Personal details
Title(s), first name, surname: Prof. Dr. Libertario Demi

Website: https://sites.google.com/view/drlibertariodemi/home

Associate Professor
Head and founder of the Ultrasound Laboratory Trento – ULTRa (current position)
University: University of Trento, Italy
Department: Information Engineering and Computer Science
Starting date: 16 April 2021
Previously Assistant Professor at the same institute (2018-2021)
Main field of research: lung ultrasound, image analysis, signal processing, advanced beam forming techniques for ultrasound imaging, ultrasound propagation modeling

Adjunct Professor
University: Queensland University of Technology, Australia
Faculty of Health
Starting date: Feb 2025

Visiting Professor
University: Korean Advanced Institute of Science and Technology, South Korea
Department: NanoFab Center
Dates: April 2023
Lecture series on Lung Ultrasound

Visiting Professor
University: Stanford University, USA
Department: Radiology
Dates: April to May 2022
Lecture series on Lung Ultrasound

University Researcher/Visiting Scholar
University: University of Twente, the Netherlands
Department: Applied Sciences
Dates: Feb to September 2018
Main field of research: Ultrasound tomography for breast cancer application, Laser induced ultrasound sensors design and fabrication

Ultrasound R&D Engineer & Ultrasound Consultant
Research Institute: Imec, Belgium
Department: Life Science and Imaging
High-Tech company: TMC, Belgium
Starting date: 5 Dec 2016
Main field of research: MEMS sensor design and image-formation-algorithm development for SODAR applications in life science and integrated systems technology

Post doctorate
University: Eindhoven University of Technology, the Netherlands
Faculty: Electrical Engineering
Starting date: 15 July 2012
Main field of research: Quantitative-ultrasound imaging
for prostate cancer localization & mapping of inaccessible environments
using an uncontrolled ultrasound-sensor swarm

Doctorate
University: Delft University of Technology, the Netherlands
Faculty: Applied Physics
Starting date: 1 July 2008
Date of PhD award: March 2013
Supervisors: Prof. Dr. Ir. A. Gisolf, Dr. M.D. Verweij
Title of thesis: Modeling nonlinear propagation of ultrasound through inhomogeneous biomedical media

Research assistant
University: University of Pisa, Italy
Faculty: Information Engineering
Subject: research on automatic target recognition algorithm
Starting date: 19 Feb 2008

Master Degree
University: University of Pisa, Italy
Date of award: February 2008, ***cum laude***
Subject: telecommunication engineering,
specialization in signal processing and remote sensing
Title of the thesis: automatic target recognition based on Inverse Synthetic Aperture Radar (ISAR) images with applications to real data acquired in an anechoic chamber

Visiting Student
University: University of Adelaide, Australia
September to December 2007
Research Topic: model design and data acquisition for ISAR based automatic target recognition algorithms

Bachelor Degree
University: University of Pisa, Italy
Date of award: March 2006
Subject: telecommunication engineering
Title of the thesis: development of data analysis software for synthetic speckle

Main areas of expertise
Lung ultrasound, signal processing, array technology, beam forming, sensor design, ultrasound imaging and image formation, image analysis, ultrasound propagation modeling and simulations, nonlinear acoustics, ultrasound physics, ultrasound contrast agents, medical ultrasound

Academic staff supervised @ the Ultrasound Laboratory Trento (ULTRa)
PostDoc [5]:
1. Marco Robol [2021], focusing on machine learning approaches to lung ultrasound imaging
2. Sajjad Afrakhteh [2022-25], focusing on beamforming and image generation
3. Federico Mento [2022-25], focusing on quantitative lung ultrasound
4. Umair Khan [2024], focusing on the application of AI to lung ultrasound data analysis
5. Hamed Jalilian [2024-25], focusing on integral equations applied to ultrasound imaging

PhDs [8]:
1. Federico Mento [2019-22], focusing on quantitative lung ultrasound imaging
2. Umair Khan [2021-24], focusing on ultrasound propagation in bubbly media
3. Laura De Rosa [2021-24], focusing on ultrasound imaging of the liver
4. Noreen Fatima [2022-25], focusing on lung ultrasound image analysis
5. Giulia Tuccio [2022-25], focusing on super-localization ultrasound imaging
6. Perpenti Mattia [2023-26], focusing on raw radio frequency data analysis for lung ultrasound

7. Luca Giaccone [2024-27], focusing on ultrasound localization microscopy
8. Chiara Zangrandi [2024-27], focusing on quantitative lung ultrasound spectroscopy

Master students [13]:
two of which (F. Mento and E. Peschiera) graduated *cum laude*

Academic staff supervised @ previous institutions
PhDs: 6 (David Thompson *UTwente*, Stefan Schalk, Ruud van Sloun, Erik Duisterwinkel, Rogier Wildeboer, Anastasiia Panfilova *TUEindhoven*)
Master students: 7 (two of which graduated *cum laude*)
Others: 5 trainee students, 3 bachelor students

