

23/04/2025

PERSONAL INFORMATION

Barsotti Annalisa



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State Exam
Register of Engineering

Admittance to practice as an Engineer in Italy since 3rd October 2017.

Register of Informatics

Registration in the register of Ordine degli Ingegneri della Provincia di Lucca, N. 2332, since 17th October 2017.

Registration in the register of Computer Science "Giovanni Degli Antoni", ID_202305_INFO Dr 4338/2023 since 6th September 2023

WORK EXPERIENCE

March 2024 - present

SCUOLA SUPERIORE SANT'ANNA, INTERDISCIPLINARY CENTRE OF HEALTH SCIENCE.

Qualification Research Fellow

Tasks **AI-based clinical decision support system** to **optiMize** the **follow-up strategies** for the **management of Heart Failure patients** after discharge.

October 2020 - April 2024

UNIVERSITA' DEGLI STUDI DI MILANO, SESAR LAB.

Qualification PhD Candidate

Tasks **Prediction** and **causal analysis** of churn in the telecommunication domain. **Development** of a **novel methodology** to define what **algorithms** and **features** can be used to optimize the Customer Churn **Prediction** in the telecommunication domain. Furthermore, explain the **reasons** behind Customer Churning based on **observational data**. In addition, engage with the most significant telecom company's professionals.

October 2018 - March 2020

KHALIFA UNIVERSITY, Abu Dhabi, UAE.

Qualification Employment Contract as Research Associate

Tasks Electromyography (EMG) **validation** of a **Novel** Bio-Inspired Adaptable Compliant Exoskeleton for Smart Lower Limb **Rehabilitation** within the project ADEC Award for Research Excellence (AARE). I have mastered a new EMG System (Trigno Wireless EMG System, Delsys). I have **prepared** the **experimental setups**, **established** the **protocols**, **performed** the **experiments**, **collected** and **analyzed** the **data**. I have drafted both **informed consent** and **requests** for approvals from then **ethics committee**.

May 2017 - December 2017

SCUOLA SUPERIORE SANT'ANNA, CENTER FOR MICRO-BIO ROBOTICS (CMBR@SSSA) & ITALIAN INSTITUTE OF TECHNOLOGY (IIT).

Qualification Collaborator

Tasks **Development** and **validation** of sensorized wearable ankle and knee sleeves for kinematics assessment of gait within the project H2020-EU XoSoft funded by ENI. The tasks included **development of data fusion algorithms** for online gait analysis and **optimization** of the number and position of capacitive sensors to maximize informativeness.

June 2016 - December 2016

SCUOLA SUPERIORE SANT'ANNA, THE BIOROBOTICS INSTITUTE, TNE LAB.

Qualification Internship

Tasks	Multimodal recording of EEG and EMG during overground walking with an exoskeleton. The experiment was carried out at the Villa Beretta facilities, Rehabilitation Center, Presidium of Valduce Hospital, Costa Masnaga (LC) under the supervision of Dott. Franco Molteni. The tasks included setting up the recording protocol (electrode pairing, EEG and EMG set up, testing, etc.) and analyzing the data (removal of artifacts, ERPImage, time-frequency, ICA, Source localization, etc.).
September 2010 - February 2011	INFORMATION ENGINEERING DEPARTMENT, UNIVERSITA' DI PISA
Qualification	Internship
Tasks	Development, simulation and realization on breadboard of an electrocardiogram (EKG) front-end featuring automatic detection of cardiac arrhythmias.

EDUCATION

2020 - 2024 PHD IN COMPUTER SCIENCE

Università degli Studi di Milano – Computer Science, Via Celoria 18 - 20133 Milano

Thesis **Prediction and causal analysis of churn in the telecommunication domain.**

Courses
Machine Learning For Network And Genomic Medicine
Artificial Intelligence Techniques, Application And Social Issues
E-health And Social Distancing Technologies In Covid Time And For The Future Of Health Care
Scientific Papers From The First Draft To Proofs Correction

2011 - 2016 MASTER'S DEGREE IN BIOMEDICAL ENGINEERING

Università degli Studi di Pisa – Engineering Faculty, Via Diotisalvi 2 - Pisa (PI)

