

Personal information

<i>Name and Surname</i>	Marco Controzzi	<i>Parental status</i>	
<i>Birth-date</i>		<i>Current address</i>	
<i>Birth place</i>		<i>Email address</i>	
<i>Sex</i>	Male	<i>Telephone</i>	
<i>Nationality</i>	Italian Citizen		

Actual Position

I am currently Assistant Professor of Bioengineering at The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy. My current research is devoted to the **design and development of advanced artificial devices aimed at improving the lives of people with disabilities.**

Bibliometrics indicators¹

<i>Parameter</i>	<i>Google Scholar</i>	<i>Scopus</i>
Citations	2078	1433
H-index	18	17

Academic roles, memberships and qualifications

Period (start-end)	Description
04/04/2018 – 04/04/2024	National Scientific Habilitation (Abilitazione Scientifica Nazionale) (2018) as Associate Professor of Bioengineering 09/G2. Call 2016.
a.a. 2016/2017	Member of the selection committee for the admission of Allievi Ordinari at the Scuola Superiore Sant'Anna.
29/09/2016 – today	Member (Junior Chair) of the Technical Committee in Mechanisms and Design, IEEE Robotics & Automation Society.
01/03/2014 – today	Faculty Member of The Biorobotics Institute, Scuola Superiore Sant'Anna, Italy, Pisa.
2012 – today	Member of the Institute of Electric and Electronics Engineers (IEEE) - #90880620
29/09/2009	State exam for the Italian engineering profession qualification, University of Pisa, Italy. Sector: Industrial Engineer – Section A, Final Mark: 221/240.

Education

Period (start-end)	Description
09/2009 – 07/2013	Ph.D. in Innovative Technologies of ICT and Robotics Engineering (curriculum Biorobotics), at Scuola Superiore Sant'Anna (Italy), Thesis entitled "Advances in the design and control of dexterous artificial hands for functional substitution" defended 15/07/2013, Mark: 100/100 <i>cum laude</i> . Principal Advisor: Prof. Maria Chiara Carrozza.
01/2006 – 12/2008	M.Sc. in Mechanical Engineering (curriculum Machine design), at University of Pisa (Italy), Thesis entitled "Design and development of underactuated robotic hand for biped humanoid robot", defended 17/12/2008, Mark: 109/110.
09/2001 – 12/2005	B.Sc. in Mechanical Engineering , at University of Pisa (Italy), Thesis entitled "Influence of the linear tip relief modification on contact pressure in spur gear", defended on 20/12/2005, Mark: 106/110.

Summer schools and specialization courses:

¹ Last update May 23, 2019

Period (start-end)	Description
16/09/2012 – 21/09/2012	International Summer School on NeuroRehabilitation "Emerging Therapies", Consejo Superior de Investigaciones Científicas (Spain).
01/09/2012 – 09/09/2012	International Summer School on Screw-Theory Based Methods in Robotics, University of Genoa (Italy).
12/03/2012 – 13/03/2012	Specialization Course, topic: FEM Mechanical Structural Nonlinearities – advanced, Enginsoft (Italy).
12/11/2011 – 17/11/2011	International Summer School WSK-TNg 2011 on "Robots in the UBICloud", Waseda University (Japan).
27/09/2010 – 01/10/2010	International Summer School on Robot Grasping IURS 2010, Universitat Jaume I (Spain).

Employment history

Period (start-end)	Description
01/04/2019 – 31/03/2022	Assistant professor of Applied Mechanics (RTD-a) at the Artificial Hands Area of The Biorobotics Institute, Scuola Superiore Sant'Anna, Coordinator of the "Human-Robot Interaction" Laboratory.
01/03/2017 – 28/02/2019	Assistant professor of Bioengineering (RTD-a) at the Artificial Hands Area of The Biorobotics Institute, Scuola Superiore Sant'Anna, Coordinator of the "Human-Robot Interaction" Laboratory.
01/03/2014 – 28/02/2017	Assistant professor of Bioengineering (RTD-a) at the Artificial Hands Area of The Biorobotics Institute, Scuola Superiore Sant'Anna.
15/07/2013 – 28/02/2014	Postdoctoral fellow at The Biorobotics Institute of the Scuola Superiore Sant'Anna in the framework of the European projects: CogLaboration, WAY, NEBIAS (FP7).
15/06/2011 – 14/06/2013	Research fellow at The Biorobotics Institute of the Scuola Superiore Sant'Anna in the framework of the European projects: CogLaboration, WAY (FP7).
15/05/2009 – 14/05/2011	Research fellow at the ARTS-Lab of the Scuola Superiore Sant'Anna in the framework of the European project: Nanobiotouch (FP7).
15/01/2009 – 14/11/2009	Research fellow at the ARTS-Lab of the Scuola Superiore Sant'Anna in the framework of the European project: SmartHand (FP7).

Coordinated and Continuous Collaborations:

Period (start-end)	Description
01/03/2019 – 31/03/2019	Contingent work, The Biorobotics Institute of the Scuola Superiore Sant'Anna in the framework of the National project: CECA2020 (INAIL).
11/09/2013 – 10/01/2014	Research Assistant, The Biorobotics Institute of the Scuola Superiore Sant'Anna in the framework of the National project: My-HAND (FIRB).
26/07/2012 – 25/10/2012	Research Assistant, The Biorobotics Institute Scuola Superiore Sant'Anna in the framework of the National project: My-HAND (FIRB).
23/05/2011 – 22/11/2011	Research Assistant, ARTS-Lab of the Scuola Superiore Sant'Anna in the framework of the European project: Nanobiotouch (FP7).
25/05/2009 – 24/11/2009	Research Assistant, ARTS-Lab of the Scuola Superiore Sant'Anna in the framework of the European project: SmartHand (FP7).
14/12/2007 – 30/09/2008	Research Assistant, ARTS-Lab of the Scuola Superiore Sant'Anna in the framework of the European project: Robocub (FP6).
01/12/2006 – 30/11/2007	Research Assistant, ARTS-Lab of the Scuola Superiore Sant'Anna in the framework of the European project: Robocub (FP6).
02/10/2006 – 30/11/2006	Research Assistant, ARTS-Lab Scuola Superiore Sant'Anna in the framework of the Research contract: RPP2009 (DARPA).
01/06/2006 – 30/09/2006	Research Assistant, ARTS-Lab Scuola Superiore Sant'Anna in the framework of the European project: Robocub (FP6).

Awards and distinctions

Date	Description	Relevance
2019	Red Dot Design Award 2019 with the <u>MIA Artificial Hand</u> .	International

19/10/2018	Best ICNR2018 Poster Award with the paper entitled "Progress towards the development of the DeTOP hand prosthesis: a sensorized transradial prosthesis for clinical use".	International
20/07/2017	Third place at the RehabWeek 2017 Best Poster Competition (>500 posters participating) (RehabWeek – ICORR, London, 17-20/07/2017) with the paper entitled "A Cosmetic Prosthetic Digit with Bioinspired Embedded Touch Feedback".	International
10/10/2015	Research section of the "Premio Capitani dell'Anno 2015" awarded to the MyHAND prototype.	National
21/03/2013	Mention euRobotics Technology Transfer Award (within the 5 best in Europe), European Robotics Association, Lyon, France with the spin-off company founded Prensilia.	European
16/11/2012	Mention at the Student Paper Competition (2 mentions released) during the International Conference on NeuroRehabilitation, ICNR2012, 14-16/11/2012, Toledo, Spain, with the paper entitled "Decoding Grasp Types from the Monkey Motor Cortex and On-line Control of a Dexterous Artificial Hand".	International
4/12/2009	Finalist at the Italian Prize for Innovation (PNI), Perugia, Italy, with the spin-off company founded Prensilia.	National
27/11/2009	First prize at the Vespucci Award (Innovation) 2009 from Tuscany regional Government, Florence, Italy, with the spin-off company founded Prensilia.	Regional
28/02/2009	First prize at the 2009 Antonio d'Auria Award, Italian Robotics and Automation Association (SIRI), Milan, Italy, for projects and prototypes of innovative robotic devices to aid the motor disabled with the SmartHand transradial-prosthesis prototype developed.	European

Technology transfer

Spin-off Company:

