Andrea Calanca

PERSONAL INFORMATIONS

Name	ANDREA CALANCA
Birth	March 12th, 1981
Address	Via Fonte Tognola n. 4, 37135 Verona Italy
E-mail	andrea.calanca@univr.it
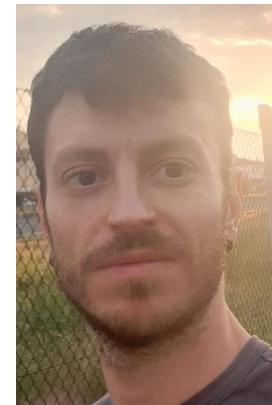
RESEARCH INDEXES

Google Scholar: Citations 1056; H-index 15; All/Journal/Book/Conferences 39/19/6/14
Scopus: Citations 805; H-index 12; All/Journal/Book/Conferences 37/18/5/12

EDUCATION

PhD in Computer Science (2014)
University of Verona
Thesis: Compliant Control Of Elastic Actuators For Human-Robot Interaction
Supervisor: Prof. Paolo Fiorini
Doctoral Committee: Prof. Darwin Caldwell, Prof. Antonio Bicchi

Master Degree in Computer Engineering (2006)
University of Pavia
Thesis: MIMO Identification of an Industrial Robot
Vote *110 /110 cum laude*

Bachelor Degree in Computer Engineering (2003)
University of Pavia
Thesis: File System Design for a DSP Embedded Application
Vote *110/110*

High School (2000)
Liceo Scientifico Tecnologico "E.Fermi"
Short Thesis: How Physics Sounds
Vote *94/100*

EMPLOYMENT

1 May 2023 – Today
Associate Professor at University of Verona – Computer Science Department
Teaching classic and advanced topics in robotics, control theory and physical human-robot interaction.
Research on upper limb exoskeletons, EMG-based control, assistive strategies, flexible link robots

2017 – 2023
Assistant Professor (Ricercatore a tempo determinato di tipo A e B) at University of Verona – Computer Science Department
Teaching classic and advanced topics in robotics, control theory and cyberphysical systems. Research on upper limb exoskeleton design and control, EMG-based control, robotic needle insertion.

2016 – 2017
Post Doc Researcher at University of Verona – Computer Science Department
Teaching of classic and advanced topics in control theory. Research on force and impedance control, passive dynamics walkers, lower limb exoskeleton design, and EMG-based control.

2016 – 2018
Adjunct Professor of Robotics at University of Brescia – Information Engineering Department (Contratto di lavoro autonomo per l'attività didattica)
Teaching of robot kinematics, dynamics and control. The course also includes laboratory exercises and practical projects.

2015
Advanced Control Specialist at Electrolux Italia s.p.a.
Investigation and development of advanced identification and control algorithms for dynamic balancing control of horizontal axis washing machines
Related topics: System identification, adaptive observers, non-linear control

2011 – 2014
Phd Student at University of Verona – Computer Science Department
Thesis: Compliant control of elastic actuators for human-robot interaction

2010 – 2011
Research Assistant at University of Verona – Computer Science Department
Research on assistive active orthoses for the lower limbs, force control, pneumatic artificial muscles

2009 – 2010
Research Assistant at University of Verona – Computer Science Department
Research on algorithms for voice synthesis and voice enhancing based on physiological glottal models

2008 - 2009
Audio DSP Engineer at Overloud s.r.l. (Audio DSP)
Analysis and identification of reverberation structure for non-convolution algorithms
Related topics: Artificial Reverberation Algorithms, Real-Time Programming, Object Oriented Programming

2008
Automation Engineer at Sidel s.p.a. (Industrial Automation)
Development and maintenance of control software for industrial machinery

2006 - 2008
Software Engineer at Provenia s.r.l. (ICT)

Design and development of business software applications
Related topics: OO Architectures, Design Patterns, Generic Programming

2003
University Stage at Charlie Lab s.r.l. (Audio DSP)
Design and Development of a FAT File System within an Embedded Device for real-time audio streaming.

