

## Curriculum Vitae

2020, March the 14th

### Personal Data

Name	<b>CARROZZA, MARIA CHIARA</b>
Citizenship	Italian
Born	16 September 1965 In Pisa, Italy
Fiscal Code	CRRMCH65P56G702V
E-mail	<a href="mailto:m.c.carrozza@santannapisa.it">m.c.carrozza@santannapisa.it</a> <a href="mailto:mccarrozza@dongnocchi.it">mccarrozza@dongnocchi.it</a>

### Education

- PhD in Engineering (1994) Scuola Superiore Sant'Anna, Pisa, Italy
- Master of Science (Laurea) in Physics (1990) University of Pisa, Italy

### Positions and Membership

- Full Professor of Industrial Bioengineering (ING-IND/34), Scuola Superiore Sant'Anna, Pisa, since 2006
- Scientific Director Fondazione Don Gnocchi Onlus, a network of research hospitals dedicated to translational research in the area of Rehabilitation Medicine (IRCCS recognized by the Italian Ministry of Health)
- Scientific Coordinator of the NeuroRobotics Area at The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy
- Member of the Board of Directors of Piaggio SpA (since 2015)
- President of the National Group of Bioengineering (Gruppo Nazionale di Bioingegneria) since 2016
- Senior Member of the IEEE, member of the IEEE Engineering in Medicine and Biology (EMBS) and of the Robotics and Automation (RAS) societies

## Previous Positions

- Minister of Education, University and Research in the Italian Government (Letta), Italy, from April 28, 2013, to February 21, 2014
- Member of the Italian Chamber of Deputies (from March 12, 2013), Foreign and European Affairs Committee, Italy
- Rector of Scuola Superiore Sant'Anna, Pisa, Italy (from November 1, 2007, to February 26, 2013)

## National and International Activities in Scientific and Advisory Boards

- Member of the Working Group of the Scientific Council of the Italian Ministry of Health for *In Silico Medicine* (2019)
- Member of the Evaluation Board for the Cluster Projects in NeuroRobotics for the Deutsche Forschungsgemeinschaft (DFG) (June 2018)
- Member of the Steering Committee of the Quantum Technology FET Flagship, for the European Commission, DG Communication Networks, Content and Technology (dal 2016 al 2017)
- Chair of the Interim Evaluation Panel for the FET Flagship Program for the European Commission, DG Communication Networks, Content and Technology (dal 2015 al 2017)
- Member of the Task Force on Artificial Intelligence of the Italian Digital Agency, Italian Government, (since 2017)
- Member of the Evaluation Panel in Engineering for the European Research Council (ERC) (from 2012 to 2013)
- Member of the International Evaluation Panel for The Excellence Initiative of the German Federal Ministry of Education and Research and the German Research Foundation) in NeuroRobotics (2011)

## Industrial Activities and Technology Transfer

- Member of the Scientific Committee of the Competence Center ARTES 4.0 (*Advanced Robotics Technologies and Enabling Digital Technologies and Systems*) (2019)
- Member of the Scientific Committee of RCS Academy Innovation (2019)
- Member of the Scientific Committee of the Foundation 'Leonardo – Civiltà delle Macchine' (2019)
- Member of the Scientific Committee of the Development and Value of the Aerospace and Defence Sectors in Italy in collaboration with Ambrosetti-The European House for Leonardo SpA (2018)
- Member of the Scientific Committee of the Study on Electrical Mobility in Italy in collaboration with Ambrosetti-The European House for ENEL (2017)
- Member of the Faculty and Scientific Board of the Scuola di Politiche, AREL, Rome, Italy (since 2016)
- Member of the Scientific Committee of the Merloni Foundation (since 2015)
- Founding Partner of IUVO srl, Spin-off Company of Scuola Superiore Sant'Anna a spin-off company active in wearable robotics (founded in 2015)