Date	Description
01/03/2009	<p><i>Company details:</i> Prensilia SRL, viale Rinaldo Piaggio 32, 56025 Pontedera, Italy.</p> <p><i>Company mission:</i> Prensilia currently sells robotic hands for research and education across the globe. Over the years it has established important collaborations with the leading companies and research centers involved in grasping, manipulation, robotics and prosthetics.</p> <p><i>Website:</i> https://www.prensilia.com/</p> <p><i>Candidate role and shares in the company:</i> Founder and Board Member, 45% owner of Prensilia (other two stakeholders share the 45% and 10% of the company, respectively)</p>

Publications

Papers published or accepted on International journals:

No.	Publication details	Journal impact factor
J43	V. Ortenzi, M. Controzzi , F. Cini, J. Leitner, M. Bianchi, M. A. Roa, P. Corke, "Robotic manipulation and the role of the task in the metric of success", <i>Nature Machine Intelligence</i> , vol. 1, no. 8, pp. 340–346, 2019, DOI: 10.1038/s42256-019-0078-4.	-
J42	G. Risso, G. Valle, F. Iberite, I. Strauss, T. Stieglitz, M. Controzzi , F. Clemente, G. Granata, P. M. Rossini, S. Micera, G. Baud-Bovy, "Optimal integration of intraneural somatosensory feedback with visual information: a single-case study", <i>Scientific Reports</i> , vol. 9, no. 1, 2019, DOI: 10.1038/s41598-019-43815-1.	4.122
J41	N. Malesevic, G. Andersson, A. Björkman, M. Controzzi , C. Cipriani, C. Antfolk, "Instrumented platform for assessment of isometric hand muscles contractions", <i>Measurement Science and Technology</i> , 2019, in press, DOI: 10.1088/1361-6501/ab0eae.	1.685
J40	E. Mastinu, F. Clemente, P. Sassu, O. Aszmann, R. Brånemark, B. Håkansson, M. Controzzi , C. Cipriani, M. Ortiz-Catalan, "Grip control and motor coordination with implanted and surface electrodes while grasping with an osseointegrated prosthetic hand" <i>Journal of</i>	3.865

- NeuroEngineering and Rehabilitation*, vol. 16, no. 1, pp. 49-59, 2019, DOI: 10.1186/s12984-019-0511-2.
- J39 F. Clemente, G. Valle, **M. Controzzi**, I. Strauss, F. Iberite, T. Stieglitz, G. Granata, P. M. Rossini, F. Maria Petrini, S. Micera, C. Cipriani, "Intraneural sensory feedback restores grip force control and motor coordination while using a prosthetic hand" *Journal of Neural Engineering*, vol. 16, no. 1, pp. 1-10, 2019, DOI: 10.1088/1741-2552/ab059b. 3.920
- J38 F. Cini, V. Ortenzi, P. Corke, **M. Controzzi**, "On the choice of grasp type and location when handing over an object" *Science Robotics*, vol. 4, no. 27, eaau9757, 2019, DOI: 10.1126/scirobotics.aau9757. 19.40
- J37 E. D'Anna, G. Valle, A. Mazzoni, I. Strauss, F. Iberite, J r my Patton, F. Petrini, S. Raspopovic, G. Granata, R. Di Iorio, **M. Controzzi**, C. Cipriani, T. Stieglitz, P. M. Rossini, and S. Micera, "A closed-loop hand prosthesis with simultaneous intraneural tactile and position feedback" *Science Robotics*, 2019, vol. 4, no. 27, eaau9757, 2019, DOI: 10.1126/scirobotics.aau8892. 19.40
- J36 F. Petrini, G. Valle, I. Strauss, G. Granata, R. Di Iorio, E. D'anna, P. Cvancara, M. Mueller, J. Carpaneto, F. Clemente, **M. Controzzi**, L. Bisoni, C. Carboni, M. Barbaro, F. Iodice, D. Andreu, A. Hiairassary, J. Divoux, C. Cipriani, D. Guiraud, L. Raffo, E. Fernandez, T. Stieglitz, S. Raspopovic, P. M. Rossini, S. Micera, "Six-months assessment of a hand prosthesis with intraneural tactile feedback", *Annals of Neurology*, vol. 85, no. 1, pp 137-154, 2018, DOI: 10.1002/ana.25384. 10.244
- J35 G. Valle, F. Petrini, I. Strauss, F. Iberite, E. D'Anna, G. Granata, **M. Controzzi**, C. Cipriani, T. Stieglitz, P. Rossini, A. Mazzoni, S. Raspopovic, and S. Micera, "Comparison of linear frequency and amplitude modulation for intraneural sensory feedback in bidirectional hand prostheses" *Scientific Reports*, vol. 85, no. 1, 2018, DOI: 10.1038/s41598-018-34910-w. 4.122
- J34 I. Boni, J. Millenaar, **M. Controzzi**, M. Ortiz Catalan, "Restoring Natural Forearm Rotation in Transradial Osseointegrated Amputees", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 26, no. 12, pp. 2333-2341, 2018, DOI: 10.1109/TNSRE.2018.2880948. 3.972
- J33 **M. Controzzi**, H. Singh, F. Cini, T. Cecchini, A. Wing, and C. Cipriani, "Humans adjust their grip force when passing an object based on the observed speed of the partner's reaching out movement", *Experimental Brain Research*, vol. 236, no. 12, pp. 3363-3377, 2018. DOI: 10.1007/s00221-018-5381-5. 1.806
- J32 G. Valle, A. Mazzoni, F. Iberite, E. D'Anna, I. Strauss, G. Granata, **M. Controzzi**, F. Clemente, G. Rognini, C. Cipriani, T. Stieglitz, F. M. Petrini, P. M. Rossini, S. Micera, "Biomimetic intraneural sensory feedback enhances sensation naturalness, tactile sensitivity and manual dexterity in a bidirectional prosthesis", *NEURON*, vol. 100, no. 1, pp. 37-45.e, 2018. DOI: 10.1016/j.neuron.2018.08.033. 14.318
- J31 A.W. Shehata, L.F. Engels, **M. Controzzi**, C. Cipriani, E.J. Scheme, and J.W. Sensinger "Improving Internal Model Strength and Performance of Prosthetic Hands Using Augmented Feedback", *Journal of NeuroEngineering and Rehabilitation*, vol. 15, no. 1, pp. 70, 2018. DOI: 10.1186/s12984-018-0417-4 3.865
- J30 G. Kanitz, F. Montagnani, **M. Controzzi**, C. Cipriani, "Compliant prosthetic wrists entail more natural use than stiff wrists during reaching, not (necessarily) during manipulation", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 26, no. 7, pp. 1407-1413, 2018. DOI: 10.1109/TNSRE.2018.2847565. 3.972
- J29 I. Imbinto, F. Montagnani, M. Bacchereti, C. Cipriani, A. Davalli, R. Sacchetti, E. Gruppioni, S. Castellano and **M. Controzzi**, "The S-Finger: a synergetic externally powered digit with tactile sensing and feedback", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 26, no. 6, pp. 1264-1271, 2018. DOI: 10.1109/TNSRE.2018.2829183. 3.972
- J28 N. Malesevic, D. Markovic, G. Kanitz, **M. Controzzi**, C. Cipriani and C. Antfolk, "Vector Autoregressive Hierarchical Hidden Markov Models (VARHHMM) for extracting finger movements using multichannel surface EMG signals", *Complexity (Hindawi)*, vol. 2018, 12 pages, 2018. DOI: 10.1155/2018/9728264. 1.829
- J27 S. Tarantino, F. Clemente, D. Barone, **M. Controzzi**, C. Cipriani, "The myokinetic control interface: tracking implanted magnets as a means for prosthetic control", *Scientific Reports*, vol. 7, no. 17149, pp. 1-11, 2017. DOI: 10.1038/s41598-017-17464-1 4.122
- J26 M. D'Alonzo, L. F. Engels, **M. Controzzi**, C. Cipriani, "Electro-cutaneous stimulation on the palm elicits referred sensations on intact but not on amputated digits", *Journal of Neural* 3.465

