Laboratory for which I was responsible and which resulted in a UniGe - TIM SpA EU patent relating to new techniques for speech recognition that has been recently extended to US in April 2024.
Since 2010 with the foundation of the SI4life consortium - Science and Enterprises for the Quality of Life - (www.si4life.it) of which I am president, I have oriented my research activity more and more to applications and services in the health sector for diagnosis, rehabilitation, telemedicine and monitoring of patients and the elderly at home. My activity has developed in the context of research projects on regional structural funds such as the Smart Angel project (aimed at cognitive disabled), the IANUS project (aimed at psychiatric patients in protected residences), Starc for Stroke (for post-motor rehabilitation -ictus), Neuroglass (for monitoring neurological patients), through the project funded by the Compagnia San Paolo for "Study and construction of a prototype of an innovative portable microwave device for the differential diagnosis between ischemic and hemorrhagic stroke" and the European research project FP7 DOREMI of which Si4life was a partner.
Through Si4life, which since 2015 is a member of the European Partnership on Active Aging and is the leader of the "Prevention of functional decline and frailty" commitment, I have been involved in ERASMUS + European training projects, such as CARESS, Enhance and InTour or European cooperation projects such as I-Care and ASAP currently underway.
During my career I have participated in technical and organizing committees of numerous scientific conferences and I have been Associate Editor of prestigious scientific journals of the IEEE Communication Society and IEEE Signal Processing Society. I was General Chair of SNHC3DI 1997, Rhodos, Greece, September 1997, SNHC3DI 1999, Santorini, Greece, September 1999, EUROIMAGE ICAV3D 2001, Mykonos, Greece, May 200 and IEEE Conference Healthcom 2022 that took place in Genova on October 17-19, 2022.
In my career I have received 6 best paper awards, including the most recent at IEEE GlobeCom 2012, IEEE ICC 2014 and CloudNet 2016.

Recent positions

2008-today

Full Professor of Telecommunications
Head of the Digital Signal Processing laboratory at DITEN Department of the University of Genova. Responsible of international and national research project either as coordinator or as partner. General Chair of Scientific Conferences.

2021-today

Member of the GEV (Group of Evaluation Experts) of the University of Genova for the selection of the Case Study (Terza Missione) to submit to VQR 2015-2019 and VQR 2020-24

2010-today

President of SI4Life SCARL - Innovation Center in Life Science

Founder in 2010 of the Consortium SI4Life - Science and Enterprises for the Quality of Life. Partners are University of Genova, CNR, IIT, IRCCS IST-SanMartino, IRCCS-Gaslini, Istituto Chiossone, AISM, Cepim, and many regional SMEs. Promotion of the Consortium activities in the regional context and international context. Coordinator and participant to more than 10 European Research and Erasmus+ projects. Participation to the National Cluster in Life Science ALISEI. Participation to the European Commitment on Active Aging. Scientific and technological support to PAR-FAS and POR FESR projects funded by Region Liguria.

2020-2021

Vice-rector of the University of Genova for Technological Transfer
Support to innovative policies for Technological Transfer, patent deposit and spin-off creation. Promotion of competitions for business ideas, selection and funding of Proof of Concept projects funded by Compagnia SanPaolo and by MiSE. Selection of best candidates of "third mission" activity to expose to the Periodic National Evaluation of Research (VQR 2015-2019). Activation of the regional Work Group for applying to the PNRR call for Innovation Ecosystems RAISE that has been recently approved and going to start on September 1st, 2022.

2018-2021

Member of Board of Directors of the Ligurian Innovation Pole on Life Science
Support to research and technological transfer in Life Science regional system. Advising to Regione Liguria for the new Smart Strategies program. Member of the organizing committee of Meet in Italy for Life Science 2021.

2016-2020

Member of Board of Directors of the University of Genova
Administrative responsibilities, annual budget approval, investments approval, personnel recruitment

2008-2014

Vice-rector of the University of Genova for Research and Technological Transfer
Policies for University PhD system development through agreements with other Italian Research Institutions, scouting of business ideas for Proof of Concepts, responsible of project UNITI funded by MiSe for the creation of new spin-off, advising for patents submission and spin-off scaling-up strategies. Participation to CRUI Research Commission. Selection of best scientific publications to expose to the Periodic National Evaluation of Research (VQR 2004-2010).

Education and training

1992

PhD in Electronic and Computer Science Engineering by the University of Genova

1987

Laurea degree in Electronic Engineering 110/110 magna cum laude, by the University of Genova

Selected publications

Bisio, Igor; Garibotto, Chiara; Grattarola, Aldo; Lavagetto, Fabio; Sciarrone, Andrea; Zerbino Matteo "SHM With Low-Cost, Low-Energy and Low-Rate IoT Devices: Reducin Transmission Burden With Compressive Sensing", IEEE INTERNET OF THINGS JOURNAL, 2024.

Bisio, Igor; Garibotto, Chiara; Haleem, Halar; Lavagetto, Fabio; Sciarrone, Andrea Vehicular/Non-Vehicular Multi-Class Multi-Object Tracking in Drone-based Aerial Scenes IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, 2024.