## Teaching Activities in Italy, Europe, Usa, China and Asia

- Academic Year 2019/20: 1. Interdisciplinary Course for the Master Students: La IV rivoluzione industriale, 2. Course in the PhD Programme in Biorobotics 'The fourth Industrial Revolution'
- She has been Visiting Professor in Austria at Technical University of Vienna, and has teaching experiences in China, Korea and Japan, and in three Italian Universities: Scuola Superiore Sant'Anna, University of Pisa and Campus Biomedico in Rome
- 2013, Honorary Professor Tianjin University, Tianjin, China
- 2013, Guest Professor Tongji University, Shanghai, China
- 2010, Guest Professor Zhejiang University, Hangzhou, China
- She gave invited lectures and talks in different universities: Massachusetts Institute of Technology USA, KAIST Daejeon, Korea, KIST, Seoul, Korea, Salford University, Manchester UK, Waseda University Tokyo Japan, Ecole Polytechnique de Lausanne EPFL, Svizzera, Zhejiang University, China, University of Tianjin, Tianjin, China, University of Tongji, Shanghai, China, Collège de France, Paris, France, École Normale Supérieure, Paris, France, University of Lille, Lille, France, Zurich University, Zurich, Switzerland

## Foreign Languages

- Fluent in English and French

## Scientific Interests

- Since 2006 Maria Chiara Carrozza is Full Professor of Industrial Bioengineering at The Biorobotics Institute, Scuola Superiore Sant'Anna, where she also served as Rector and in different positions. She is Coordinator of the Research Area in Neuro-Robotics. She is working in national and European Research Projects, and she is Partner of Start-up initiatives in the area of Robotics for Rehabilitation and Personal Assistance.
- She is Scientific Director of Fondazione Don Carlo Gnocchi Onlus, a network of 30 hospitals and rehabilitation clinics in Italy, including two research hospitals in the national network of clinical research facilities of the Ministry of Health (IRCCS) located in Milano and Firenze. The research area covered by Fondazione Don Carlo Gnocchi is Medicine of Rehabilitation.
- She served as Coordinator of several European, National and International Projects funded by different research agencies, including European Commission Framework Programs, private Foundations, companies, European Space Agency, and regional agencies in the area of rehabilitation engineering, artificial hands, humanoid robotics, exoskeletons for upper and lower limb, tactile sensors, artificial touch, neural interfaces and bionics. Recently she is also studying the impact of technology in the society, the transformation of jobs and society, and social robotics. She is interested in the innovation of the education system in the fourth industrial revolution. She also was a pioneer in studying Techno-Ethics. She is author of several international and European patents and she is founding partner of a spin-off company of Scuola Superiore Sant'Anna in wearable robotics.
- She served as a member of several advisory boards and evaluation committees of Italian and International Institutions, as the European Commission and the German Foundation for Research for

the Excellence Initiative, and she was active in organizing scientific events such as workshops and symposia, and in serving as guest and associate editor for international scientific journals.

- She is Associate Editor of the International Journal of Social Robotics, Springer, The Netherlands, (since 2008).
- She served as Scientific Responsible of the Joint Lab between Waseda University, Tokyo, Japan and Scuola Superiore Sant'Anna in Humanoid Robotics located in Tokyo, Japan (2003-2005).

## Books

- In 2017 she published a book on the impact of Robotics in the Society (I Robot e noi, Il Mulino, Arel, 2017)
- In 2018 she published the translation in English of the Book: The Robot and Us, Elsevier

## Scientific Production (March 2020)

Scopus 2020

- papers: 265
- citations: 10481
- h-index: 54

## Patents

- 29 Patents in the database Espacenet (March 2020)