- Engineering*, vol. 15 no. 1, pp. 1-13, 2018, (Early access, on line Dec. 2017). DOI: 10.1088/1741-2552/aa81e2
- J25 Y. Li, S. Zhang, Y. Jin, B. Cai, **M. Controzzi**, J. Zhu, J. Zhang and X. Zheng, "Gesture Decoding Using EcoG Signals From Human Sensorimotor Cortex: A Pilot Study", *Behavioural Neurology*, vol. 2017, Article ID 3435686, 12 pages, 2017; DOI: 10.1155/2017/3435686 2.088
- J24 **M. Controzzi**, L. Bassi Luciani, F. Montagnani, "Unified Approach to Bi-Directional Non-Back Drivable Roller Clutch Design", *Mechanism and Machine Theory*, vol. 116, pp. 433-450, 2017. DOI: 10.1016/j.mechmachtheory.2017.06.010 2.796
- J23 F. Montagnani, **M. Controzzi**, C. Cipriani, "Independent Long Fingers are not Essential for a Grasping Hand", *Scientific Reports*, vol. 6, no. 35545, pp. 1-9, 2016. DOI: 10.1038/srep35545 4.122
- J22 **M. Controzzi**, F. Clemente, D. Barone, A. Ghionzoli, C. Cipriani, "The SSSA-MyHand: a dexterous lightweight myoelectric hand prosthesis", *IEEE Trans. On Neural System and Rehabilitation Engineering*, vol. 25, no. 5, pp. 459-468, 2017. (Early access, on line Jun. 2016) DOI: 10.1109/TNSRE.2016.2578980 3.972
- J21 I. Imbinto, C. Peccia, **M. Controzzi**, A. Cutti, A. Davalli, R. Sacchetti, C. Cipriani, "Treatment of the Partial Hand Amputation: An Engineering Perspective". *IEEE Reviews in Biomedical Engineering*, vol. 9, pp. 32-48, 2016, DOI: 10.1109/RBME.2016.2523799 -
- J20 I. Strazzulla, M. Nowak, **M. Controzzi**, C. Cipriani, C. Castellini, "Online Bimanual Manipulation Using Surface Electromyography and Incremental Learning", *IEEE Trans. On Neural System and Rehabilitation Engineering*, vol. 25, no. 3, pp. 459-468, 2016. (Early access, on line April 2016). DOI: 10.1109/TNSRE.2016.2554884 3.972
- J19 F. Clemente, M. D'Alonzo, **M. Controzzi**, B.B. Edin, and C. Cipriani, "Non-invasive, temporally discrete feedback of object contact and release improves grasp control of closed-loop myoelectric transradial prostheses", *IEEE Trans. On Neural System and Rehabilitation Engineering*, vol. 24, no. 12, pp. 1314-1322, 2016 (Early access, on line Nov. 13 2015). DOI: 10.1109/TNSRE.2015.2500586 3.972
- J18 F. Montagnani, **M. Controzzi**, C. Cipriani, "Is it finger or wrist dexterity that is missing in current hand prostheses?", *IEEE Trans. On Neural System and Rehabilitation Engineering*, vol. 23, no. 4, pp. 600-9, July 2015 (Early access, on line Feb. 5 2015). DOI: 10.1109/TNSRE.2015.2398112 3.972
- J17 F. Montagnani, **M. Controzzi**, C. Cipriani, "Non-Back-Drivable Rotary Mechanism with Intrinsic Compliance for Robotic Thumb Abduction/Adduction", *Advanced Robotics*, vol. 29, no. 8, pp. 561-571, 2015. DOI: 10.1080/01691864.2014.992957 0.961
- J16 L. Orlando Russo, G. Airó Farulla, D. Pianu, A. R. Salgarella, **M. Controzzi**, C. Cipriani, C. M. Oddo, C. Geraci, S. Rosa, and M. Indaco, PARLOMA – A Novel Human-Robot "Interaction System for Deaf-blind Remote Communication", *International Journal of Advanced Robotic Systems*, vol. 12, no. 57, 2015. DOI: 10.5772/60416 0.952
- J15 Y. Hao, Q. Zhang, **M. Controzzi**, C. Cipriani, Y. Li, J. Li, S. Zhang, Y. Wang, W. Chen, M. C. Carrozza, and X. Zheng, "Distinct neural patterns enable grasp types decoding in monkey dorsal premotor cortex", *Journal of Neural Engineering*, vol. 11 no. 6, pp. 1-13, 2014. DOI: 10.1088/1741-2560/11/6/066011 3.920
- J14 J.L. Segil, **M. Controzzi**, R.F. Weir, C. Cipriani, "Comparative study of state-of-the-art myoelectric controllers for Multigrasp prosthetic hands", *Journal of Rehabilitation Research & Development*, vol. 51 no. 9, pp. 1439-1454, 2014. DOI: 10.1682/JRRD.2014.01.0014 1.277
- J13 **M. Controzzi**, M. D'Alonzo, C. Peccia, C. M. Oddo, M. C. Carrozza, C. Cipriani, "Bioinspired fingertip for anthropomorphic robotic hands", *Applied Bionics and Biomechanics*, vol. 11 no. 1-2, pp. 25-38, 2014. DOI: 10.3233/ABB-140092 1.769
- J12 S. Raspopovic, M. Capogrosso, F. Petrini, M. Bonizzato, J. Rigosa, G. Di Pino, J. Carpaneto, **M. Controzzi**, T. Boretius, E. Fernandez, G. Granata, C. M. Oddo, L. Citi, A.L. Ciancio, C. Cipriani, M.C. Carrozza, W. Jensen, E. Guglielmelli, T. Stieglitz, P.M. Rossini, S. Micera, "Restoring natural sensory feedback in real-time bidirectional hand prostheses", *Science Translational Medicine*, vol. 6, no. 222, 2014. DOI: 10.1126/scitranslmed.3006820 16.710
- J11 Y. Hao, **M. Controzzi**, C. Cipriani, D. B. Popovic, X. Yang, W. Chen, X. Zheng, and M. C. Carrozza, "Controlling Hand-Assistive Devices: Utilizing Electrooculography as a Substitute for Vision", *IEEE Robotics and Automation Magazine*, vol. 20, no. 1, pp. 40-52, 2013. DOI: 10.1109/MRA.2012.2229949 3.573
- J10 Antfolk, M. D'Alonzo, **M. Controzzi**, G. Lundborg, B. Rosén, F. Sebelius, C. Cipriani, "Artificial redirection of sensation from prosthetic fingers to the phantom hand map on transradial

- amputees: vibrotactile versus mechanotactile sensory feedback discrimination", *IEEE Trans. on Neural Systems and Rehabilitation Engineering*, vol. 21, no. 1, pp. 112-120, 2013. DOI: 10.1109/TNSRE.2012.2217989
- J9 L. Pape, C. M. Oddo, **M. Controzzi**, C. Cipriani, A. Förster, M. C. Carrozza, J. Schmidhuber, "Learning tactile skills through curious exploration", *Frontiers in Neurobotics*, vol. 6, no. 6, 2012. DOI: 10.3389/fnbot.2012.00006 2.606
- J8 C. Cipriani, **M. Controzzi**, G. Kanitz, R. Sassu, "The effects of weight and inertia of the prosthesis on the Sensitivity of EMG pattern recognition in relax state", *Journal of Prosthetics & Orthotics*, Vol. 24, no. 2, pp. 86-92, 2012. DOI: 10.1097/JPO.0b013e3182524cce -
- J7 C. M. Oddo, **M. Controzzi**, L. Beccai, C. Cipriani, M. C. Carrozza. "Roughness Tactile Encoding in Active Touch with an Artificial Actuated Finger", *IEEE Transactions on Robotics*, vol. 27, no. 3, pp. 522-533, 2011. DOI: 10.1109/TRO.2011.2116930 4.269
- J6 C. Cipriani, **M. Controzzi**, M. C. Carrozza. "The SmartHand Transradial Prosthesis", *Journal of NeuroEngineering and Rehabilitation*, vol. 8, no.29, 2011. DOI: 10.1109/TNSRE.2011.2108667 3.865
- J5 C. Cipriani, C. Antfolk, **M. Controzzi**, G. Lundborg, B. Rosén, M. C. Carrozza, F. Sebelius, "Online Myoelectric Control of a Dexterous Hand Prosthesis by Transradial Amputees", *IEEE Trans. on Neural Systems and Rehabilitation Engineering*, vol. 19, no. 3, pp. 260-270, 2011. DOI: 10.5405/jmbe.767 3.972
- J4 S. Dosen, C. Cipriani, M. Kostic, **M. Controzzi**, M. C. Carrozza, D. B. Popovic. "Cognitive Vision System and EMG-Based Control of a Dexterous Prosthetic Hand", *Journal of NeuroEngineering and Rehabilitation*, vol. 7, no. 42, 2010. DOI: 10.1186/1743-0003-7-42 3.865
- J3 **M. Controzzi**, C. Cipriani, M. C. Carrozza, "Miniaturized non-back-drivable mechanism for robotic applications", *Mechanism and Machine Theory*, Elsevier, vol. 45, no. 10, pp. 1395-1406, 2010. DOI: 10.1016/j.mechmachtheory.2010.05.008 2.796
- J2 C. Cipriani, **M. Controzzi**, M. C. Carrozza, "Objectives, criteria and methods for the design of the SmartHand transradial prosthesis", *ROBOTICA*, Robotica Cambridge University Press, vol. 28, no. 6, pp. 919-927, 2010. DOI: 10.1017/S0263574709990750 1.177
- J1 C. Antfolk, C. Cipriani, **M. Controzzi**, M. C. Carrozza, G. Lundborg, B. Rosén, F. Sebelius, "Using EMG for Real-time Prediction of Joint Angles to Control a Prosthetic Hand Equipped with a Sensory Feedback System", *Journal of Medical and Biological Engineering*, vol. 30, no. 6, pp. 399-406, 2010. DOI: 10.5405/jmbe.767 1.211