RESEARCH Interests

My research interests are mainly related to robotics and control. A special focus is on control methodologies for physical human-robot interaction, including the control of assistive and rehabilitation devices and strategies for advanced human-robot cooperation. I started my scientific path investigating low-level interaction control algorithms, focusing on theoretical robustness properties to deal with uncertainties introduced by the human. Given the deep synergy between control and mechanics, I started including mechanical aspects in my research and I focused on the challenges of introducing inexpensive components in robot design. At the same time, I investigated voluntary control techniques based on muscular activations and assistive algorithms for industrial and medical applications, focusing in the latter case on muscular weakness pathologies. Currently, I lead a team of seven members doing research on interaction control, assistive robotics, voluntary control, affordable robotics, actuation systems, and flexible structures.

RESEARCH Projects

Principal Investigator for the research project "ASSOLOIST: an ASSsistive exOskeLeton for mOtor Impaired SubjecTs " (**Un esoscheletro a controllo mioelettrico per assistenza alla disabilità motoria**) funded by European Social Fund (Fondo Sociale Europeo). Budget: 92.70kEUR; Duration: February 2024 – July 2005, 3 temporary researchers hired.

Principal Investigator for the research project "Design of an emg-controlled upper limb robotic orthosis for muscular weakness" (**Progettazione di un'ortesi robotica per l'arto superiore con controllo mioelettrico e indirizzata a soggetti con debolezza muscolare**) funded by European Social Fund (Fondo Sociale Europeo). Budget: 92.70kEUR; Duration: October 2018 - October 2019, 4 temporary researchers hired.

Principal Investigator for the research project "**Forecast**" funded by the European Union, Horizon 2020 research and innovation programme, through an Open Call issued by the EUROBENCH Project. The EUROBENCH project aims at creating the first benchmarking framework for robotic systems in Europe. The FORECAST project focuses on benchmarking force control algorithms for robotic locomotion applications such as exoskeletons and humanoids. Budget: 98.63kEUR; Duration: March 2018 - September 2020, 6 temporary researchers hired.

Technical leader of the **PROST** project ERC Proof of Concept Grants, with Grant Agreement No. 875523. PROST project aims at the technical and commercial validation of an Autonomous Prostate Biopsy System that will use robotic autonomy to reduce human errors in prostate cancer diagnosis.

Technical and scientific leader of the work package (WP) "Real Time Task Control" of the project **Autonomous Robotic Surgery** (ARS) funded by the ERC Advanced Grant 2016 category with Grant Agreement No. 742671. The WP concerns the real-time adaptation of the patient's model, the localization of surgical instruments within such a model and the execution of learned actions in position, force and impedance control. (2018 – Today)

Member of the UNIVR team of the **MURAB** project Autonomous Robotic Surgery funded by the European Union, Horizon 2020 research and innovation programme, Grant Agreement No. 688188. I was involved the design and control of a robotic device for needle insertion and for the development of identification and control algorithms for needle steering. (2017-2020)

Within the project "Movement disorder and rehabilitation of cerebral palsy" funded by Cariverona Foundation I was the technical manager of a small research group for the design and development of a mobile robotic orthosis for autonomous walking of cerebral palsy patients. (2009-2010)

Within the project "Integration of advanced voice synthesis features on embedded platform" (Integrazione delle funzionalità di centralino e delle funzionalità vocali avanzate su piattaforma embedded) funded by European Social Fund (Fondo Sociale Europeo) I developed algorithms for voice synthesis and model-based filtering (voice enhancing) based on physiological glottal models. (2010-2011)

INDUSTRIAL RESEARCH Contracts

Principal Investigator for the research contract "Design of algorithms and mechatronic devices for wearable robotic systems with the aim of compensating gravitational forces acting on operators or patients" (Progettazione di algoritmi e apparati meccatronici per sistemi robotici indossabili con la finalità di compensare le forze gravitazionali agenti su operatori o pazienti) Contract n. 440888 - 09/10/2024 with the company Plumake s.r.l. (PIVA 04221940234), Budget 20.000 EUR;