## Publications

- Aprile I.; Germanotta M.; Cruciani A.; Loreti C.; Pecchioli C.; Cecchi F.; Montesano A.; Galeri S.; Diverio, M.; Falsini C.; Speranza G.; Langone E.; Papadopoulou D.; Padua L.; Carrozza M.C.; Upper Limb Robotic Rehabilitation After Stroke A Multicenter, Randomized Clinical Trial, Journal of Neurologic Physical Therapy: January 2020 - Volume 44 - Issue 1 - p 3-14
- Padua L., Imbimbo I., Aprile I., Loreti C., Germanotta M., Coraci D., Piccinini G., Pazzaglia C., Santilli C. Cruciani A., Carrozza M.C., Cognitive reserve as a useful variable to address robotic or conventional upper limb rehabilitation treatment after stroke: a multicentre study of the Fondazione Don Carlo Gnocchi, European Journal of Neurology, Vol 27, Issue 2, February 2020, pp. 392-398.
- Romeo, R. A.; Rongala, U. B.; Mazzoni, A.; Camboni, D.; Carrozza, M. C.; Guglielmelli, E.; Zollo, L.; Oddo, C. M. Identification of slippage on naturalistic surfaces via Wavelet Transform of tactile signals 1260-1268 IEEE SENSORS JOURNAL (2019) Volume nr. : 19 Issue nr. : 1

- Sorgini, F., Calì, R., Carrozza, M.C., Oddo, C.M. Haptic-assistive technologies for audition and vision sensory disabilities (2018) *Disability and Rehabilitation: Assistive Technology*, 13 (4), pp. 394-421. DOI: 10.1080/17483107.2017.1385100
- Baldoni, A., Cempini, M., Cortese, M., Crea, S., Carrozza, M.C., Vitiello, N. Design and validation of a miniaturized SEA transmission system (2018) *Mechatronics*, 49, pp. 149-156. DOI: 10.1016/j.mechatronics.2017.12.003
- Sorgini, F., Massari, L., D'Abbraccio, J., Palermo, E., Mencias, A., Petrovic, P.B., Mazzoni, A., Carrozza, M.C., Newell, F.N., Oddo, C.M. Neuromorphic vibrotactile stimulation of fingertips for encoding object stiffness in telepresence sensory substitution and augmentation applications (2018) *Sensors (Switzerland)*, 18 (1), art. no. 261, .
- Sorgini, F., Mazzoni, A., Massari, L., Calì, R., Galassi, C., Kukreja, S.L., Sinibaldi, E., Carrozza, M.C., Oddo, C.M. Encapsulation of piezoelectric transducers for sensory augmentation and substitution with wearable haptic devices (2017) *Micromachines*, 8 (9), art. no. 270, DOI: 10.3390/mi8090270
- Romeo, R.A., Oddo, C.M., Carrozza, M.C., Guglielmelli, E., Zollo, L. Slippage detection with piezoresistive tactile sensors (2017) *Sensors (Switzerland)*, 17 (8), art. no. 1844, DOI: 10.3390/s17081844
- Crea, S., Cempini, M., Mazzoleni, S., Carrozza, M.C., Posteraro, F., Vitiello, N. Phase-II clinical validation of a powered exoskeleton for the treatment of elbow spasticity (2017) *Frontiers in Neuroscience*, 11 (MAY), art. no. 261, . DOI: 10.3389/fnins.2017.00261
- Vitiello, N., Cempini, M., Crea, S., Giovacchini, F., Cortese, M., Moisè, M., Posteraro, F., Carrozza, M.C. Functional Design of a Powered Elbow Orthosis Toward its Clinical Employment (2016) *IEEE/ASME Transactions on Mechatronics*, 21 (4), art. no. 7460240, pp. 1880-1891. DOI: 10.1109/TMECH.2016.2558646
- Oddo, C.M., Raspopovic, S., Artoni, F., Mazzoni, A., Spigler, G., Petrini, F., Giambattistelli, F., Vecchio, F., Miraglia, F., Zollo, L., Di Pino, G., Camboni, D., Carrozza, M.C., Guglielmelli, E., Rossini, P.M., Faraguna, U., Micera, S. Intraneural stimulation elicits discrimination of textural features by artificial fingertip in intact and amputee humans (2016) *eLife*, 5 (MARCH2016), art. no. e09148, .DOI: 10.7554/eLife.09148
- Cortese, M., Cempini, M., De Almeida Ribeiro, P.R., Soekadar, S.R., Carrozza, M.C., Vitiello, N. A Mechatronic System for Robot-Mediated Hand Telerehabilitation (2015) *IEEE/ASME Transactions on Mechatronics*, 20 (4), art. no. 6905843, pp. 1753-1764. DOI: 10.1109/TMECH.2014.2353298
- Crea, S., Cipriani, C., Donati, M., Carrozza, M.C., Vitiello, N. Providing Time-Discrete Gait Information by Wearable Feedback Apparatus for Lower-Limb Amputees: Usability and Functional Validation (2015) *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 23 (2), art. no. 6942273, pp. 250-257. DOI: 10.1109/TNSRE.2014.2365548