Other academic activities

- **Lecturer** of the course "Fundamentals of Bioengineering" at the University of Trento Department of Information Engineering and Computer Science (since academic year 2023/24)
- **Lecturer** of the course "Biomedical Signal Processing" at the University of Trento Department of Information Engineering and Computer Science (since academic year 2023/24)
- **Lecturer** of the course "Medical Imaging Diagnostics" at the University of Trento Department of Information Engineering and Computer Science (since academic year 2021/22)
- **Lecturer** of the course "Digital Signal Processing" at the University of Trento Department of Information Engineering and Computer Science (since academic year 2018/19)
- **Lecturer** of the course "Ultrasound Technologies for Medical Applications" at the University of Trento Department of Information Engineering and Computer Science (since academic year 2018/19)
- Member of 7 PhD Thesis Defense Committees (5 at the University of Trento, 1 at the University of Florence, 1 at the University of Eindhoven)
- Co-lecturer of the course "Medical Ultrasound" at the Eindhoven University of Technology faculty of Electrical Engineering (academic year 2014/15 and 2015/16)
- Lecturer assistant of the course "Biomedical Sensing Technology" at the Eindhoven University of Technology (academic year 2013/14 and 2015/16)
- Lecturer assistant of the course "Introduction to Technical Physics" at the Delft University of Technology, faculty of Applied Physics (academic year 2009/10 and 2010/11)
- Member of graduation committees for (3) bachelor and (9) master students, during my years at the Delft and Eindhoven University of Technology
- Board member and ultrasound-lab responsible of the biomedical diagnostics group, Eindhoven University of Technology (2013-2016)
- Advisory Committee member of the Technology for Global Development (TGD/e) organization at the Eindhoven University of Technology (2014-16)

International activities

Grant Reviewing Activities

- Selected as **project evaluator** for ERC (European Research Council) Starting Grants
- Selected as **project evaluator** for the French National Research Agency Research Grants

Editorial Activities

- **Deputy Editor** of the Ultrasound Journal (Springer Nature) since 2024.
- **Associate Editor** of the Journal of The Acoustical Society of America, area Biomedical Acoustics, since 2021.
- **Editorial Board Member** of Ultrasonics (Elsevier), since 2023.
- **Editorial Board Member** of Applied Sciences (MDPI), Applied Biosciences and Bioengineering Section (2019-2022).
- **Guest Editor** of the Special Issue on "Ultrasound in COVID-19 and Lung Diagnostics", on IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control 2020.
- **Guest Editor** of the Special Issue on "Signal Processing and Image Analysis Techniques for Lung Ultrasound Imaging", on Applied Sciences 2019-20.
- **Guest Editor** of the Special Issue on "Lung Ultrasound", on the Journal of the Acoustical Society of America 2020-2021.

Conference Steering Committee Activities

- **Fellow** of the Acoustical Society of America
- **Senior Member** of the IEEE
- **Medical Image and Signal Processing Track Lead** of the IEEE International Ultrasonics Symposium (since Jannuary 2023)
- **Member of the Medical Ultrasound Technical Program Committee** of the IEEE International Ultrasonics Symposium (since March 2021)
- **Technical Program Organizer** (representative for *Biomedical Acoustics*) for Meetings of the Acoustical Society of America (since May 2019)
- **Member of the Tutorial Committee** at the IEEE International Symposium of Biomedical Imaging, Kolkata, 28-21 March, 2022.
- **Hybrid chair** at the IEEE International Ultrasonics Symposium, Venice, Italy, 2022.
- **General chair** at the International Lung Ultrasound Symposium, Trento, Italy, 2023 and 2025 (co-sponsored meeting of the Acoustical Society of America).
- **Program Committee member** at the 16th International Conference on Image Analysis and Recognition, Waterloo, Canada, 27-29 August 2019

Conference Chairing Activities

- **Session chair of the session** "Tissue Classification and Characterization 1", at the IEEE International Ultrasonics Symposium, Taipei, Taiwan, 22-26 September 2024.
- **Session chair of the session** "Neural Network Application to Ultrasound Imaging", at the IEEE International Ultrasonics Symposium, Taipei, Taiwan, 22-26 September 2024.
- **Session chair of the session** "Image Analysis and Elastography", at the IEEE South Asian Ultrasonics Symposium, Gandinaghar, India, 27-29 March 2024.
- **Session chair and organiser** of the special session "Novel Ultrasound Image Acquisition Technologies and Techniques", at the 185th Meeting of the Acoustical Society of America, Sidney, 4-8 December 2023.
- **Session chair and organiser** of the special session "Biomedical Acoustics in Pulmonology", at the 185th Meeting of the Acoustical Society of America, Sidney, 4-8 December 2023.
- **Session chair of the session** "Deep Learning for Image Segmentation", at the IEEE International Ultrasonics Symposium, Montreal, Canada, 3-8 September 2023.
- **Session chair and organizer** of the special session "Lung Ultrasound", at the 184th Meeting of the Acoustical Society of America, Chicago, 8-12 May 2023.
- **Session chair** of the session "Artificial Intelligence For Imaging I", at the IEEE International Ultrasonics Symposium, Venice, Italy, 10-13 October 2022.
- **Session chair and organizer** of the special session "New Developments in Lung Ultrasound", at the 182th Meeting of the Acoustical Society of America, Denver, 23-27 May 2022
- **Session chair** of the session "Elastography", at the AIUM meeting, San Diego, California, 12-16 March 2022.
- **Session chair** of the session "Deep learning based diagnosis", at the IEEE International Ultrasonics Symposium, Virtual Symposium, 11-16 September 2021.
- **Session chair** of the session "Heart, Lung, Thyroid, & Tongue", at the IEEE International Ultrasonics Symposium, Virtual Symposium, 11-16 September 2021.
- **Session chair** of the **Panel Session** "Advances in Ultrasound Imaging", at the 180th Meeting of the Acoustical Society of America, Acoustics in Focus, 8-10 June 2021.
- **Session chair and organizer** of the special session "New Developments in Lung Ultrasound", at the 179th Meeting of the Acoustical Society of America, Acoustics Virtually Everywhere, 7-11 December 2020
- **Session chair of the session** "New Approaches For Photoacoustic Imaging & Contrast", at the IEEE International Ultrasonics Symposium, Virtual Symposium, 6-11 September 2020
- **Session chair** of the session "Image Fusion and Registration", at the IEEE International Ultrasonics Symposium, Glasgow, 6-9 October 2019
- **Session chair and organizer** of the special session "High Frame Rate Ultrasound Imaging: Technical Developments and Clinical Applications", at the 178th Meeting of the Acoustical Society of America, San Diego, USA, 2-6 December 2019