Principal Investigator for the research contract "Experimental Assessment of an Active Industrial Exoskeleton's Performance through Trials Involving Healthy Subjects" (Valutazione sperimentale delle performance di un esoscheletro industriale attivo mediante test su soggetti sani) Contract n. 420417-23/10/23 with the company AGADE s.r.l. (PIVA IT11236320963), Budget 20.410 EUR;

Principal Investigator for and technical manager for the research contract: "Sviluppo di un sistema meccatronico di puntamento registrato su immagini pre-operatorie per interventi di vertebroplastica percutanea", Contract n. 405106-14/10/2021 with the company Tecres s.p.a. (PIVA 02042700233), Budget 60k EUR;

Principal Investigator for and technical manager for the research contract "Metodologie per l'analisi statistica di segnali eterogenei al fine di identificare anomalie rispetto alla storia pregressa di uno o più segnali", Contact n. 271507 - 03/09/2018 with the company C.S.T. s.r.l. (PIVA 10132000158), Budget 14k EUR;

Technical manager for the research contract "Analisi di strategie esistenti di stima e ridistribuzione del carico in macchine di lavaggio rotative e sviluppo di un algoritmo di stima del carico basato su sensori giroscopici". Contact n. 6785 - 13/01/2017 with the company Electrolux Italia S.p.a. (PIVA IT00065130932), Budget 23k EUR;

RESEARCH Collaborations

Currently, I lead research team of eight members with national and international collaborations. The team is composed by 3 PhD student, one post-doc and 4 research assistants. It follows the list of national and international collaborations with indication of research activities:

1. Design of an emg-controlled upper limb robotic orthosis for muscular weakness. Collaborators: Prof. Vincenzo Parenti Castelli, Prof. Rocco Vertechy, Dr. Giulio Spagnuolo, Dr. Luca Luzi, Dr.

EmanuelePalazzi, University of Bologna. Prof. Thiago Boaventura, University of São Paulo, São Paulo, Brazil.

2. Analysis of the benefits of parallel elastic actuation in terms of force controllability with application to lower limb industrial exoskeletons for assistance in load lifting. Robo-Mate project (7th FP, grant agreement n 608979). Collaborators: Prof. Darwin Caldwell, Dr. Jesus Ortiz, Dr. Stefano Toxiri, Dr. Tomaso Poliero, Dr. Christian Di Natali, Italian Institute of Technology.

3. Benchmarking of force control algorithms within the EUROBENCH project. Collaborators: the funded project involves collaboration with the Agencia Estatal Consejo Superior De Investigaciones Cientificas (CSIC) and with the Italian Institute of Technology (IIT)

4. Algorithms for intention decoding based on neuro-musculoskeletal models in a pathological subject. Collaborators: Prof. Massimo Sartori, University of Twente, Netherlands.

5. Design and control of an active orthosis for the lower limb. Project "Movement disorder and rehabilitation of cerebral palsy in children" (contract signed on 21/02/2008 with the Don Calabria Multifunctional Center, Verona, which coordinated the project). Collaborators: Dr. Alessandro Cosentino, Institute Don Calabria, Prof. Nicola Smania, University of Verona, Faculty of Medicine, Prof. Carlo Capelli, University of Verona, Faculty of Motor Sciences.

6. Innovative series elastic actuation implementation for physical human-robot interaction. Collaborators: Prof. Mauro Serpelloni, Prof. Giovanni Legnani, University of Brescia.