Conference papers indexed on ISI or Scopus:

No.	Publication details
C18	M. Controzzi , F. Clemente, D. Barone, L. Bassi Luciani, N. Pierotti, M. Bacchereti, C. Cipriani, Progress towards the development of the DeTOP hand prosthesis: a sensorized transradial prosthesis for clinical use, International Conference on NeuroRehabilitation, ICNR2018, Italy. Proceedings published within the book Biosystems and Biorobotics edited by Springer. <i>ICNR 2018 Best Poster Award</i> . DOI: 10.1007/978-3-030-01845-0_20
C17	J. Brand, I. Imbinto, M. Bacchereti, C. Cipriani, M. Controzzi , Improvements on the design of the S-Finger prosthetic digit, International Conference on NeuroRehabilitation, ICNR2018, Italy. Proceedings published within the book Biosystems and Biorobotics edited by Springer. DOI: 10.1007/978-3-030-01845-0_24
C16	T. A. Lenssen, L. Cappello, D. H. Plettenburg, C. Cipriani, M. Controzzi , Principal orientations of the wrist during ADLs: towards the design of a synergetic wrist prosthesis, International Conference on NeuroRehabilitation, ICNR2018, Italy. Proceedings within the book Biosystems and Biorobotics edited by Springer. DOI: 10.1007/978-3-030-01845-0_68
C15	I. Imbinto, M. Controzzi , C. Cipriani, Method for optimal digit alignment for the fitting of partial hand powered prostheses: a preliminary study, International Conference on NeuroRehabilitation, ICNR2018, Italy. Proceedings published within the book Biosystems and Biorobotics edited by Springer. DOI: 10.1007/978-3-030-01845-0_26
C14	H. Singh, M. Controzzi , C. Cipriani, G. Di Caterina, L. Petropoulakis, J. Soraghan, Online prediction of robot to human handover events using vibrations, in 26 th European Signal Processing Conference, EUSIPCO 2018, Rome, Italy, September 2018. DOI: 10.23919/EUSIPCO.2018.8553474
C13	D. Barone, M. D'Alonzo, M. Controzzi , F. Clemente, C. Cipriani, A Cosmetic Prosthetic Digit with Bioinspired Embedded Touch Feedback, 2017 IEEE-RAS-EMBS International Conference on Rehabilitation Robotics ICORR,

- London, UK, July 2017. Article number 8009402, Pages 1136-1141. DOI: 10.1109/ICORR.2017.8009402 *Third place at the RehabWeek 2017 Best Poster Competition (>500 posters participating)*
- C12 F. Montagnani, G. Smit, **M. Controzzi**, C. Cipriani, D. H. Plettenburg, A passive wrist with switchable stiffness for a body-powered hydraulically actuated hand prosthesis, 2017 IEEE-RAS-EMBS International Conference on Rehabilitation Robotics ICORR, London, UK, July 2017. Article number 8009412, Pages 1197-1202. DOI: 10.1109/ICORR.2017.8009412
- C11 N. Malesevic, D. Markovic, G. Kanitz, **M. Controzzi**, C. Cipriani and C. Antfolk, Decoding of individual finger movements from surface EMG signals using Vector Autoregressive Hierarchical Hidden Markov Models (VARHMM), 2017 IEEE-RAS-EMBS International Conference on Rehabilitation Robotics ICORR, London, UK, July 2017. Article number 8009463, Pages 1518-1523. DOI: 10.1109/ICORR.2017.8009463
- C10 M. D'Alonzo, A. Alsaqqa, **M. Controzzi**, C. Cipriani, Evoking referred sensations of missing digits by electro-tactile stimulation: preliminary tests, International Conference on NeuroRehabilitation, ICNR2016, Spain. Proceedings published within the book Biosystems and Biorobotics, Volume 15, 2017, Pages 607-611 DOI: 10.1007/978-3-319-46669-9_100
- C9 S. Tarantino, F. Clemente, D. Barone, **M. Controzzi**, C. Cipriani, A MyoKinetic HMI for the Control of Hand Prostheses: a Feasibility Study, International Conference on NeuroRehabilitation, ICNR2016, Spain. Proceedings published within the book Biosystems and Biorobotics, Volume 15, 2017, Pages 575-579. DOI: 10.1007/978-3-319-46669-9_95
- C8 F. Montagnani, **M. Controzzi**, C. Cipriani, Exploiting arm posture synergies in activities of daily living to control the wrist rotation in upper limb prostheses: a feasibility study, 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society of the IEEE Engineering in Medicine and Biology Society (EMBC'15), Milano Conference Center, Milano, Italy on August 25-29, 2015. Volume 2015-November, 4 November 2015, Article number 7318892, Pages 2462-2465. DOI: 10.1109/EMBC.2015.7318892
- C7 F. Montagnani, **M. Controzzi**, C. Cipriani, Preliminary design and development of a two degrees of freedom passive compliant prosthetic wrist with switchable stiffness, Robotics and Biomimetics (ROBIO), 2013 IEEE International Conference on, Shenzhen, China, December 12-14, 2013. 2013, Article number 6739477, Pages 310-315. DOI: 10.1109/ROBIO.2013.6739477
- C6 **M. Controzzi**, Y. Hao, Q. Zhang, C. Cipriani, S. Zhang, W. Chen, M. C. Carrozza and X. Zheng. Decoding Grasp Types from the Monkey Motor Cortex and On-line Control of a Dexterous Artificial Hand. Proceedings of the International Conference on NeuroRehabilitation, ICNR2012, Toledo, Spain, pp. 67-71; Published by Springer. Proceedings published within the book Biosystems and Biorobotics Volume 1, 2013, Pages 67-71. DOI: 10.1007/978-3-642-34546-3_11 *Mention at the Best Conference Student Paper Award.*
- C5 C. Cipriani, R. Sassu, **M. Controzzi**, M. C. Carrozza, Influence of the Weight Actions of the Hand Prosthesis on the Performance of Pattern Recognition Based Myoelectric Control: Preliminary Study, 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society in Merging Medical Humanism and Technology, EMBC 2011, Boston, MA, Aug. 30-Sept. 3, 2011. Article number 6090468, Pages 1620-1623. DOI: 10.1109/IEMBS.2011.6090468
- C4 **M. Controzzi**, C. Cipriani, B. Jehenne, M. Donati, M.C. Carrozza. Bio-Inspired Mechanical Design of a Tendon-Driven Dexterous Prosthetic Hand, 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society in Merging Medical Humanism and Technology, EMBC 2010. September 2010 Buenos Aires, Argentina. Article number 5627148, Pages 499-502. DOI: 10.1109/IEMBS.2010.5627148
- C3 C. Cipriani, **M. Controzzi**, M.C. Carrozza. Progress Towards the Development of the SmartHand Transradial Prosthesis, 2009 IEEE 11th International Conference on Rehabilitation Robotics, 23-26 June 2009, Kyoto International Conference Center, Japan. Article number 5209620, Pages 682-687. DOI: 10.1109/ICORR.2009.5209620
- C2 **M. Controzzi**, C. Cipriani, M.C. Carrozza. Mechatronic Design of a transradial cybernetic hand, IEEE/RSJ IROS-2008 International Conference on Intelligent Robots and Systems September, 22-26, 2008, Nice, France. Article number 4650987, Pages 576-581. DOI: 10.1109/IROS.2008.4650987
- C1 C. Cipriani, **M. Controzzi**, F. Vecchi, M.C. Carrozza. Embedded Hardware Architecture Based on Microcontrollers for the Action and Perception of a Transradial Prosthesis. IEEE/RAS-EMBS International Conferences on Biomedical Robotics and Biomechatronics, 19-22 October 2008 Scottsdale. Arizona, USA. Article number 4762782, Pages 848-853. DOI: 10.1109/BIOROB.2008.4762782