- **Session chair and organizer** of the special session **"**Signal Processing Techniques for Ultrasound Tissue Characterisation and Imaging in Complex Biomedical Media **",** at the 16th International Conference on Image Analysis and Recognition, Waterloo, Canada, 27-29 August 2019
- **Session chair and organizer** of the special session on "Lung Ultrasound and Tissue Stiffness Methods" at the 177th Meeting of the Acoustical Society of America, Louisville, Kentucky, May 2019
- **Session chair and organizer** of the special session on "Lung Ultrasound" at the 176th Meeting of the Acoustical Society of America, Victoria, Canada, 5-9 November 2018
- **Session co-chair** of the session "Imaging and tissue characterization" at the 20th International Symposium on Nonlinear Acoustics, Lyon 2015.
- **Co-organizer/associate editor and session co-chair** of the invited session "Imaging of angiogenesis and neo-vascularization for cancer diagnostics" at the 36th international conference of the IEEE Engineering in Medicine and Biology Society, Chicago 2014

Others

- Collaboration with the Canadian research institute PTRC and Dutch INCAS3 innovation center for the development of ultrasound sensors and sensor systems for mapping wormholes in heavy oil reservoirs
- Participation at the Physical Acoustics Summer School organized by the Acoustical Society of America and the National Center for Physical Acoustics, and held at the University of Mississippi in 2012
- From September 23 to December 21 2007, I carried out research activities at the University of Adelaide (South Australia), School of Electrical and Electronic Engineering, as part of my master thesis project
- From April to September 2006, I worked as volunteer for Engineering without Borders (Pisa), and designed and established a satellite connection in Burkina Faso, Africa, in the city of Boulsa

Main Departmental activities

- Faculty board (consiglio dei docenti) and Executive Council member of the Information and Communication Technology International PhD program, Department of Information Engineering and Computer Science, University of Trento.
- Internationalization delegate (from 2019 to 2022) for the Department of Information Engineering and Computer Science, University of Trento.
- Erasmus+ program delegate (since 2018) for the Department of Information Engineering and Computer Science, University of Trento.

Reviewer for

- Science Advances
- IEEE Transactions on Medical Imaging
- IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control
- IEEE Journal of Translational Engineering in Health and Medicine
- IEEE Journal of Biomedical and Health Informatics
- Journal of the Acoustical Society of America
- Ultraschall in der Medizin - European Journal of Ultrasound
- Computers in Biology and Medicine
- Medical Image Analysis
- Chest
- Scientific Reports
- European Respiratory Journal
- Ultrasound in Medicine and Biology
- Ultrasonics
- Journal of Ultrasound in Medicine
- BMJ Open
- International Journal of Hyperthermia
- PloS ONE
- Applied Sciences
- Ultrasonic Imaging
- Sensors
- Acta Acustica
- Computational and Mathematical Methods in Medicine

Scientific collaborations (collaborators are specified in case of ongoing collaboration):

- Faculty of Computing and Data Science, Boston University, (USA) (Prof. Margrit Betke)
- Institute of Health Biomedical Innovation, Queensland University of Technology, Brisbane, (Australia) (Prof. Davide Fontanarosa)
- Laboratory of Microelectronics System Design, Universitá degli studi di Firenze (Italy) (Prof. Piero Tortoli and Dr. Alessandro Ramalli)
- Department of Mechanical and Aerospace Engineering, North Carolina State University (USA) (Dr. Marie Muller)
- Institute of Clinical Physiology, National Research Council (Italy)
- Department of Imaging Physics, Delft University of Technology (the Netherlands)
- Biomedical Engineering and Signal Processing Center, Weizmann Institute of Science (Israel)
- Laboratory of Signal Processing and Systems, Eindhoven University of Technology (the Netherlands)
- Laboratory of Multi-Modality Medical Imaging, University of Twente (the Netherlands)
- Laboratory of Biomedical Ultrasound Research, IIT Gandhinagar (India)
- Department of Medical Physics and Bioengineering, University College London (United Kingdom)
- Institute for Data Processing and Electronics, Karlsruhe Institute of Technology (Germany)
- CREATIS, Université de Lyon, Villeurbanne (France)
- Thorax Center, Erasmus Medical Center, Rotterdam (the Netherlands)
- Department of Information Engineering, Universitá di Pisa (Italy)
- Defence Science & Technology Organisation, Edinburgh (Australia)
- School of Electrical and Electronic Engineering, University of Adelaide (Australia)

Medical collaborations (collaborators are specified in case of ongoing collaboration):

- Neonatology Department, Fondazione IRCCS San Gerardo dei Tintori, Monza, (Italy) (Dr. Maria Luisa Ventura, Dr. Camilla Rigotti, Dr. Emanuela Zannin)
- Emergency Department, Humanitas, Gavazzeni (Italy) (Dr T. Perrone)
- Pulmonary Medicine Unit at University Hospital "A. Gemelli", Università Cattolica del Sacro Cuore, Roma (Italy) (Dr Andrea Smargiassi and Dr Riccardo Inchingolo)
- Department of Urology at the academic Medical Center in Amsterdam (the Netherlands)
- Department of Ultrasound, Zhejiang University School of Medicine, Zhejiang (China)

Industrial collaborations (collaborators are specified in case of ongoing collaboration):