7. Force control of surgical robots using MEMS resonators, within the Autonomous Robotic Surgery (ARS) project. Collaborators: Dr. Alberto Roncaglia, Dr. Luca Belsito, CNR Institute for Microelectronics and Microsystems, Physics and Matter Technologies Department

8. Energy efficiency of series elastic actuators. Collaborator Tom verstraten, Vrije Universiteit Brussel.

Also, I am the promoter and coordinator for the exchange program between Department of Computer Science of the University of Verona and the Escola De Engenharia De São Carlos of the University of São Paulo

Credits, Honors and Awards

MAKE4CASH 2012. An open-source competition for electronic projects and prototype held by Elettronica Open Source Community and ELETTRONICA IN Journal. Reward 1000 €
https://it.emcelettronica.com/tag/make4cash

ANTONIO D'AURIA PRIZE 2010. For projects and prototypes of innovative robotic devices to aid the motor disabled SIRI – Associazione Italiana di Robotica e Automazione (Italian Robotic and Automation Society). Reward 1500 €

Overloud BREVERB2 Credits - DSP algorithm for high quality non-convolution reverberation software, distributed by Overloud, http://www.overloud.com/products/breverb2.php

Invited Speaker

Invited speaker at the workshop "Promoting elastic actuators for robotics (PEAR)" for the presentation "Force control of Series Elastic Actuators: overview, state of the art and perspectives" at the IEEE International Conference on Advanced Intelligent Mechatronics (AIM-2017), 3-7 July, 2017, Munich, Germany. https://pearres.wordpress.com/workshop-aim17/

Peer Reviewer

Peer reviewer for the following international journals: IEEE Transaction on Robotics, IEEE Transaction on Mechatronics, IEEE Robotics and Automation Letters, IEEE Transaction on Control System Practice, IEEE Transaction on Control System Technology, IEEE Transaction on Industrial Electronics, IEEE Transaction on Neural System and Rehabilitation Engineering, Robotics And Autonomous Systems, Robotica (Cambridge Press), Mechatronics, International Journal Advanced Robotic Systems, Robotics and Computer-Integrated Manufacturing, Mechanical Systems and Signal Processing.

Peer reviewer for the following international conferences: IROS2012, IROS2013, IROS2014, IROS2015, IROS2016, IROS2017, IROS2018, CDC2013, IFAC2016, ICRA2014, ICRA2020, ICORR2015, BIOROB2014, BIOROB2016, Humanoids2018.

Supervisor

Supervisor of 4 PhD students, 10+ bachelor and 10+ master students.

Organization Of Scientific Meetings

Workshop organizer at European Robotic forum (ERF2025). Title "Bringing Exoskeletons to Life in Europe: From Labs to Real-World Impact" to be held in stuggart (Germany) on March 2025 (proposal accepted)

Workshop organizer at the IEEE International Conference on Automation Science and Engineering (CASE 2024). Title "Industrial Exoskeletons: Market Demands, Open Challenges and Research Opportunities" September 1, 2024, Bari (Italy). full day workshop session with live demonstrations. https://metropolis.scienze.univr.it/ieee-case-2024-workshop-on-industrial-exoskeletons/

Associate Editor for the 20th International Conference on Advanced Robotics. December 7-10, 2021, Ljubljana, (Slovenia) 2021

Technical Committee member and Session Chair at the 7th international conference on Control, Instrumentation and Automation (ICCIA). 23-24 February 2021, Tabriz (Iran).

Workshop organizer at the 13th International Conference on Intelligent Autonomous Systems (IAS-13) 18 July 2014, Padova (Italy). "Compliant Control for Physical Human-Robot Interaction with application to exoskeletons, active orthoses, wearable robots and haptics" at the 13th International Conference on Intelligent Autonomous Systems (IAS-13) 18 July 2014, Padua (Italy). http://duerer.usc.edu/pipermail/robotics-worldwide/2014-April/007890.html

TEACHING

2020/21, 2021/22, 2022/23 Physical Human-Robot Interaction 6 ECTS
Master Degree in Robotics and Smart Manufacturing, Department of Computer
Science, University of Verona, Italy