Conference papers not indexed (neither on ISI, nor on Scopus):

No.	Publication details
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- CN20 S. Tarantino, F. Clemente, D. Barone, **M. Controzzi**, C. Cipriani, Implanted Magnets Tracking as a Novel Method for Prosthetic Hands Control, MEC Symposium 2017, New Brunswick, Canada, August 2017.
- CN19 **M. Controzzi**, F. Clemente, N. Pierotti, M. Bacchereti, C. Cipriani, Evaluation of the Hand Function Transporting Fragile Objects: The Virtual Eggs Test. MEC Symposium 2017, New Brunswick, Canada, August 2017.
- CN18 F. Montagnani, **M. Controzzi**, C. Cipriani, A Novel Passive Compliant Wrist with Automatic Switchable Stiffness, MEC Symposium 2017, New Brunswick, Canada, August 2017.
- CN17 H. Singh, **M. Controzzi**, T. Cecchini, C. Cipriani, Prediction of Robot to Human Handover Events Using Vibrations, 25th IEEE International Symposium on Robot and Human Interactive Communication ROMAN 2016, USA.
- CN16 A. Remazeilles, M. Prada, **M. Controzzi**, C. Cipriani, J. Canseco, D. Cabaneros, A. M. Wing, E. Gatti, M. Burgin, G. Pegman, Towards Human-Robot object exchange: lessons learned, Workshop on Human-Robot Hand-Over Workshop at the RSS 2015 - July 17, 2015 - Rome, Italy.
- CN15 **M. Controzzi**, M. Rank, I Strazzulla, C Peccia, AM Wing, C Cipriani, Human-inspired release controller for natural robot to human handover tasks, workshop on Behaviour Coordination between Animals, Humans, and Robots, within the Human-Robot Interaction international Conference, March 2-5, 2015.
- CN14 **M. Controzzi**, M. Rank, I. Strazzulla, C. Peccia, A.M. Wing, C. Cipriani, Improving the fluency of the robot to human handovers using a human inspired feed-forward release controller, abstract presented at the 7th International Workshop on Human-Friendly Robotics, Pisa, Italy, October 23rd-24th, 2014.
- CN13 D. Pianu, G. Micotti, A. R. Salgarella, D. Camboni, **M. Controzzi**, C. Cipriani, C. M. Oddo, S. Rosa, M. Indaco, Real-Time Single Camera Hand Gesture Recognition System for Remote Deaf-Blind Communication, Augmented and Virtual Reality: First International Conference, AVR 2014, Lecce, Italy, September 17-20, 2014.
- CN12 **M. Controzzi**, F. Clemente, S. Dragoni, C. Cipriani, A dexterous hand prosthesis based on a geneva drive: preliminary design, MEC Symposium 2014, New Brunswick, Canada, August 18-22, 2014.
- CN11 F. Montagnani, **M. Controzzi**, C. Cipriani, A Comparison Between Different Configurations Of Hand/wrist Prostheses, MEC Symposium 2014, New Brunswick, Canada, August 18-22, 2014.
- CN10 F. Montagnani, **M. Controzzi**, C. Cipriani M.C. Carrozza, Design of a rotary non backdrivable mechanism with intrinsic compliance, Third national conference in bioengineering, GNB 2012, Rome, Italy, June 26-29, 2012.
- CN9 M. D'Alonzo, **M. Controzzi**, C. Peccia, C. Cipriani, M.C. Carrozza, Design of biomimetic artificial fingertips and analysis of stiffness at the contact, Third national conference in bioengineering, GNB 2012, Rome, Italy, June 26-29, 2012.
- CN8 **M. Controzzi**, C. Cipriani, M. D'Alonzo, C. Peccia and M. C. Carrozza, Design of an Anthropomorphic Robotic Hand with Intrinsic Actuation and Compliant Fingers, Third national conference in bioengineering, GNB 2012, Rome, Italy, June 26-29, 2012.
- CN7 C. Cipriani, R. Sassu, **M. Controzzi**, G. Kanitz, M. C. Carrozza, Preliminary study on the influence of inertia and weight of the prosthesis on the EMG pattern recognition robustness, In Proc. of the Myoelectric Control/Powered Prosthetics Symposium, Fredericton, NB, Canada, Aug. 14-19, 2011.
- CN6 L. Beccai, C. M. Oddo, **M. Controzzi**, C. Cipriani, M. C. Carrozza, Roughness Discrimination of Surfaces in Artificial Active Touch, Royal Society Theo Murphy meeting on active touch sensing, Kavli Royal Society Centre, London, UK, Jan. 31 - Feb. 2, 2011.
- CN5 L. Beccai, C. M. Oddo, C. Cipriani, **M. Controzzi**, F. Mattioli, M. C. Carrozza, A bioinspired tactile fingertip for texture discrimination, EuroHaptics 2010 satellite workshop, Amsterdam, The Netherlands, July 7, 2010.
- CN4 C. Cipriani, **M. Controzzi**, F. Vecchi, M. C. Carrozza, C. Carboni, D. Loi, M. Barbaro, L. Raffo, G. Cavallo, L. Zollo, E. Guglielmelli, SAFEHAND - Design and Experimental Analysis of a Neuro-Controlled Prosthetic Hand, Second national conference in bioengineering, GNB 2010, Turin, Italy, July 8-10, 2010.
- CN3 C. Antfolk, C. Cipriani, **M. Controzzi**, M. C. Carrozza, F. Sebelius. Integration of a EMG-Control System for a Prosthetic Hand - Preliminary Observations. ISSNIP Biosignals and Biorobotics Conference 2010, 4-6 January 2010 in Vitoria, Brazil.
- CN2 C. Cipriani, A. Persichetti, **M. Controzzi**, G. Stellin, M. C. Carrozza, Robust sensory system for anthropomorphic fingers in prosthetic hands, First National conference in bioengineering, GNB 2008, Pisa, Italy, 3-5 July, 2008.
- CN1 **M. Controzzi**, C. Cipriani, M. C. Carrozza, Design of a transradial cybernetic hand, First National conference in bioengineering, GNB 2008, Pisa, Italy, 3-5 July, 2008.

Book chapters:

No.	Publication details
B3	G. Airo Farulla, L. Orlando Russo, C. Pintor, D. Pianu, G. Micotti, A. Salgarella, D. Camboni, M. Controzzi , C. Cipriani, C. Oddo, S. Rosa, M. Indaco, Real-Time Single Camera Hand Gesture Recognition System for Remote Deaf-Blind Communication, In: Lucio Tommaso De Paolis Antonio Mongelli. Augmented and Virtual Reality. vol. 8853, p. 35-52, 2014, Heidelberg:Springer International Publishing, ISBN: 978-3-319-13968-5, doi: 10.1007/978-3-319-13969-2
B2	M. Bortole, M. Controzzi , I. Pisotta, A. Ubeda, BMIs for Motor Rehabilitation: key concepts and challenges, within the book Neurorehabilitation Emerging Therapies, Springer Berlin Heidelberg, vol. 4, pp. 235-247, 2014, NEW YORK:Springer Berlin Heidelberg, ISBN: 978-3-642-38555-1, doi: 10.1007/978-3-642-38556-8 12
B1	M. Controzzi , C. Cipriani, M.C. Carrozza, Design of artificial hands: a review, in The Human Hand: A Source of Inspiration for Robotic Hands, Springer Tracts in Advanced Robotics (STAR) series, Balasubramanian, R. and Santos, V.J., Eds., Springer, Heidelberg, vol. 95, pp. 219-246, 2014, ISBN: 9783319030166, ISSN: 1610-7438

Patents:

Date	Patent details
19/10/2018	Italian patent pending no. 102018000009639, 2018. <i>Inventors</i> : "M. Controzzi, A. Lupi, D. Bartoli, A. Ghionzoli, P. Dario, M. Bacchereti, F. Montagnani, T. Cecchini, M. Roggi Massimo, M. Barbieri, M. Minutillo. <i>Title</i> : "Metodo per la verifica della capacità frenante di un veicolo e sistema che attua tale metodo".
10/12/2015	Patent WO2017098472 (A1), <i>Inventors</i> : "L. Bassi Luciani, M. Controzzi, F. Montagnani, C. Cipriani", <i>Title</i> : "Mechanical joint with selectable transmission mode".
10/12/2015	Italian patent pending no. 102015000081958. 2015. <i>Inventors</i> : "L. Bassi Luciani, M. Controzzi, F. Montagnani, C. Cipriani", <i>Title</i> : "Giunto meccanico a modalità di trasmissione selezionabile".
10/12/2015	Patent WO2017098471 (A1), <i>Inventors</i> : "L. Bassi Luciani, M. Controzzi, F. Montagnani, C. Cipriani", <i>Title</i> : "Mechanical joint with variable impedance".
10/12/2015	Italian patent pending no. 102015000081936. 2015. <i>Inventors</i> : "L. Bassi Luciani, M. Controzzi, F. Montagnani, C. Cipriani", <i>Title</i> : "Giunto meccanico a cedevolezza variabile".
28/11/2014	Italian patent pending no. TO2014A000982, <i>Inventors</i> : "P. Prinetto, I. Marco, G. Airó Farulla, C. Pintor, L. Russo, A. Salgarella, G. Micotti, C. Oddo, C. Cipriani, M. Controzzi", <i>Title</i> : "Sistema per la comunicazione di simboli appartenenti ad una lingua dei segni tattile, e relativo metodo".
20/04/2012	European patent no. 13164114.4, <i>Inventors</i> : "M. Controzzi, F. Clemente, C. Cipriani, M.C. Carrozza", <i>Title</i> : "Self-Contained Multifunctional Hand Prosthesis".
20/04/2012	Italian patent no. PI2012A000049, 2012. <i>Inventors</i> : "M. Controzzi, F. Clemente, C. Cipriani, M.C. Carrozza", <i>Title</i> : "Protesi di mano auto contenuta".
03/08/2010	Italian national patent no. LU2010A000008, <i>Inventors</i> : "C. Cipriani, M. Controzzi, M.C. Carrozza", <i>Title</i> : "Interface device between an individual and a machine and interfacing method thereof".

Editorial activity

Period (start-end)	Description
06/2019 – to date	Guest Associate Editor Journal of NeuroEngineering and Rehabilitation (ISI) – IF 3.865.
01/2015 - 03/2017	Associate Editor Applied Bionics and Biomechanics Journal, Hindawi Publishing Corporation (ISI) – IF 1.769.

Invited presentations and organization of scientific meetings

Period (start-end)	Description
16-20/10/2018	Workshop & Special session chair and co-program chair for the 5 th International Conference on NeuroRehabilitation (ICNR2018) and for the 3 rd International Symposium on Wearable Robotics (WeRob2018) which will take place in Pisa (Italy) from October 16 to 20, 2018. http://www.icnr2018.org/ and http://www.werob2018.org/
5/10/2018	Organizer of the international workshop "Human-Robot cooperation and collaboration in manipulation: advancements and challenges" at the IEEE/RSJ

- International Conference on Intelligent Robots and Systems, IROS 2018, Madrid, (SP).
[Web-site](#)
- 1/10/2018 Invited speaker at the Workshop on Hands in the real world: connecting end-effector design, sensitivity and behaviour within the IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS 2018, Madrid, (SP). Title of the talk: Design of a smart artificial hand with tactile sensors and shared control.
- 26-29/08/2018 Co-chair of the session "Biomechanics and Bio-inspired Systems 2" at the 7th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics, BioRob 2018, Twente (NL).
- 26/08/2018 Invited speaker at the Workshop on Bionic Prosthetics Controlled by Neural Interface within the 7th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics, BioRob 2018, Twente (NL). Title of the talk: Design of neuro-controlled bidirectional artificial hands.
- 15/11/2017 Invited speaker at the Workshop – Towards robust grasping and manipulation skills for humanoids within the 2017 IEEE-RAS International Conference on Humanoid Robots. November 15, 2017. Birmingham (UK). Title of the talk: Exploiting artificial hands to efficiently cooperate with humans.
- 15/09/2017 Invited speaker at the International Scientific Festival organized by the Italian Institute of Culture and the Italian Embassy in Vilnius, Vilnius, Lithuania. September 15, 2017. Title of the talk: *Recenti progressi verso la sostituzione funzionale e sensoriale della mano (Recent progress towards the functional and sensory replacement of the hand)*.
- 31/01/2017 Invited seminar at the University of Strathclyde held in January 31, 2017, Glasgow, UK. Title of the talk: Design and control of artificial hands: ongoing research.
- 19/05/2016 Invited speaker at the "Innovazione e nuove tecnologie in ambito protesico e riabilitativo per il reinserimento sociale della persona con disabilità: Stato dell'arte e sviluppi futuri". EXPOSANITa 2016 held in May 19, 2016, Bologna, Italia. Title of the talk: PPR3 Sviluppo di un sistema protesico nelle amputazioni digitali della mano'.
- 25/09/2015 Invited speaker at the Frontiers in Interdisciplinary Neuroscience and Technology 2015 (FINT-2015) held in September 24-25, 2015, Hangzhou, Zhejiang, China. Talk title: "Development of advanced artificial devices aimed at improving the lives of people with disabilities"
- 17/07/2015 Panelist for the discussion panel "Algorithmic issues around hand-over" within the 2015 Robotics: Science and Systems Conference - Workshop on Human-Robot Hand-Over, July 13-17 2015, Rome.
- 17/07/2015 Invited speaker at the Workshop on Human-Robot Hand-Over Workshop at the RSS 2015 held during July 17, 2015 at Rome, Italy. Talk title: "Human-inspired release controller for natural robot to human handover tasks."
- 18/11/2014 Invited speaker at the Workshop – Anthropomorphic robotic hands: design and control within the 2014 IEEE-RAS International Conference on Humanoid Robots. November 18-20th 2014. Madrid. Spain. Title of the talk: Ongoing research on the design and control of artificial hands for functional substitution.
- 21/03/2013 Invited speaker at the euRobotics Forum 2013, Lyon, France, 19-20-21 March, 2013. Title of the talk: Prensilia – Versatile hands for biorobotics.
- 24/09/2012 Invited speaker at the International Scientific Week organized by the Warsaw University in collaboration with the Italian Institute of Culture and the Italian Embassy in Warsaw, Warsaw, Poland. September 2012. Title of the talk: Neuro-prosthesis and artificial hands: results and on-going research.
- 16/05/2012 Invited speaker at the 3rd National Congress of the Italian Society of Tele-medicine and e-Healthcare (SIT Società Italiana Telemedicina e Sanità Elettronica, in the framework of the EXPOSANITÁ 2012, May 16-17-18 2012, Bologna, Italy. Title of the talk: *Recenti progressi in neuro protesica e nello sviluppo di mani artificiali.*

Teaching and supervision activity

Teaching activity:

Academic year	Description
<i>Holder of the course/module</i>	
2018/2019	Holder of the course "Bioingegneria della riabilitazione (<i>Rehabilitation Engineering</i>)" (tot: 60 h – 6 CFU), M.Sc. in Biomedical Engineering, University of Pisa. Syllabus (in Italian).
2017/2018	Holder of the course "Bioingegneria della riabilitazione (<i>Rehabilitation Engineering</i>)" (tot: 60 h – 6 CFU), M.Sc. in Biomedical Engineering, University of Pisa. Syllabus (in Italian). Evaluation report .
2017/2018	Holder of the course "Modellazione CAD (<i>Computer Aided Design</i>)" (tot: 20 h – 2 CFU), Allievi ordinari, Scuola Superiore Sant'Anna. Syllabus (in Italian).
2016/2017	Holder of the course "Bioingegneria della riabilitazione (<i>Rehabilitation Engineering</i>)" (tot: 60 h – 6 CFU), M.Sc. in Biomedical Engineering, University of Pisa. Syllabus (in Italian). Evaluation report .
2016/2017	Holder of the course "Modellazione CAD (<i>Computer Aided Design</i>)" (tot: 20 h – 2 CFU), Allievi ordinari, Scuola Superiore Sant'Anna. Syllabus (in Italian).
2015/2016	Holder of the course "Bioingegneria della riabilitazione (<i>Rehabilitation Engineering</i>)" (tot: 60 h – 6 CFU), M.Sc. in Biomedical Engineering, University of Pisa. Syllabus (in Italian). Evaluation report .
2015/2016	Holder of the course "Analysis and Design of Mechanical Components" (tot: 30 h – 3 CFU), Allievi perfezionandi (<i>PhD students</i>), Scuola Superiore Sant'Anna. Syllabus (in English).
<i>Support to the teaching activities</i>	
2017/2018	Support to teaching activities (tot: 4 h + exams) for the course "Artificial Limbs" held by Prof. Christian Cipriani, M.Sc. in Bionics Engineering, University of Pisa/Scuola Superiore Sant'Anna.
2016/2017	Support to teaching activities (4 h) and tutoring of students (regular monthly meetings, 10 students) for the Bachelor Degree in Product Design, European Institute of Design –IED– Turin.
2016/2017	Support to teaching activities (tot: 4 h + exams) for the course "Artificial Limbs" held by Prof. Christian Cipriani, M.Sc. in Bionics Engineering, University of Pisa/Scuola Superiore Sant'Anna.
2015/2016	Support to teaching activities within the Master: Digital Life & Smart Living (SMART) (tot: 4 h), "Design of Mechanical Devices", Scuola Superiore Sant'Anna.