- Solstice Pharmaceuticals (Dr. Wim van Hoeve)
- ESAOTE (Dr. Giovanni de Leo and Dr. Nicola Guraschi)
- BlueTensor (Jonni Malacarne and Federico Lucca)
- Witted (Italy)
- Tide Microfluidics (Netherlands)
- Samsung Electronics (Germany)
- IMEC (Belgium)
- Philips Research (the Netherlands)
- General Electrics Global Research Centre (USA)
- Petroleum Technology Research Centre (Canada)
- Bracco (Italy)
- Oldelft Ultrasound (the Netherlands)

Grants

- Development and validation of novel methods for lung ultrasound data acquisition and processing for the phenotyping and personalized management of neonatal lung disease - POC project from the Ministry of Health (Italian national grant) for research on pediatric lung ultrasound solutions (**2024-2026**)
- 3D printed vascular phantom of a full organ - Project funded by VRT foundation (**2024**)
- INNOVA "Italian network of excellence for advanced diagnosis" project from the Ministry of Health (Italian national grant) to promote the development of an ecosystem that will absorb validated advanced diagnostic approaches, favoring their uptake and commercial use in clinical setting. (**2023-2026**)
- ULTRASONIC-CAP- POC project from the Ministry of Health (Italian national grant) for research on pediatric lung ultrasound solutions (**2023-2025**)

- INEST - PNRR funded project (Italian national grant) for research on AI-based solutions for ultrasound data automated image analysis (**2022-2025**)
- External funding from Solstice Pharmaceuticals (Dutch company) for research activities on super-localization ultrasound imaging with monodisperse contrast agents (**2022-2025**) – Role: Principal Investigator.
- External funding from ESAOTE for research activities on lung ultrasound imaging protocols (**2021**) – Role: Principal Investigator.
- UltraON - European Institute of Innovation & Technology (EIT) Digital 2020 Grant (European grant) for research on computer aided solutions for lung ultrasound image analysis (**2020-2021**) – Role: Principal Investigator and Project Coordinator.
- Fondazione VRT COVID-19 Grant (Italian regional grant) for the project COMPUTER-AIDED LUNG ULTRASOUND IMAGING FOR THE MANAGEMENT OF PATIENTS AFFECTED BY COVID-19 (**2020**) – Role: Principal Investigator.
- 5x100 Research Grant from the University of Trento for research activities on breast ultrasound imaging (**2020-2021**) – Role: Principal Investigator.
- External funding from the National Research Council for research activities on quantitative lung ultrasound imaging (**2019-2022**) – Role: Principal Investigator.
- Ateneo Starting Grant, 2018. Research grant from the University of Trento to carry out research activities on dedicated signal processing algorithms for lung ultrasound imaging (**2018-19**) – Role: Principal Investigator.

Scholarships and prizes

- Socrates scholarship (support for master thesis abroad) from Pisa University obtained to carry out research activities on automatic target recognition algorithm at the University of Adelaide (South Australia).
- TERIT (Telecommunication Research in Italy) postmaster research scholarship from CNIT (Consorzio nazionale Interuniversitario per le Telecomunicazioni) obtained to carry out research activities on radar monitoring systems and sensors. (**2008-2009**)
- *Best poster award* at the 22nd European symposium on Ultrasound Contrast Imaging, Rotterdam, the Netherlands, 19-20 January 2017, with the paper "Multiparametric approach for dynamic contrast-enhanced ultrasound imaging of prostate cancer", W.W. Rogier, A.W. Postema, **L. Demi**, M. Kuenen, H. Wijkstra, and M. Mischi.
- *Best poster award* (Category New Directions) at the 20th European symposium on Ultrasound Contrast Imaging, Rotterdam, the Netherlands, January 2015, with the paper "Cumulative Phase Delay Imaging - a new contrast enhanced imaging modality", **L. Demi**, R.J.G. Van Sloun, X. Zhao, H. Wijkstra, and M. Mischi.
- *Best poster award* at the 20th European symposium on Ultrasound Contrast Imaging, Rotterdam, the Netherlands, January 2015, with the paper "3D Contrast-Ultrasound Dispersion Imaging by Mutual Information Analysis in Prostate Cancer", S.G. Schalk, **L. Demi**, S. Martijn, J. de la Rosette, H. Wijkstra, and M. Mischi.
- *Best poster award* at the 19th European symposium on Ultrasound Contrast Imaging, Rotterdam, the Netherlands, 23-24 January 2014, with the paper "Contrast-enhanced angiogenesis imaging by mutual information analysis", N. Bouhouch, **L. Demi**, M. Kuenen, H. Wijkstra, T. Tjalkens, and M. Mischi.

Publications:

- **International refereed journals (total =102)**

1. N. Fatima, F. Mento, S. Afrakhteh, T. Perrone, A. Smargiassi, R. Inchingolo, **L. Demi**, Synthetic Lung Ultrasound Data Generation Using Autoencoder with Generative Adversarial Network, IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control, 2025.
2. S. Afrakhteh, G. Tuccio, **L. Demi**, A Novel 2x2D Radial Basis Functions-based Interpolation for Short Acquisition Time and Relaxed Frame Rate Ultrasound Localization Microscopy, IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control, 2024.
3. S. Afrakhteh and L. Demi, Mitigating High Frame Rate Demands in Shear Wave Elastography Using Radial Basis Function-based Reconstruction: An Experimental Phantom Study, Ultrasonics, 2024.