Thesis **Feasibility study for the recording of EEG and EMG signals during overground walking with an exoskeleton.**

Grade 100/110

Courses
Radiations Biophysics and Bioengineering
Biomedical electronics I
Biomedical electronics II
Laboratory of electromedical devices design
Software tools for medicine
Economics and Management in Health and Health Technology Assessment
Mechanics applied to the muscle skeletal system
Bioimaging
Methods for the analysis of multidimensional signals
Modeling and identification of physiological systems
Analysis and models of biomedical signals
Other activities useful for entering the job market

2006 - 2011 BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING

Università degli Studi di Pisa – Engineering Faculty, Via Diotisalvi 2 - Pisa (PI)

Thesis **Front-End development for EKG and automatic detection of arrhythmias.**

Grade 96/110

2001 - 2006 DIPLOMA OF SCIENTIFIC MATURITY

Liceo Scientifico Barsanti e Matteucci Via IV Novembre, 151, 55049, Viareggio, LU.

Scientific Lyceum with PNI (National Informatics Experimentation).

Grade 85/100

LANGUAGE SKILLS

Mother tongue Italian

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
(*) English	B2	B2	B2	B2	B2
International Certifications					
01/06/2003	Trinity, Grade 6, Spoken English for Speakers of Other Languages, Viareggio.				
11/06/2004	Trinity, Grade 7, Graded Examinations in Spoken English, B2 of Common European Framework, Viareggio.				
15 - 29/07/2004	ISIS, Education and travel, Certificate of Attendance, Edimburgh.				
30/01/2006	Cambridge's First Certificate in English - F.C.E.				
31/03/2021 - 31/12/2021	Speexx, Certificate English Smart B.2.1				
Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user Common European Framework of Reference for Languages					

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TECHNICAL SKILLS

AI & ML	Regression, Big Data, Statistics, Hypothesis Testing, Clustering, Classification, Statistical Process Control.
Big Data & Statistics	Data preprocessing, Exploratory Data Analysis, Feature Engineering, Time-Series Analysis.
Causal Reasoning	Causal Discovery and Causal Inference.
Data Science Frameworks	TensorFlow, PyTorch, Scikit-learn, SciPy, Pandas, NumPy, DoWhy, gCastle
Visualization Tools	Matplotlib, Seaborn, Plotly, NetworkX
Programming Languages	Python, Java, JavaScript, MATLAB. Tools: Eclipse, EEGLAB.
Databases	ORACLE PL/SQL, relational database design, BMF framework for ICT in Life Sciences.
Health Standards	HL7, DICOM, FHIR.
Privacy & Compliance	GDPR documentation (EU 2016/679) CNIL Privacy Impact Assessment (PIA) Software provided by the Commission Nationale de l'Informatique et des Libertés (CNIL).
Signal Processing:	Principal Components Analysis (PCA), Independent Component Analysis (ICA), Blind Source Separation Techniques (BSS), Feature extraction in time and frequency domains. Transforms: Fourier, Wavelets, etc.
Biomedical Techniques	Electroencephalography (EEG), Electromyography (EMG), Electrocardiography (EKG), Magnetic Resonance (MR) imaging.
EMG Systems	TRIGNO Wireless EMG System (DELSYS), BTS FREEEMG 1000 (BTS Bioengineering).
EEG Systems	SynAmps2, Compumedics NEUROSCAN, actiCAP Control Software (Brain Products GmbH).
Electronics	LTspice, Design on Breadboard, KiCad, Soldering.
Certifications	European Computer Driving Licence (ECDL), Viareggio – 05/11/2005.
Editing & Docs	Microsoft Office, Overleaf, CANVA, \LaTeX , LyX, CorelDRAW.

REFERENCES

Prof. Claudio Passino Full Professor of Cardiology at the Interdisciplinary Centre of Health Science of the Scuola Superiore Sant'Anna, Pisa, Italy.

Prof. Dongming Gan Assistant Professor, Department of Mechanical Engineering, Khalifa University, Abu Dhabi, United Arab Emirates.