- Vitiello, N., Oddo, C.M., Lenzi, T., Roccella, S., Beccai, L., Vecchi, F., Carrozza, M.C., Dario, P. Neuro-robotics paradigm for intelligent assistive technologies (2015) Springer Tracts in Advanced Robotics, 106, 40 p. DOI: 10.1007/978-3-319-12922-8\_1
- Hao, Y., Zhang, Q., Controzzi, M., Cipriani, C., Li, Y., Li, J., Zhang, S., Wang, Y., Chen, W., Chiara Carrozza, M., Zheng, X. Distinct neural patterns enable grasp types decoding in monkey dorsal premotor cortex (2014) Journal of Neural Engineering, 11 (6), art. no. 066011, DOI: 10.1088/1741-2560/11/6/066011
- Raspopovic, S., Capogrosso, M., Petrini, F.M., Bonizzato, M., Rigosa, J., Pino, G.D., Carpaneto, J., Controzzi, M., Boretius, T., Fernandez, E., Granata, G., Oddo, C.M., Citi, L., Ciancio, A.L., Cipriani, C., Carrozza, M.C., Jensen, W., Guglielmelli, E., Stieglitz, T., Rossini, P.M., Micera, S. Bioengineering: Restoring natural sensory feedback in real-time bidirectional hand prostheses (2014) Science Translational Medicine, 6 (222), . DOI: 10.1126/scitranslmed.3006820
- Controzzi, M., Cipriani, C., Carrozza, M.C. Design of artificial hands: A review (2014) Springer Tracts in Advanced Robotics, 95, pp. 219-246. DOI: 10.1007/978-3-319-03017-3\_11
- Controzzi, M., Peccia, C., Oddo, C.M., Carrozza, M.C., Cipriani, C. Bioinspired fingertip for anthropomorphic robotic hands (2014) Applied Bionics and Biomechanics, 11 (1-2), pp. 25-38 DOI: 10.3233/ABB-140092
- Cavallo, F., Aquilano, M., Bonaccorsi, M., Limosani, R., Manzi, A., Carrozza, M.C., Dario, P. Improving domiciliary robotic services by integrating the ASTRO robot in an Aml infrastructure (2014) Springer Tracts in Advanced Robotics, 94, pp. 267-282. DOI: 10.1007/978-3-319-02934-4\_13
- Mazzoleni, S., Carrozza, M.C., Sale, P., Franceschini, M., Posteraro, F., Tiboni, M. Effects of upper limb robot-assisted therapy on motor recovery of subacute stroke patients: A kinematic approach (2013) IEEE International Conference on Rehabilitation Robotics, art. no. 6650503, . DOI: 10.1109/ICORR.2013.6650503
- Cempini, M., De Rossi, S.M.M., Lenzi, T., Cortese, M., Giovacchini, F., Vitiello, N., Carrozza, M.C. Kinematics and design of a portable and wearable exoskeleton for hand rehabilitation (2013) IEEE International Conference on Rehabilitation Robotics, art. no. 6650414, . DOI: 10.1109/ICORR.2013.6650414
- Novak, D., Reberšek, P., De Rossi, S.M.M., Donati, M., Podobnik, J., Beravs, T., Lenzi, T., Vitiello, N., Carrozza, M.C., Munih, M. Automated detection of gait initiation and termination using wearable sensors (2013) Medical Engineering and Physics, 35 (12), pp. 1713-1720. DOI: 10.1016/j.medengphy.2013.07.003
- Lenzi, T., Carrozza, M.C., Agrawal, S.K. Powered hip exoskeletons can reduce the user's hip and ankle muscle activations during walking (2013) IEEE Transactions on Neural Systems and Rehabilitation Engineering, 21 (6), art. no. 6482647, pp. 938-948. DOI: 10.1109/TNSRE.2013.2248749
- Mazzoleni, S., Sale, P., Tiboni, M., Franceschini, M., Carrozza, M.C., Posteraro, F. Upper limb robot-assisted therapy in chronic and subacute stroke patients: A kinematic analysis (2013) American Journal