4. N.Fatima, U. Khan, X. Han, E. Zannin, C. Rigotti, F. Cattaneo, G. Dognini, M.L. Ventura, **L. Demi**, Deep learning approaches for automated classification of neonatal lung ultrasound with assessment of human-to-AI interrater agreement, Computers in Biology and Medicine, 2024.
5. F. Mento, M. Perpenti, G. Barcellona, T. Perrone, **L. Demi**, Lung Ultrasound Spectroscopy Applied to the Differential Diagnosis of Pulmonary Diseases: an in vivo multicenter clinical study, IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control, 2024.
6. L. De Rosa, A. Salvati, N. Martini, D. Chiappino, S. Cappelli, M. Mancini, **L. Demi**, L. Ghiadoni, F. Bonino, M.R. Brunetto, F. Faita, An ultrasound multiparametric method to quantify liver fat using magnetic resonance as standard reference, Liver International, 2024.
7. U. Khan, R. Thompson, J. Li, L.P. Etter, I. Camelo, R.C. Pieciak, I. Castro-Aragon, B. Setty, C.C. Gill, **L. Demi**, M. Betke, FLUEnT: Transformer for detecting lung consolidations in videos using fused lung ultrasound encodings, Computers in Biology and Medicine, 2024.N.
8. Fatima, S. Afrakhteh, G. Iacca, **L. Demi**, Automatic segmentation of 2D echocardiography ultrasound images by means of generative adversarial network, IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control, 2024.
9. L. Etter, M. Betke, I.Y. Camelo, C.J. Gill, R. Pieciak, R. Thompson, **L. Demi**, U Khan, A. Wheelock, J. Katanga, B.N. Setty, I Castro-Aragon Curated and Annotated Dataset of Lung US Images of Zambian Children with Clinical Pneumonia, Radiology: Artificial Intelligence, 2024.
10. S. Bonvini, I. Raunig, **L. Demi**, N. Spadoni, S. Tasselli, Unsuspected Limitations of 3D Printed Model in Planning of Complex Aortic Aneurysm Endovascular Treatment, Vascular and Endovascular Surgery, 2024.
11. G. Tuccio, S. Afrakhteh, G. Iacca, **L. Demi**, Time Efficient Ultrasound Localization Microscopy Based on A Novel Radial Basis Function 2D Interpolation, IEEE Transactions on Medical Imaging, 2023.
12. U. Khan, S. Afrakhteh, F. Mento, Gizem, A. Smargiassi, R. Inchingolo, F. Tursi, V.N. Macioce, T. Perrone, G. Iacca, **L. Demi**, Low-complexity lung ultrasound video scoring by means of intensity projection-based video compression, Computers in Biology and Medicine, 2023.
13. S. Afrakhteh, G. Iacca, **L. Demi**, A 2D Angular Interpolation Based on Radial Basis Functions (RBFs) for High Frame Rate Ultrafast Imaging, The Journal of the Acoustical Society of America (Vol.154, Issue 5), 2023.
14. F. Mento, M. Perini, C. Malacarne L. **Demi**, Ultrasound Multifrequency Strategy To Estimate the Lung Surface Roughness, *In Silico* and *In Vitro* Results, Ultrasonics, 2023.
15. U. Khan, S. Afrakhteh, F. Mento, N. Fatima, L. De Rosa, L.L. Custode, Z. Azam, E. Torri, G. Soldati, F. Tursi, V.N. Macioce, A. Smargiassi, R. Inchingolo, T. Perrone, G. Iacca, **L. Demi**, Benchmark Methodological Approach for the Application of Artificial Intelligence to Lung Ultrasound data from COVID-19 Patients: from Frame to Prognostic-level, Ultrasonics, 2023.
16. H. Jalilian, S. Afrakhteh, G. Iacca, **L. Demi**, Increasing Frame Rate of Echocardiography Based on A Novel 2D Spatio-Temporal Meshless Interpolation, Ultrasonics, 2023.
17. L.L. Custode, F. Mento, F. Tursi, A. Smargiassi, R. Inchingolo, T. Perrone, **L. Demi**, G. Iacca, Multi-objective automatic analysis of lung ultrasound data from COVID-19 patients by means of deep learning and decision trees, Applied Soft Computing, 2022.
18. F. Wolfram, D. Miller, **L. Demi**, P. Verma, C.M. Moran, M. Walther, G. Mathis, H. Prosch, C. Kollmann, K.V. Jenderka, Best Practice Recommendations for the Safe use of Lung Ultrasound, European Journal of Ultrasound (Ultraschall in der Medizin), 2022.
19. S. Sajjad, G. Iacca, **L. Demi**, High Frame Rate Ultrasound Imaging by Means of Tensor Completion: Application to Echocardiography, IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control, 2022.
20. **L. Demi**, F. Wolfram, C. Klersy, A. De Silvestri, V.V. Ferretti, M. Muller PhD, D. Miller, F. Feletti, M. Wełnicki, N. Buda, A. Skoczylas MD, A. Pomiecko, D Damjanovic, R. Olszewski, A.W. Kirkpatrick, R. Breitkreutz, G. Mathis MD, G. Soldati, A. Smargiassi, R. Inchingolo, T. Perrone, New International Guidelines and Consensus on the use of Lung Ultrasound, Journal of Ultrasound in Medicine, 2022.
21. S. Sajjad, H. Jalilian, G. Iacca, **L. Demi**, Temporal Super-Resolution of Echocardiography Using a Novel High-precision Non-polynomial Interpolation, Biomedical Signal Processing and Control, Vol 78, 2022.
22. F. Mento, U. Khan, F. Faita, A. Smargiassi, R. Inchingolo, T. Perrone, **L. Demi**, State of The Art in Lung Ultrasound, Shifting From Qualitative To Quantitative Analyses, Ultrasound in Medicine and Biology, accepted, 2022.