Prof. Alberto Landi President of the School of Engineering of the University of Pisa, Full Professor of Automatic Controls at the University of Pisa, Italy.

Prof. Roberto Roncella Associate Professor Department of Information Engineering, University of Pisa, Italy

Prof. Barbara Mazzolai Director of "Center for Micro-Bio Robotics CMBR@SSSA", Italian Institute of Technology - Pontedera, Italy.

Prof. Silvestro Micera Professor at the Translational Neural Engineering Laboratory, Center for Neuroprosthetics, EPFL, Lausanne, Switzerland and Professor at the Biorobotics Institute of the Sant'Anna School of Advanced Studies, Italy.

PUBLICATIONS

Annalisa Barsotti, Stefano Dalmiani, Luca Fanucci, Martina Olivelli, Massimiliano Donati, and Claudio Passino, **AI-based clinical decision support system to optiMize the follow-up strategies for the management of Heart Failure patients after discharge**, under Submission to Frontiers.

Annalisa Barsotti, Armin Gerl, Sebastian Wilhelm, Stefano Dalmiani, Claudio Passino, **The complexity of eHealth Architecture - from big picture to lessons learned**, under Submission to Frontiers.

Annalisa Barsotti, Gabriele Gianini, Corrado Mio, Jianyi Lin, Himanshi Babbar, Aman Singh, Fatma Taher, Ernesto Damiani, **A Decade of Churn Prediction Techniques in the TelCo Domain: A Survey**. SN Computer Science.

G. Gianini, **A. Barsotti**, C. Mio and J. Lin, **Heterogeneous Transfer Learning from a Partial Information Decomposition perspective**, 15th International Conference on Management of Digital EcoSystems (MEDES-2023), Springer Nature Computer Science book series (CCIS, LNAI, LNBI, LNBIP or LNCS).

C. Pezzoni, C. Mio, **A. Barsotti** and G. Gianini, **Retinex by Autoencoders** - 2022 16th International Conference on Signal-Image Technology & Internet-Based Systems (SITIS), IEEE Proceedings

Barsotti, Annalisa; Kinda Khalaf; Dongming Gan **Muscle fatigue evaluation with EMG and Acceleration data: a case study**, 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC2020), July 20-24, 2020, Montréal, Québec, Canada. Annu Int Conf IEEE Eng Med Biol Soc. 2020 Jul;2020:3138-3141. doi: 10.1109/EMBC44109.2020.9175315

Artoni, Fiorenzo; **Barsotti, Annalisa**; Guanziroli, Eleonora; Molteni, Franco; Landi, Alberto; Micera, Silvestro, **EEG and EMG synchronization and jitter estimation for mobi experiments**, The first biannual Neuroadaptive Technology Conference, NAT17, Berlin, 19th - 21st of July.

Fiorenzo Artoni, **Annalisa Barsotti**, Eleonora Guanziroli, Silvestro Micera, Alberto Landi, Franco Molteni, **Effective Synchronization of EEG and EMG for MOBILE-BRAIN-BODY-Imaging in Clinical Settings**, Frontiers in Human Neuroscience, 2017, 11, 652.

FURTHER INFORMATION

Conferences

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|-----------------|--|
| 12/02/2004 | "2nd conference on the state of the environment in the Province of Lucca", Palazzo Ducale. |
| 13/02/2004 | European Conference "Sustainable tourism and outdoor sports activities: sports facilities and compliance with environmental regulations", Principe di Piemonte Convention Center, Viareggio. |
| 23 - 24/03/2006 | Certificate of participation in the "Fifth National Conference of Bioethics for the School", Piaggio Museum "Giovanni Alberto Agnelli", Pontedera. |
| 3 - 5/07/2008 | First National Congress of Bioengineering, Palazzo dei Congressi, Pisa. |
| 26 - 30/10/2008 | Multidisciplinary Conference, Progress in Bioengineering, Seventh International Congress - Pisa. |
| 11 - 14/07/2018 | 3rd International Mobile Brain/Body Imaging Conference, Health Care Systems Management Berlin (HCMB) eG, Berlin. |
| 20 - 24/07/2020 | 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC2020), Montréal, Québec, Canada. |