of Physical Medicine and Rehabilitation, 92 (10 SUPPL. 1), pp. e26-e37. DOI: 10.1097/PHM.0b013e3182a1e852

- Mazzoleni, S., Sale, P., Franceschini, M., Bigazzi, S., Carrozza, M.C., Dario, P., Posteraro, F. Effects of proximal and distal robot-assisted upper limb rehabilitation on chronic stroke recovery (2013) *NeuroRehabilitation*, 33 (1), pp. 33-39 DOI: 10.3233/NRE-130925
- De Almeida Ribeiro, P.R., Lima Brasil, F., Witkowski, M., Shiman, F., Cipriani, C., Vitiello, N., Carrozza, M.C., Soekadar, S.R. Controlling assistive machines in paralysis using brain waves and other biosignals (2013) *Advances in Human-Computer Interaction*, 2013, art. no. 369425, DOI: 10.1155/2013/369425
- Lucarotti, C., Oddo, C.M., Vitiello, N., Carrozza, M.C. Synthetic and bio-artificial tactile sensing: A review (2013) *Sensors (Switzerland)*, 13 (2), pp. 1435-1466. DOI: 10.3390/s130201435
- Antfolk, C., Cipriani, C., Carrozza, M.C., Balkenius, C., Björkman, A., Lundborg, G., Rosén, B., Sebelius, F. Transfer of tactile input from an artificial hand to the forearm: Experiments in amputees and able-bodied volunteers (2013) *Disability and Rehabilitation: Assistive Technology*, 8 (3), pp. 249-254. DOI: 10.3109/17483107.2012.713435
- Hao, Y., Controzzi, M., Cipriani, C., Popovic, D., Yang, X., Chen, W., Zheng, X., Carrozza, M. Controlling hand-assistive devices: Utilizing electrooculography as a substitute for vision (2013) *IEEE Robotics and Automation Magazine*, 20 (1), art. no. 6476693, pp. 40-52. DOI: 10.1109/MRA.2012.2229949
- Ronsse, R., De Rossi, S.M.M., Vitiello, N., Lenzi, T., Carrozza, M.C., Ijspeert, A.J. Real-time estimate of velocity and acceleration of quasi-periodic signals using adaptive oscillators (2013) *IEEE Transactions on Robotics*, 29 (3), art. no. 6428719, pp. 783-791.
- Cempini, M., De Rossi, S.M.M., Lenzi, T., Vitiello, N., Carrozza, M.C. Self-alignment mechanisms for assistive wearable robots: A kinetostatic compatibility method (2013) *IEEE Transactions on Robotics*, 29 (1), art. no. 6359868, pp. 236-250. DOI: 10.1109/TRO.2012.2226381
- Vitiello, N., Lenzi, T., Roccella, S., De Rossi, S.M.M., Cattin, E., Giovacchini, F., Vecchi, F., Carrozza, M.C. NEUROExos: A powered elbow exoskeleton for physical rehabilitation (2013) *IEEE Transactions on Robotics*, 29 (1), art. no. 6304936, pp. 220-235. DOI: 10.1109/TRO.2012.2211492
- Donati, M., Vitiello, N., de Rossi, S.M.M., Lenzi, T., Crea, S., Persichetti, A., Giovacchini, F., Koopman, B., Podobnik, J., Munih, M., Carrozza, M.C. A flexible sensor technology for the distributed measurement of interaction pressure (2013) *Sensors (Switzerland)*, 13 (1), pp. 1021-1045. DOI: 10.3390/s130101021