Supervision activity:

Supervision of PhD students

1. Main supervisor of **Cini Francesca**, Ph.D. student in Biorobotics at Scuola Superiore Sant'Anna Title of the research program: "Human inspired algorithms for a natural human-robot cooperation". Research activity started in November 2017.
2. Tutor of **Singh Harmeet**, Ph.D. student in Biorobotics at Scuola Superiore Sant'Anna Title of the research program: "Bioinspired control algorithms for improving human robot interaction". Research activity started in November 2015. Main supervisor: Prof. Christian Cipriani.
3. Tutor of **Imbinto Ilario**, Ph.D. student in Biorobotics at Scuola Superiore Sant'Anna Title of the research program: "Synergetic Partial Hand Prostheses: Design and Fitting". Research activity started in November 2014. Main supervisor: Prof. Christian Cipriani.
4. Tutor of **Tarantino Sergio**, Ph.D. student in Biorobotics at Scuola Superiore Sant'Anna Title of the research program: "Low invasive control interfaces for hand prosthesis". Research activity started in November 2014. Main supervisor: Prof. Christian Cipriani.
5. Tutor of **Clemente Francesco**, Ph.D. student in Biorobotics at Scuola Superiore Sant'Anna Title of the research program: "Sensory feedback strategies and systems for restoring control in amputees". Research activity started

in November 2012. Main supervisor: Prof. Christian Cipriani. *Winner (ex aequo) of the prize "MASSIMO GRATTAROLA" – GNB 2017.*

6. Tutor of **Peccia Carlo**, Ph.D. student in Biorobotics at Scuola Superiore Sant'Anna Title of the research program: "Bioinspired Fingertips for Robotics and Prosthetics". Research activity started in November 2012. Main supervisor: Prof. Christian Cipriani.
7. Tutor of **Kanitz Gunter Robert**, Ph.D. student in Biorobotics at Scuola Superiore Sant'Anna Title of the research program: "Innovative control of multi grasp prostheses based on the transient electromyographic signal". Research activity started in November 2012. Main supervisor: Prof. Christian Cipriani.
8. Tutor of **Montagnani Federico**, Ph.D. student in Biorobotics at Scuola Superiore Sant'Anna Title of the research program: "On the links between wrist movements and thumb opposition, essential features for upper limb prosthetics". Research activity started in November 2012. Main supervisor: Prof. Christian Cipriani.

Supervision of M.Sc. and B.Sc. students

1. **Cirelli Sara** M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2018-2019. Thesis title: Design and Development of an Adaptive Finger Mechanism for Application in Body Powered Prostheses and Orthoses. Advisors: M. Controzzi, D. Plettemburg.
2. **Martinucci Pasquale** M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2018-2019. Thesis title: Design and Development of an Adaptive Finger Mechanism for Application in Body Powered Prostheses and Orthoses. Advisors: M. Controzzi, D. Plettemburg.
3. **Sulis Simona** M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2018-2019. Thesis title: Benefici della tracciabilità nel processo dell'anatomia patologica: valutazione delle performance di un sistema guidato di tracciabilità rispetto al processo tradizionale. Advisors: M. Controzzi, A. Zucca.
4. **Forte Sara** M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2018-2019. Thesis title: An assessment of automatic segmentation of the knee joint based on machine learning. Advisors: M. Controzzi, F. Rodriguez y Baena.
5. **Vanteddu Punith Reddy**, M.Sc. Thesis in Bionics Engineering (University of Pisa/Scuola Superiore Sant'Anna), a.y. 2018-2019. Thesis title: Design of a Robotic thumb for prosthetic application. Advisors: C. Cipriani, M. Controzzi.
6. **Ianniciello Valerio**, M.Sc. Thesis in Bionics Engineering (University of Pisa/Scuola Superiore Sant'Anna), a.y. 2018-2019. Thesis title: Myokinetic embedded controller for prosthetic limbs. Advisors: C. Cipriani, F. Clemente, M. Controzzi.
7. **Pipitone Francesco** M.Sc. Thesis in Ingegneria Meccanica (Politecnico di Torino), a.y. 2018-2019. Thesis title: Progettazione e sviluppo di un'articolazione di gomito a rigidità selezionabile. Advisors: M. Controzzi.
8. **Millieri Chiara** M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2017-2018. Thesis title: "Progettazione e sviluppo di un by-pass cinematico per il test di protesi di mano con soggetti sani". Advisors: M. Controzzi, F. Clemente.
9. **Ferrara Giada** M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2017-2018. Thesis title: "Progettazione e sviluppo di un articolazione di polso a rigidità selezionabile". Advisors: M. Controzzi, L. Cappello.
10. **Franceschi Alessia** M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2017-2018. Thesis title: "Progettazione e sviluppo di un articolazione adattativa per protesi di mano". Advisors: M. Controzzi, L. Bassi Luciani.
11. **Lenssen Tomas**, M.Sc. Thesis in Biomedical Engineering (Delft University of Technology), a.y. 2017-2018, Thesis title: "Design and development of a synergetic based prosthetic wrist" that defended on August 2018. Advisors: M. Controzzi, D. Plettemburg.
12. **Boni Irene**, M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2017-2018. Thesis title: "Enabling natural forearm rotation by a novel attachment device for transradial bone-anchored prostheses". Advisors: M. Controzzi, M. Ortiz Catalan.
13. **Garretto Edwidge**, M.Sc. Thesis in Ingegneria Biomedica (University of Pisa), a.y. 2017-2018. Thesis title: "Progettazione e sviluppo di un articolazione di gomito libera-bloccabile". Advisors: M. Controzzi, L. Bassi Luciani.
14. **Brand Jessica**, M.Sc. Thesis in Biomedical Engineering (Delft University of Technology), a.y. 2016-2017, Thesis title: "Design and Development of a Switchable Joint for Rehabilitation Purpose with the Focus on an Elbow Joint Orthosis", Advisors: M. Controzzi, D. Plettemburg.
15. **Cini Francesca**, M.Sc. Thesis in Biomedical Engineering (University of Pisa) a.y. 2011-2012. Thesis title: "Sviluppo di un algoritmo di controllo bio-ispirato per lo scambio di oggetti in task collaborativi uomo-robot", Advisors: M. Controzzi, C. Cipriani. *Winner of the Prize "Luigi Divieti e Marisa Maranzana", Politecnico di Milano – GNB2017.*