23. N. Fatima, F. Mento, A. Zanforlin, A. Smargiassi, E. Torri, T. Perrone, **L. Demi**, Human to AI Inter rater Agreement for Lung Ultrasound Scoring in COVID-19 Patients, Journal of Ultrasound in Medicine, Accepted, 2022.
24. U. Khan, F. Mento, LG Nicolussi, R. Trevisan, A. Smargiassi, R. Inchingolo, T. Perrone, **L. Demi**, Deep Learning-based Classification of Reduced Lung Ultrasound Data from COVID-19 Patients, IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control, Vol 69, pp 1661-1669, 2022.
25. **L. Demi,** M. Muller, Introduction to the Special Issue on Lung Ultrasound, the Journal of the Acoustical Society of America, 2021.
26. R. Roshankhah, Y Karbalaeisadegh, H. Greer, F. Mento, G. Soldati, A. Smargiassi, R. Inchingolo, E. Torri, T. Perrone, S. Aylward, **L. Demi**, and M. Muller, Investigating training-test data splitting strategies for automated segmentation and scoring of COVID-19 lung ultrasound images, the Journal of The Acoustical Society of America, 2021.
27. **L. Demi**, F .Mento, A. Di Sabatino, A. Fiengo, U. Sabatini, V.N. Macioce, M. Robol, F. Tursi, C. Sofia, C. Di Cienzo, A. Smargiassi, R Inchingolo, T. Perrone, Lung Ultrasound in COVID-19 and Post-COVID-19 Patients, an Evidence-Based Approach, Journal of Ultrasound in Medicine, 2021.
28. F. Mento, **L. Demi**, Dependence of lung ultrasound vertical artifacts on frequency, bandwidth, focus and angle of incidence: An in vitro study, Journal fo The Acoustical Society of America, 150, 4705, 2021.
29. O. Frank, N. Schipper, M. Vaturi, G. Soldati, A. Smargiassi, R. Inchingolo, E. Torri, T. Perrone, F. Mento, **L. Demi**, M. Galun, Y.C. Eldar, S. Bagon, Integrating Domain Knowledge into Deep Networks for Lung Ultrasound with Applications to COVID-19, IEEE Transactions on Medical Imaging, 2021.
30. F. Guidi, **L. Demi**, P. Tortoli, Experimental and Simulation Study of Harmonic Components Generated by Plane and Focused Waves, Ultrasonics, 2021F.
31. Mento, T. Perrone, A. Fiengo, A. Smargiassi, R. Inchingolo, G. Soldati, **L. Demi**, Deep learning applied to lung ultrasound videos for scoring COVID-19 patients: A multicenter study, Journal of the Acoustical Society of America, 149, 3626, 2021. Also awarded as **FEATURED ARTICLE: TECHNICAL AREA PICK FOR BIOMEDICAL ACOUSTICS**.
32. F. Mento , T. Perrone, A. Fiengo, F. Tursi, V.N. Macioce, A. Smargiassi, R. Inchingolo, **L. Demi**, Limiting the areas inspected by lung ultrasound leads to an underestimation of COVID-19 patients' condition, Intensive Care Medicine, 2021.
33. G. Soldati, A. Smargiassi, T. Perrone, E. Torri, F. Mento, **L. Demi**, R. Inchingolo, LUS for COVID-19 Pneumonia: Flexible or Reproducible Approach? Journal of Ultrasound in Medicine, 2021.
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54. G. Soldati, A. Smargiassi, R. Inchingolo, E. Torri, **L. Demi**, Reply, Journal of Ultrasound in Medicine, 2020.
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59. G. Soldati, G. Giannasi, A. Smargiassi, R. Inchingolo, **L. Demi**, Reply: on CEUS applicability to COVID-19 patients, Journal of Ultrasound in Medicine, 2020.
60. G. Soldati, G. Giannasi, A. Smargiassi, R. Inchingolo, **L. Demi**, Contrast-Enhanced Ultrasound in Patients With COVID-19: Pneumonia, Acute Respiratory Distress Syndrome, or Something Else?, Journal of Ultrasound in Medicine, 2020.