2020/21, 2021/22, 2022/23 Robot Programming and Control 6 ECTS
Master Degree in Robotics and Smart Manufacturing, Department of Computer
Science, University of Verona, Italy

2020/21, 2021/22, 2022/23 Robotics 6 ECTS
Master Degree in Robotics and Smart Manufacturing, Department of Computer
Science, University of Verona, Italy

2019/20, 2020/21, 2021/22, 2022/23 Control Theory (Controlli Automatici) 6 ECTS
Bachelor Degree in Computer Science, Department of Computer
Science, University of Verona, Italy

2017/2018, 2018/2019 Cyberphysical Laboratory 6 ECTS (Practical exercises on robot control)
Bachelor Degree in Computer Science, Department of Computer
Science, University of Verona, Italy

2018/2019 Robotics (Robotica) 6 ECTS
Master Degree Computer Science and Engineering, Department of Computer
Science, University of Verona, Italy

2017/2018 System Theory (Sistemi Dinamici) 6 ECTS
Master Degree Computer Science and Engineering, Department of Computer
Science, University of Verona, Italy

2015/2016, 2016/2017 Robotics (Robotica) 9 ECTS
Master Degree in Computer Engineering, Department of Information Engineering, University of Brescia,
Italy (contratto di lavoro autonomo per attività didattica)

PUBLICATION LIST

International Patents:

A. Calanca, M. Bossi, D. De Vito
Rotatable Drum Laundry Machine and control method thereof
International Publication Number WO2020/114602 A1, International Application Number
PCT/EP2018/083878, International Publication Date: 11-06-2020, Applicant: Electrolux Appliances
Aktiebolag.

The patent is related to a load estimation and rebalancing algorithm for horizontal axis washing
machines aiming at reducing vibrations and energy consumption during spinning phases. Extended to
EU, US and ASIA

International Journals:

[1]   F. Pascucci, E. Feola, P. Cesari and A. Calanca, "**Evaluation of a Semi-Active Upper-Limb
      Exoskeleton While Performing Material Handling Tasks**," in *IEEE Transactions on Medical
      Robotics and Bionics*, vol. 7, no. 3, pp. 1152-1163, Aug. 2025, doi: 10.1109/TMRB.2025.3573032.

[2]   E. Dimo, A. Calanca "**Environment Aware Friction Observer with Applications to Force Control Benchmarking**". Actuators 2024, 13(2), 53; https://doi.org/10.3390/act13020053.

[3]   Zandonà, C., Roberti, A., Costanzi, D., Gül, B., Akbulut, Ö., Fiorini, P., & Calanca, A. (2024). "**A Comparison between Kinematic Models for Robotic Needle Insertion with Application into Transperineal Prostate Biopsy".** Technologies, 12(3), 1–14. https://doi.org/10.3390/technologies12030033

[4]   E. Feola, M. I. Refai, D. Costanzi, M. Sartori, and A. Calanca, "**A Neuromechanical Model-Based Strategy to Estimate the Operator ' s Payload in Industrial Lifting Tasks**," IEEE Trans. Neural Syst. Rehabil. Eng., vol. 31, p. 4644, 2023. https://doi.org/10.1109/TNSRE.2023.3334993

[5]   A. Calanca, E. Sartori, and B. Maris, "**Force control of lightweight series elastic systems using enhanced disturbance observers**," Robotics and Autonomous Systems., vol. 164, p. 104407, 2023.

[6]   A. Calanca, E. Dimo, E. Palazzi, L. Luzi, "**Enhancing Force Controllability by Mechanics in Exoskeleton Design**," Mechatronics, vol. 86, 2022.

[7]   E. Palazzi et al., "**An Affordable Upper-Limb Exoskeleton Concept for Rehabilitation Applications**," Technologies, vol. 10, no. 1, p. 22, 2022.