Seminars, Workshops and Symposia

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|-------------------------|--|
| 03/12/2004 | Seminar on Biomedicine, Scuola Normale Superiore, Sala Ulisse Dini, Pisa. |
| 20 - 21/06/2005 | Workshop to the Physics Department "E. Fermi". |
| 26/09/2007 | ENABLE- Enhancing Human Ability for Employability, Pisa. |
| 08/05/2009 | Breathing Life into Robots, David Hanson, Department of Information Engineering, Pisa. |
| 25 - 26/11/2019 | First International Healthcare Engineering Innovation Workshop, 25th-26th November 2019, Khalifa University, Abu Dhabi. |
| 26 - 27/02/2020 | Mohammad Bin Zayed International Robotics Challenge (MBZIRC) Symposium. |
| 16/06/2020 | MoBI Award 2020 Virtual Symposium. |
| 05/02/2021 | Meta-Learning and Automatic Machine Learning, Sylvio Barbon Júnior, University of Milan. |
| 03/03/2021 | Algebraic Amplification for Semi-Supervised Learning from Sparse Data, Wolfgang Gatterbauer (Khoury College of Computer Science), University of Milan. |
| 08/03/2021 | Women and Work The Impact Of Covid On Women's Work: What Prospects?, Order of the Engineers of Lucca |
| 29/11/2021 - 03/12/2021 | 27th IRIXYS Workshop, INSA Lyon, Villeurbanne. |
| 30/05/2022 - 03/06/2022 | 28th IRIXYS Workshop, Universitat Passau, Passau. |
| 15/06/2022 - 17/06/2022 | FIT Europe, INSA Lyon, Villeurbanne. |
| 11/07/2022 - 15/07/2022 | IEEE SERVICES 2022, UPC Terrassa Campus, Barcelona. |

07/08/2022 - 14/08/2022	Oxford Machine Learning Summer School 2022, St. Catherine's College, Oxford.
03/10/2022 - 07/10/2022	29th IRIXYS Workshop, Università di Milano, Gargnano.
19/10/2022 - 21/10/2022	16th International Conference on Signal Image Technology & Internet based Systems.
08/05/2023 - 17/05/2023	30th IRIXYS Workshop, INSA Lyon, Villeurbanne.
23/03/2024	International Workshop on Telemedicine, Aula Magna, Scuola Superiore Sant'Anna, Pisa.
24/06/2024 - 28/06/2024	First AI4BA 2024 – Summer School on Artificial Intelligence for Biomedical Applications, Siena.
Training courses	
21/02/2018	Technological innovation in the nuclear medicine and molecular imaging, ESTAR, Pisa.
19/04/2018	Innovation in intracardiac and neurological imaging, ESTAR, Pisa.
25/05/2018	Obligations, responsibilities and sanctions of the new European Privacy Legislation (G.D.P.R.), TALENT GARDEN, Pisa.
01/07/2020	The Digital Transformation of the Entire Health System. Conference organized and promoted by the National Council of Engineers through the Italian Committee of Information Engineers.
25/02/2021	The Role of Air Conditioning Systems in the Containment of the Infection by Sars-Cov-2. CNI Foundation
09/03/2021	Qualification, Standardization, Certification of Skills: A Role Guarantee for Professionals, Companies, Collectivity. Organized by the National Council of Engineers, the CERTING Certification Agency in collaboration with the CNI Foundation and the UNI (Italian Body of Standardization).
17/12/2021	Introduction to General Data Protection Regulation (GDPR).
Events	
22 - 25/02/2020	Scorer at the Mohammad Bin Zayed International Robotics Challenge (MBZIRC).
Sports activities	
	Functional training, Surf.
Other interests	
	Learning a new language: Arabic (with Duolingo); Reading, Gardening, Animal Care, Comedies and Action movies. Cooking: small pastries, sweet and savory cakes, pizza made with "mother yeast", finger food. Chocolate tempering and molding.
Driver's license	
	Type B (car)
	I authorize the processing of my personal data pursuant to Legislative Decree 30 June 2003, n. 196 "Code regarding the protection of personal data".