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71. R.J.G. van Sloun, **L. Demi**, "Localizing B-lines in Lung Ultrasonography by Weakly-Supervised Deep Learning, in-vivo results", IEEE Journal of Biomedical and Health Informatics, 2019. **COVER PAGE ARTICLE.**
72. P. Gijsenbergh, A. Halbach, Y. Jeong, G. Brondani Torri, M. Billen, **L. Demi,** C.H. Huang, D. Cheyns, X. Rottenberg and V. Rochus, "Characterisation of polymer-based PMUT for short-range gesture recognition applications", Journal of Micromechanics and Microengineering, 2019.
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75. S. Schalk, J. Huang, J. Li, **L. Demi**, H. Wijkstra, P. Huang, M. Mischi, "3D quantitative dynamic contrast ultrasound for prostate cancer localization", Ultrasound in Medicine and Biology, 2018.
76. R.J.G. van Sloun, **L. Demi,** S.G. Schalk, C. Cartesio, C. Mannaerts, A.W. Postema, F. Molinari, H.C. van der Linden, P. Huang, H. Wijkstra, M. Mischi, "Contrast-enhanced ultrasound tractography for 3D vascular imaging of the prostate", **Nature: Scientific Reports**, Vol 8, 14640, 2018.
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78. E.H.A. Duisterwinkel, G. Dubbelman, **L. Demi**, E. Talnishnikh, H.J. Wortche, J.W.M. Bergmans, "Robust Reconstruction of Sensor Swarms Floating Through Enclosed Environments", Wireless Sensor Network (WSN), accepted, 2017.
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87. G. Soldati, M. Demi, R. Inchingolo, A. Smargiassi, **L. Demi**, "On the Physical Basis of Pulmonary Sonographic Interstitial Syndrome", Journal of Ultrasound in Medicine, Vol 35, pp. 2075-2086, 2016.
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90. **L. Demi**, A. Ramalli, G. Giannini, and M. Mischi, "In Vitro and In Vivo Tissue Harmonic Images obtained with Parallel Transmit Beamforming by means of Orthogonal Frequency Division Multiplexing", IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control, Vol. 62, Issue 1, pp. 230-235, 2015.
91. R. van Sloun, A. Pandharipande, M. Mischi, and **L. Demi**, "Compressed Sensing for Ultrasound Computed Tomography", IEEE Transactions on Biomedical Engineering, Vol. 62, Issue 6, pp. 1660-1664, 2015.
92. M.Mischi, **L. Demi**, M. Smeenge, M.P.J. Kuenen, A.W. Postema, J.J.M.C.H. de la Rosette, and H. Wijkstra, "Transabdominal contrast-enhanced ultrasound imaging of the prostate", Ultrasound in Medicine and Biology, Vol. 41, Issue 5, pp. 1112-1118, 2015.
93. S. Schalk, **L. Demi**, M. Smeenge, D.M. Mills, K.D. Wallace, J. de la Rosette, H. Wijkstra, and M. Mischi, "4-D Spatiotemporal Analysis of Ultrasound Contrast Agent Dispersion for Prostate Cancer Localization: A Feasibility Study", IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control, Vol. 62, Issue 5, pp. 839-851, 2015. Included in the **Editor's Selection of Articles of IEEE T-UFFC**.
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95. **L. Demi**, H. Wijkstra, and M. Mischi, "Cumulative phase delay between second harmonic and fundamental components - a marker for ultrasound contrast agents", Journal of the Acoustical Society of America, Vol. 136, Issue 3, pp. 2968-2975, 2014.
96. **L. Demi**, M. Demi, A. Smargiassi, R. Inchingolo, F. Faita, and G. Soldati, "Ultrasonography in lung pathologies: new perspectives", Multidisciplinary Respiratory Medicine, Vol. 9, Issue. 9, 2014.
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98. M.D. Verweij, **L. Demi**, and K.W.A. van Dongen, "Computation of nonlinear ultrasound fields using a linearized contrast source method," Journal of the Acoustical Society of America, Vol. 134, Issue 2, pp. 1442-1453, 2013.

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101. P.L.M.J. van Neer, M.G. Danilouchkine, M.D. Verweij, **L. Demi**, M.M. Voormolen, A.F.W. van der Steen, and N. de Jong, "Comparison of fundamental, second harmonic, and superharmonic imaging: a simulation study," Journal of the Acoustical Society of America, Vol. 130, Issue 5, pp. 3148-3157, 2011.
102. M. Martorella, E. Giusti, **L. Demi**, Z. Zhou, A. Cacciamano, Berizzi F., and B. Bates, "Target Recognition by Means of Polarimetric ISAR Images", IEEE Transactions on Aerospace and Electronic Systems, Vol. 47, Issue 1, pp. 225-39, 2011.

- **Invited talks and seminars (total=27)**

1. **L. Demi**, State of the art in diagnostic lung ultrasound, from physics to clinics, 18th WINFOCUS World Virtual Congress, 22-23 November 2024.
2. **L. Demi**, "The acoustic trap theory and its application to lung ultrasound", Invited talk at Meetings of the Acoustical Society of America, Ottawa, Canada, May, 2024.
3. **L. Demi**, "State of the art in Diagnostic Lung Ultrasound, from physics to clinics", Invited talk at Acoustics 2023 (joint meeting of the Acoustical Society of America and Australian Acoustical Society), Sydney, Australia, 4-8 December 2023.
4. **L. Demi,** "New International Guidelines and their Impact on the Future of LUS", Invited talk at the International Lung Ultrasound Symposium, Trento, Italy, 10-12 July 2023.
5. **L. Demi,** "Lung Ultrasound, from physics to clinics", Invited seminar at the Critical Care Trauma Centre, London Health Sciences Centre, Victoria Hospital, Canada, 13 June 2023.
6. **L. Demi,** "Lecture Series on Lung Ultrasound", Invited lecture series (4 lectures) at Korean Advanced Institute for Science and Technology (KAIST), Republic of Korea, NanoFab Center, April, 2023.
7. **L. Demi,** "AI based Lung Ultrasound data analysis" Invited talk at the at the Faculty of Computing & Data Sciences, Boston University, Boston USA, January 24, 2023.
8. **L. Demi,** "The journey from qualitative to quantitative lung ultrasound" Invited talk at the Erasmus Medical Center, Rotterdam, the Netherlands, December 9, 2022.
9. **L. Demi,** "From qualitative to quantitative lung ultrasound: the need for highly controllable physical models" Invited talk at the Institute of Physics Tutorial Day, London, UK, September 23, 2022.
10. **L. Demi**, "Human-to-Human and Human-to-AI inter-rater agreement for lung ultrasound scoring, from a rigorous methodological approach to solid results", Keynote Lecture at the POCUS World Conference, September 16, 2022.
11. **L. Demi,** "Lung ultrasound: State of the art and future directions", invited seminar at the Harvard Emergency Ultrasound Conference, Harvard Medical School, Boston USA, June 8, 2022.
12. **L. Demi, Hot topics** "Lung ultrasound: State of the art and future directions", at the 182th Meeting of the Acoustical Society of America, Denver USA, May 2022.
13. **L. Demi,** "A standardised and evidenced-based lung ultrasound acquisition protocol and scoring system for the monitoring and stratification of COVID-19 and post-COVID-19 patients", at the 182th Meeting of the Acoustical Society of America, Denver USA, May 2022.
14. **L. Demi,** "Lecture Series on Lung Ultrasound", Invited lecture series (4 lectures) at Stanford University, USA, Ultrasound Imaging & Instrumentation Lab, Department of Radiology, April-May, 2022.
15. **L. Demi**, "Technical Challenges and Opportunities for POCUS AI for Lung Ultrasound for COVID-19", American Institute of Ultrasound in Medicine (AIUM) 2022 Annual Meeting, San Diego, 12-16 March 2022.
16. **L. Demi**, "Understanding vertical artifactual phenomena in lung ultrasound: where are we now?", Invited talk at the 4th AdET (Thoracic Echography Academy) National Congress, Naples, Italy, 10-11 Sept 2021.