[8]   B. Maris, C. Tenga, R. Vicario, L. Palladino, N. Murr, M. De Piccoli, A. Calanca, S. Puliatti, S. Micali, A. Tafuri, P. Fiorini. "**Toward autonomous robotic prostate biopsy: a pilot study**" International Journal of Computer Assisted Radiology and Surgery, vol. 16, no. 8, pp. 1393–1401, 2021.

[9]   A. Calanca and T. Verstraten, "**An energy efficiency index for elastic actuators during resonant motion**," Robotica, vol. 40, no. 5, pp. 1–25, 2021.

[10]   A. Calanca, S. Toxiri, D. Costanzi, E. Sartori, R. Vicario, T. Poliero, C. Di Natali, D. G. Caldwell, P. Fiorini, J. Ortiz "**Actuation Selection for Assistive Exoskeletons: Matching Capabilities to Task Requirements**" IEEE Transactions on Neural Systems and Rehabilitation Engineering, 28(9), pp. 2053-2062, 2020

[11]   A. Calanca, E. Dimo, R. Vicario, P. Fiorini, M. Serpelloni, and G. Legnani "**Introducing Series Elastic Links for Affordable Torque-Controlled Robots**" Robotics and Automation Letters, vol. 4, no. 1, pp. 137–144, 2019.

[12]   S. Toxiri, A. Calanca, P. Fiorini, and D. G. Caldwell "**A Parallel-Elastic Actuator for a Torque-Controlled Back-Support Exoskeleton**" Robotics and Automation Letters, vol. 3, no. 1, pp. 1–8, 2018.

[13]   A. Calanca and P. Fiorini "**A Rationale for Acceleration Feedback in Force Control of Series Elastic Actuators"** IEEE Transactions on Robotics, vol. 34, no. 1, pp. 48–61, 2018.

[14]   A. Calanca and P. Fiorini "**Understanding Environment-Adaptive Force Control of Series Elastic Actuators**" IEEE/ASME Transactions on Mechatronics, vol. 23, no. 1, pp. 413–423, 2018.

[15]   A. Calanca, R.Muradore, P. Fiorini "**Impedance Control of Series Elastic Actuators: Passivity and Acceleration-Based Control**" Mechatronics, vol. 47, pp. 37–48, 2017.

[16]   A. Calanca, P. Fiorini "**Impedance control of series elastic actuators based on well-defined force dynamics**" Robotics and Autonomous Systems vol. 96, pp. 81–92, 2017, Special Issue on Human-oriented Approaches for Assistive and Rehabilitation Robotics.

[17] A. Calanca, R.Muradore, P. Fiorini "**A Review of Algorithms for Compliant Control**" IEEE Transactions on Mechatronics, vol. 21, no. 2, pp. 613–624, 2016.

[18] A. Calanca, L. Capisani, and P. Fiorini "**Robust Force Control of Series Elastic Actuators**" Actuators, Special Issue on Soft Actuators, vol. 3, no. 3, pp. 182–204, 2014.

[19] A. Calanca, P. Fiorini "**Human-Adaptive Control of Series Elastic Actuators**" Robotica, Special Issue on rehabilitation Robotics, available on CJO, 2014.

[20] C. Drioli, A. Calanca "**Speaker adaptive voice source modeling, with applications to speech coding and processing**" Journal of Computer Speech and Language, Special Issue on Glottal Source Processing, 2013.

[21] A. Calanca, A. Cosentino, P. Fiorini "**A motor learning oriented, compliant and mobile Gait Orthosis**" Applied Bionics and Biomechanics, vol. 9, no. 1, pp. 15-27, 2012.

[22] A. Calanca, L. M. Capisani, A. Ferrara, and L. Magnani "**MIMO identification of an industrial robot**" IEEE Transactions on Control Systems Technology. vol. 19, no. 5, pp. 1214 - 1224, 2011.

[23] N. Smania, M.Gandolfi, V.Marconi, A.Calanca et al. "**Applicability of a new robotic walking aid in a patient with cerebral palsy**" European Journal of Physical and Rehabilitation Medicine, vol. 47, no. 0, pp. 1-7, 2011.