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16. **Pierotti Neri**, M.Sc. Thesis in Biomedical Engineering (University of Pisa) a.y. 2011-2012. Thesis title: "Instrumented VIRTUAL EGG: oggetto sensorizzato per test di valutazione funzionale della mano", Advisors: M. Controzzi, C. Cipriani.
 17. **Stallone Giandonato**, M.Sc. Thesis in Biomedical Engineering (Politecnico di Torino) a.y. 2012-2013. Thesis title: "Progettazione e Sviluppo di Protesi Attiva di Mano (Design and development of an active prosthetic hand)", Advisors: C. Cipriani, M. Controzzi.
 18. **Strazzulla Ilaria**, M.Sc. Thesis in Automation Engineering (University of Pisa) a.y. 2012-2013. Thesis title: "Controllo di una mano robotica sotto-azionata e irreversibile (Control of an underactuated, non-backdrivable robotic hand)", Advisors: L. Pollini, C. Cipriani. Tutor: M. Controzzi.
 19. **Clemente Francesco**, M.Sc. Thesis in Biomedical Engineering (University of Pisa) a.y. 2011-2012. Thesis title: "Progettazione di una protesi di mano trans-radiale (Design of a trans-radial hand prosthesis)", Advisors: M. C. Carrozza, M. Controzzi.
 20. **Peccia Carlo**, M.Sc. Thesis in Biomedical Engineering (University of Pisa) a.y. 2011-2012. Thesis title: "Progettazione di dita complianti bio-ispirate (Design of bio-inspired compliant fingertips)", Advisors: M. C. Carrozza, M. Controzzi.
 21. **Gemma Luca**, B.Sc. Thesis in Biomedical Engineering (University of Pisa) a.y. 2011-2012. Thesis title: "Controllo di protesi di mano con Sistema stereo video basato su le *affordances* umane", Advisors: M. C. Carrozza, P. Dario. Tutor: M. Controzzi.
 22. **Donati Marco**, M.Sc. Thesis in Biomedical Engineering (University of Pisa) a.y. 2009-2010. Thesis title: "Studio di un sistema di attuazione per una protesi di mano destra ad elevati gradi di libertà (Investigation of an actuation system for a prosthetic hand with multiple degrees of freedom)", Advisors: M. C. Carrozza, P. Dario, C. Cipriani. Tutor: M. Controzzi.

23.

Supervision of internships

1. **Aysha Khalid Alkhazraji**, student in Biomedical Engineering, Khalifa University of Science, Technology and Research (KUSTAR). Design of a sensorized platform for tendon illusion experiment. Supervisors: C. Stefanini, M. Controzzi. Year: 2017 (2 months).
2. **Clara Lefaucheux**, student in Mechatronics Engineering, Ecole d'Ingenieurs ENSIBS- Université Bretagne Sud, Exact constraint design applied to a lead screw actuator, Supervisors: C. Cipriani, M. Controzzi. Year: 2016 (3 months).
3. **Eric Perez Lorea**, student in Biomedical Engineering (Delft University of Technology), Design of a lockable wrist articulation. Year: 2016 (3 months).
4. **Kabakian Garen**, student in Biomedical Engineering, École Nationale d'Ingénieurs de Brest – Bretagne, Design of a passive PIP-DIP joint for a prosthetic finger, Year: 2015 (4 months).
5. **Beryl Jehenne**, student in Mechanical Engineering from the University of Technology of Compiègne, Compiègne, France, Design of a robotic wrist. Year: 2010 (6 months).
6. **Mohamed Mounisif**, student in Financial Mathematics from the Ecole Nationale des Ponts et Chaussées, Marne la Vallée, France, Modelling of bowden cable transmission. Year: 2010 (3 months).
7. **Farida Khattout**, student in Mechanical Engineering from SUPMECA, Toulon, France, Design of actuators for robotic hands. Year: 2009 (3 months).

Referee appointments

Journals:

IEEE Transactions on Medical Robotics and Bionics, Science Robotics, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Robotics, IEEE Transactions on Neural Systems and Rehabilitation Engineering, IEEE/ASME Transactions on Mechatronics, Robotics and Autonomous Systems, Journal ASME Mechanisms and Robotics, Journal of Electromyography and Kinesiology, IEEE Access, IEEE Robotics and Automation Magazine, IEEE Transactions on Human-Machine Systems, Medical & Biological Engineering & Computing (MBEC).

Conferences:

IEEE International Conference on Rehabilitation Robotics (ICORR), IEEE International Conference of the Engineering in Medicine and Biology Society in Merging Medical Humanism and Technology (EMBC), IEEE International Conference on

Robotics and Automation (ICRA), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), International Conference on Neuro-Rehabilitation, IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechanics, ACM/IEEE, International Conference on Human Robot Interaction, International Symposium on Robot and Human Interactive Communication (RO-MAN), IEEE Haptics Symposium, Myoelectric Controls Symposium MEC Symposium, Congresso del Gruppo Nazionale di Bioingegneria GNB.

National funding bodies:

External referee for the *Research Foundation – Flanders (FWO)*, Belgium and for *The Royal Society*, UK.

Activity in International and National research projects

Project details	Funding framework	Start/end dates	Funding for the candidate group	Candidate role
Advanced Laboratory Automation Read news	Research and development cooperation founded by INPECO SA	From 01/2019 to 01/2022	3.7 M€	Scientific Responsible
Collaborative robotic cell for ultrasound probes production Read news 1 Read news 2	Research and development cooperation founded by ESAOTE SpA	From 01/2018 to 03/2018	5 k€	Scientific Responsible
PCR 1/1 – MeTAcOs - “Metodologie per il Trattamento delle Amputazioni di arto con Osteointegrazione” <i>Web site not available</i>	INAIL – Italian National Institute for Insurance against Accidents at Work	From 07/2017 to 07/2020	100 k€	Team leader
PPR A/S 1/2 – CECA2020 Protesi funzionale di arto superiore con mano multi-articolata sensorizzata a controllo bio-mimetico non invasivo, Web-site	INAIL – Italian National Institute for Insurance against Accidents at Work	From 04/2017 to 11/2018	900 k€	Co-PI and Project Manager
CENTAURO – Colavoro, efficienza e prevenzione nell’industria dei motoveicoli mediante tecnologie di automazione e robotica <i>Web site not available</i>	Regione Toscana –FAR/FAS 2014	From 04/2016 to 04/2018	560 k€	PI of the unit
DeTOP – Dexterous transradial osseointegrated prosthesis with neural control and sensory feedback Web-site	H2020 – LEIT-ICT-24-2015, GA #687905	From 04/2016 to 04/2020	773 k€	Project Manager of the consortium (~5.2 M€)
MyKI – A Bidirectional MyoKinetic Implanted Interface for Natural Control of Artificial Limbs Web-site	ERC – Starting Grant – PI Prof. Christian Cipriani	From 09/2016 to 08/2021	1.475 M€	Key expert
NEBIAS – NEurocontrolled Bidirectional Artificial upper limb and hand prosthesis) Web-site	FP7 – STREP GA #611687	From 11/2013 to 01/2018	823 k€	Team Leader
PPR3 – Sviluppo di un sistema protesico nelle amputazioni digitali della mano Web-site	INAIL – Italian National Institute for Insurance	From 01/2014 to 01/2017	1.7 M€	Project Manager

	against Accidents at Work				
Closed-looped Control of Dexterous Artificial Hand Using Bi-directional Brain-Machine Interfaces on Non-human Primates <i>Web site not available</i>	Progetti Bilaterali Italia-Cina di Grande Rilevanza, Ministero Affari Esteri – MOIST China	From 01/2013 to 01/2015	21 k€		Project Manager
CogLaboration – Successful Real World Human-Robot Collaboration <u>Web-site</u>	FP7-ICT-7-2.1 GA #287888	From 11/2011 to 10/2014	427 k€		Team Leader
MY-HAND – Myoelectric Hand prosthesis with Afferent Non-invasive feedback Devices <i>Web site not available</i>	MIUR FIRB-2010 – Project # RBFR10VCLD	From 2012 to 2015	320 k€		Key expert
WAY (Wearable interfaces for hAnd function recovery) NANOBIOTOUCH (Nano-resolved multiscale investigations of human tactile sensations and tissue engineered nanobiosensors)	FP7 ICT-7-5.5 #288551	2011-2014	-		Research Engineer
SMARTHAND (The Smart bio-adaptive hand prosthesis)	FP6-NMP-2004-3.4.1.1-1 #33423	2009	-		Research Engineer
DARPA RPP 2009 (Support to the Revolutionizing Prosthetics Program)	DARPA	2006	-		Research Engineer
ROBOTCUB (Robotic open-architecture technology for cognition, understanding and behaviour)	FP6-IST-2002-2.3.2.4 #4370	2006-2008	-		Research Engineer

Languages

Italian – Native.

English – Independent user.

Tutto quanto dichiarato corrisponde a verità ai sensi delle norme in materia di dichiarazioni sostitutive di cui all'art.

46 e ss. del D.P.R. 445/2000;

Pisa, 26/08/2019

Marco Controzzi

Scuola Superiore Sant'Anna, The BioRobotics Institute, Italy

web _____