17. **L. Demi**, "Lung Ultrasound", contribution to the Panel Session on Advances in Ultrasound Imaging: Novel Imaging Methods at the 180th Meeting of the Acoustical Society of America, Virtual Meeting, 8-19 June 2021.
18. **L. Demi**, "Technical Aspects of Lung Ultrasound", Online Point of Care Ultrasound Conference, Virtual Meeting, 13 April, 2021.
19. **L. Demi**, "On the necessary paradigm-shift from qualitative to quantitative lung ultrasound", Invited talk at the 178th Meeting of The Acoustical Society of America, virtual meeting, 7-11 December, 2020.
20. **L. Demi**, "Interaction Between Ultrasound and Lung Tissue, State of the Art", Invited talk at the 3rd AdET (Thoracic Echography Accademy) National Congress, Bolzano, Italy, 25 Jan 2020.
21. **L. Demi**, "Lung Ultrasound: why standard pulse-echo imaging is clearly not enough", Invited talk at the Special Course on Chest Ultrasonography and Endobronchial Ultrasounds, Gemelli Academic Hospital, Rome, Italy, June 2019
22. **L. Demi**, "Dedicated Signal Processing for Lung Ultrasound Imaging, can we see what we hear?", Invited talk at the 177th Meeting of The Acoustical Society of America, Louisville, USA, 13-17 May, 2019.
23. **L. Demi**, "Lung Ultrasound, beyond standard pulse-echo imaging", Invited seminar at North Carolina State University, USA, Department of Mechanical and Aerospace Engineering, 10 May, 2019.
24. **L. Demi**, "Signal Processing in Lung Ultrasound, current limitations and future directions", Invited talk at the 2nd AdET (Thoracic Echography Accademy) National Congress, Rome, Italy, 19 Jan 2019 .
25. **L. Demi**, "Quantitative Lung Ultrasonography", Invited talk at the Special Course on Chest Ultrasonography and Endobronchial Ultrasounds, Gemelli Academic Hospital, Rome, Italy, 19-22 April 2016 .
26. **L. Demi**, R. van Sloun, C. Shan, M.D. Verweij, and M. Mischi, "Ultrasound Imaging of the Coefficient of Nonlinearity", Invited talk at the 170th Meeting of The Acoustical Society of America, Jacksonville, Florida, USA, 2-6 November, 2015.
27. **L. Demi**, "Synergy with other application area's", Invited talk at the PTRC/INCAS3 Innovation Centre Workshop, Regina, Canada, 2013.

- **Patents (total = 2)**

1. **L. Demi**, V. Rochus, Ultrasound Imaging Using a Null Subtraction Technique, EP3644092A1
2. **L. Demi**, V. Rochus, Ultrasound Imaging Using a Null Subtraction Technique, US 2020 0129157 A1

- **Book chapters (total = 2)**

1. **L. Demi** and M.D. Verweij, "Nonlinear Acoustics", in Comprehensive Biomedical Physics, Elsevier Science Ltd, Oxford, pp. 387–399, 2014.
2. M.D. Verweij, Bradley E. Treeby, K.W.A. van Dongen and **L. Demi**, "Simulation of Ultrasound Fields", in Comprehensive Biomedical Physics, Elsevier Science Ltd, Oxford, pp. 465–499, 2014.

- **International conference proceedings (total=91)**

1. S. Afrakhteh, **L. Demi**, Reconstruction of Elasticity Estimates in Shear Wave Elastography through Relaxed Frame Rate Acquisition Combined with Radial Basis Function Interpolation, 32nd European Signal Processing Conference (EUSIPCO), Lyon, France, 2024
2. S. Afrakhteh, F. Mento, **L. Demi**, Application of Tensor Completion for Reducing the Beamforming Time in Ultrafast Ultrasound Imaging: A Doppler Ultrasound Assessment, IEEE Ultrasonics, Ferroelectrics, and Frequency Control Joint Symposium, Taipei, 2024
3. S. Afrakhteh, **L. Demi**, A Novel High Frame Rate and High Contrast Coherent Plane Wave Compounding Approach Utilizing Euclidean Distance Transform, IEEE Ultrasonics, Ferroelectrics, and Frequency Control Joint Symposium, Taipei, 2024
4. S. Afrakhteh, **L. Demi**, Shear Wave Elastography with High Precision and Relaxed Frame Rate Utilizing 2D Radial Basis Function Reconstruction, IEEE Ultrasonics, Ferroelectrics, and Frequency Control Joint Symposium, Taipei, 2024
5. S. Afrakhteh, N. Fatima, **L. Demi**, An Automated and Generalizable Technique for Left Ventricle Segmentation in 2D Echocardiography Utilizing Generative Adversarial Network, IEEE Ultrasonics, Ferroelectrics, and Frequency Control Joint Symposium, Taipei, 2024

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