Book Chapters:

[24] S. Toxiri, A. Calanca "**Parallel-Elastic Actuation of a Back-Support Exoskeleton**" in Novel Bioinspired Actuator Designs for Robotics, 2021, pp 107-114.

Conferences:

[25] D. Costanzi, M. Gandolla, and A. Calanca, "**Towards Personalized Myoelectric Control Strategies**," in 2023 IEEE International Conference on Metrology for eXtended Reality, Artificial Intelligence and Neural Engineering (MetroXRAINE) (IEEE MetroXRAINE 2023), 2023, p. 6.

[26] R. Vicario, A. Calanca, E. Dimo, N. Murr, M. Meneghetti, R. Ferro, E. Sartori, T.Boaventura "**Benchmarking Force Control Algorithms**" in the 14th PErvasive Technologies Related to Assistive Environments Conference, 2021, pp. 359–364

[27] Andrea Calanca, Eldison Dimo, Emanuele Palazzi, Rafael Ferro, Rudy Vicario, Noe' Murr, Matteo Meneghetti, Davide Costanzi, Luca Luzi, Rocco Vertechy, and Thiago Boaventura "**Toward Personal Affordable Exoskeletons with Force Control Capabilities**" in the 14th PErvasive Technologies Related to Assistive Environments Conference, 2021, pp. 156–159.

[28] R. Vicario, A. Calanca, N. Murr, M. Meneghetti, E. Sartori, G. Zanni, P. Fiorini "**A Methodology for Benchmarking Force Control Algorithms**" in Wearable Robotics: Challenges and Trends, 2021, pp. 615--620.

[29] Ghavifekr A.A., Hassani R.H., Calanca A. "**Designing Adaptive Nonlinear Controller for Optimal Tracking of Laparoscopic Robotic Arm with Nonholonomic Constraints**" In: New Trends in Medical and Service Robotics. MESROB 2020. Mechanisms and Machine Science, vol 93. Springer, Cham.

[30] M. Ginesi, D. Meli, A. Calanca, D. Dall'Alba, N. Sansonetto, and P. Fiorini, "**Dynamic Movement Primitives: Volumetric Obstacle Avoidance**" 19th International Conference on Advanced Robotics (ICAR), 2019, pp. 234–239.

[31] S. Toxiri, T. Verstraten, A. Calanca, D. G. Caldwell, and J. Ortiz "**Using parallel elasticity in back-support exoskeletons: A study on energy consumption during industrial lifting tasks**" in 2019 Wearable Robot. Assoc. Conf. WearRAcon 2019, no. 337596, pp. 1–6, 2019.

[32] M. Carletti, D. Zerbato, D. Dall'Alba, A. Calanca, P. Fiorini "**Robust 3D Pose Estimation of a Laparoscopic Instrument with three Landmarks**" Stag 2015, Annual conference of the Italian Eurographics chapter, October 15-16, Verona, Italy.

[33] A. Calanca and P. Fiorini "**On The Role of Compliance In Force Control**" International Conference on Intelligent Autonomous Systems, July 15-19, 2014, Padua, Italy.

[34] A. Calanca, L. M. Capisani, A. Ferrara, and P.Fiorini "**Improving Continuous Approximation of Sliding Mode Control**" 16th International Conference on Advanced Robotics, November 25-29, 2013, Montevideo, Uruguay.

[35] C. Drioli, A. Calanca "**Speech modeling and processing by low-dimensional dynamic glottal models**" 13th Annual Conference of the International Speech Communication Association (Interspeech). September 9-13, 2012 Portland, Oregon.

[36] A. Calanca, C. Drioli "**Voice processing by dynamic glottal models with applications to speech enhancement**" Interspeech 2011, 12th Annual Conference of the International Speech Communication Association. August 28-31, 2011 Florence, Italy.