Igor Bisio; Chiara Garibotto; Halar Haleem; Fabio Lavagetto; Andrea Sciarrone Traffic Analysis through Deep Learning-based Image Segmentation from UAV streaming, IEEE INTERNET OF THINGS JOURNAL, 2023

Bisio, Igor;Haleem, Halar;Garibotto, Chiara;Lavagetto, Fabio;Sciarrone, Andrea, Performance Evaluation and Analysis of Drone-based Vehicle Detection Techniques From Deep Learnin Perspective,, IEEE INTERNET OF THINGS JOURNAL, 2022.

Garibotto C.;Sciarrone A.;Lavagetto F.; Pronzati L.;Baljak A.;Tagliabue G Performance Analysis of a IoT-based Personal Vocal Assistant for Cruise Ships over Satellite Networks, IEEE INTERNET OF THINGS JOURNAL, 2022

Bisio, I., Fedeli, A., Garibotto, C., Lavagetto, F., Pastorino, M., Randazzo, A., "Two Ways for Early Detection of a Stroke through a Wearable Smart Helmet: Signal Processing vs Electromagnetism", IEEE Wireless Communications, 2021, Vol.28, n.3, pp.22-27.

Sciarrone, A., Bisio, I., Garibotto, C., Lavagetto, F., Staude, G.H., Knopp, A., "Leveraging Io Wearable Technology towards Early Diagnosis of Neurological Diseases", IEEE Journal on Selected Areas in Communications, 2021, Vol.39, n.2, pp.582-592

Sciarrone, A., Bisio, I., Garibotto, C., Lavagetto, F., Hamedani, M., Prada, V., Schenone, A. Boero, F., Gambari, G., Cereia, M., Jurilli, M., "Early detection of external neurologica symptoms through a wearable smart-glasses prototype", Journal of Communications Software and Systems, 2021, Vol.17, n.2, pp. 160-168.

Bisio, I., Estatico, C., Fedeli, A., Lavagetto, F., Pastorino, M., Randazzo, A., Sciarrone, A. "Variable-Exponent Lebesgue-Space Inversion for Brain Stroke Microwave Imaging", IEEE Transactions on Microwave Theory and Techniques, 2020, Vol.68, n.5, pp.1882-1895.

Bisio, Igor;Garibotto, Chiara;Lavagetto, Fabio;Sciarrone, Andrea Computational complexity closed-form upper bounds derivation for fingerprint-based Point-Of-Interest recognition algorithms, IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, 2020

Bisio, I., Garibotto, C., Lavagetto, F., Sciarrone, A., "When eHealth Meets IoT: A Smar Wireless System for Post-Stroke Home Rehabilitation", IEEE Wireless Communications, 201 Vol.26, n.6, pp.24-29.

Bisio, I., Garibotto, C., Hamedani, M., Lavagetto, F., Prada, V., Sciarrone, A.," Towards IoT-based ehealth services: A smart prototype system for home rehabilitation", 2019 IEEE Globa Communications Conference, GLOBECOM 2019.

Bisio, I., Delfino, A., Grattarola, A., Lavagetto, F., Sciarrone, A., "Ultrasounds-Based Con Sensing Method and Applications over the Internet of Things", IEEE Internet of Things Journal, 2018, Vol.5, n.5, pp. 3876-3890

Clinical translation

(2018-today) Clinical validation of a wearable system for post-stroke motorial rehabilitation, carried on in different hospitals (San Martino, Santa Corona) and rehabilitation centres in Liguria.
(2019) 1st level University Master on "Tele and Home rehabilitation with the use of technologies" attended by over 30 Ligurian physiotherapists.
(2019-today) Clinical validation of a sensorized eyeglasses for eye blinking and essential tremor analysis for neurodegenerative pathologies diagnose and assessment (University Neurology Clinic, University of Genova)
(2018-today) Experimental validation of a microwave helmet for early ictus diversification (University Neurology Clinic, University of Genova)
(2018) User validation of a system for monitoring of protected residences for elderly and psychiatric patients (project IANUS in collaboration with Fides Group)
(2018) User validation of a system for cognitive impaired patients assistance (Project Smart Angel in collaboration with Cepim Foundation)

Technology transfer

Director of Masters and Advanced Courses:
• "Advanced Technologies for Integrated Intelligent Systems" (2007/8)
• "Technology transfer, Entrepreneurship and Innovation in the Hi-Tech sectors" (2012/13)
• "Design, management and evaluation of European and international projects" (2011)
• "Expert in innovation management on Industry 4.0 enabling technologies" (2018/19)

Responsible for the University of Genova for the UNITI project founded by MiSE for the creation of University Spin-off (2008-2012)

Responsible for the project UTT funded by MiSe for the support to the University Technology Transfer Office (2020-today)

Member of the Board of Directors of the Technology District SIIT, of the innovation Poles Si4life (2010-today) and PLSV (2018-2021) in Life Science.

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.

(omissis), 08/01/2025

Fabio Lavagetto