[37] A. Calanca, S. Piazza, P. Fiorini, A. Cosentino "**An Active Orthosis For Cerebral Palsy Children**" 1st International Conference on Applied Bionics and Biomechanics. October 14 - 16, 2010 Venice, Italy.

[38] A. Calanca, S. Piazza, P. Fiorini "**Force Control System for Pneumatic Actuators of an Active Gait Orthosis**" International Conference on Biomedical Robotics and Biomechatronics (BioRob), 3rd IEEE RAS and EMBS. September 26-29, 2010 Tokyo, Japan.

[39] A. Calanca, A. Cosentino, P. Fiorini "**A Prototype for Hip Compliant Actuation**" XI Congresso Nazionale Società Italiana di Analisi del Movimento in Clinica, October 4 - 7, 2010 Ferrara, Italy.

[40] S. Toxiri, A. Calanca, T. Poliero, D. G. Caldwell, and J. Ortiz "**Actuation Requirements for Assistive Exoskeletons: Exploiting Knowledge of Task Dynamics**" in Wearable Robotics: Challenges and Trends, 2019, pp. 381–385.

[41] A. Calanca, L. Bettinelli, E. Dimo, R. Vicario, M. Serpelloni, and P. Fiorini "**Introducing Series Elastic Links**" in Wearable Robotics: Challenges and Trends, 2019, pp. 465–469.

[42] A. Calanca, R. Muradore, and P. Fiorini "**Impedance Control of Series Elastic Actuators Using Acceleration Feedback**" in Wearable Robotics: Challenges and Trends, 2017, pp. 33–37.

[43] A. Calanca, L. M. Capisani, A. Ferrara, and L. Magnani "**An Inverse Dynamics-Based Discrete-Time Sliding Mode Controller for Robot Manipulators**" Robot Motion and Control 2007, Krzysztof Kozlowski ed., (LNCiS) Lecture Notes in Control and Information Sciences n. 360, chapter 12, pp. 137-146, Springer Verlag London Limited, ISBN: 978-1-84628-973-6

Workshops:

A. Calanca
Force control of Series Elastic Actuators: overview, state of the art and perspectives
Workshop PEAR (Promoting elastic actuators for robotics) at the IEEE International Conference on Advanced Intelligent Mechatronics (AIM-2017), 3-7 July 2017, Munich, Germany.

A. Calanca, P. Fiorini
Force Control Beyond the Passivity Interaction Paradigm.
7th International Workshop on Human-Friendly Robotics, October 23-24, 2014, Pisa, Italy

A. Calanca, N.Piccinelli, P. Fiorini
Human-Adaptive Control of Compliant Actuators.
Roboassist 2014, ICRA14 Workshop, Honk Hong, China.

A. Calanca, L. M. Capisani, A. Ferrara, and L. Magnani
An Inverse Dynamics-Based Discrete-Time Sliding Mode Controller for Robot Manipulators.
ROMOCO 2007, Sixth International Workshop on Robot Motion and Control, June 11-13, 2007 Bukowy Dworek, Poland

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DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONE (art 46 del D.P.R. n.445 del 28/12/2000)
DICHIARAZIONE SOSTITUTIVA DELL'ATTO DI NOTORIETA' (artt. 46 e 47 del D.P.R. n.445 del 28/12/2000)

Il sottoscritto Cognome: CALANCA Nome: ANDREA, nato a MANTOVA il
12/03/1981 residente in VERONA, Cap 37135, via Fonte Tognola n. 4,
e-mail: andrea.calanca@gmail.com, telefono: 3403687011, Codice Fiscale: CLNNDR81C12E897X

consapevole delle sanzioni penali, nel caso di dichiarazioni non veritiere e falsità negli atti, richiamate dall'art. 76 del D.P.R. 445/2000 e dalle leggi speciali in materia

DICHIARA

– di possedere i titoli riportati nel curriculum;
– che quanto riportato nel curriculum risponde a verità.

Verona, 20/02/2023   Andrea Calanca