## Patents

- Title: Torsional transmission element with elastic response; Inventors: Giovacchini Francesco, Cempini Marco, Vitiello Nicola, Maria Chiara Carrozza; Applicant: Scuola Superiore Sant'Anna; Publication info: WO2015001469 (A1)(2015-01-08); Application number: WO20141B62735, ITFI20130156 (A1); Priority date: 2013-07-01. In licenza di sfruttamento a IUVO Srl.

- Title: Metodo per trasmettere sensazioni tattili ad un utente e apparecchiatura che attua tale metodo; Inventors: Camboni Domenico, Maria Chiara Carrozza, Oddo Calogero Maria, Spigler Giacomo; Applicant: Scuola Superiore Sant'Anna; Publication info: ITPI20130028 (A1)(2014-10-13); Application number: IT2013PI00028; Priority date: 2013-04-12.
- Title: Method and device for making fingerprints associated to artificial fingers; Inventors: Muscolo Giovanni Gerardo, Oddo Calogero Maria, Maria Chiara Carrozza, Beccai Lucia; Applicant: Scuola Superiore Sant'Anna; Publication info: WO2014155338 (A1)(2014-10-02); Application number: WO2014IB60223; Priority date: 2013-03-29.
- Title: Modulo sensorizzato per la rilevazione di dati di posizione e di movimento; Inventors: Aquilano Michela, Carrozza Maria Chiara, Cavallo Filippo, Dario Paolo, Esposito Dario, Maremmani Carlo, Rovini Erika; Applicant: AZIENDA USL 1 DI MASSA E CARRARA e Scuola Superiore Sant'Anna; Publication info: ITPI20130003 (A1)( 2014-07-15); Application number: IT2013PI00003; Priority date: 2013-01-14.
- Title: Dispositivo per la rilevazione della posizione e del movimento di un arto umano; Inventors: Aquilano Michela, Maria Chiara Carrozza, Cavallo Filippo, Dario Paolo, Esposito Dario, Maremmani Carlo, Rovini Erika; Applicant: AZIENDA USL 1 DI MASSA E CARRARA e Scuola Superiore Sant'Anna; Publication info: ITPI20130002 (A1)( 2014-07-15); Application number: IT2013PI00002; Priority date: 2013-01-14.
- Title: Method and related apparatus for monitoring biomechanical performances of human limbs; Inventors: Cavallo Filippo, Maremmani Carlo, Esposito Dario, Rovini Erika, Aquilano Michela, Dario Paolo, Maria Chiara Carrozza; Applicant: Scuola Superiore Sant'Anna e AZIENDA USL 1 DI MASSA E CARRARA; Publication info: EP2943858 (A1)(2015-11-18); Application number: EP20140707213, WO2014108883 (A1); Priority date: 2013-01-14.
- Title: Wearable exoskeleton device for hand rehabilitation; Inventors: Cempini Marco, Vitiello Nicola, Giovacchini Francesco, De Rossi Stefano Marco Maria, Lenzi Tommaso, Chiri Azzurra, Maria Chiara Carrozza; Applicant: Scuola Superiore Sant'Anna; Publication info: US2015223959 (A1)(2015-08-13); Application number: US201314422488, WO2014033613 (A2), WO2014033613 (A3), ITPI20120094 (A1), EP2890352 (A2); Priority date: 2012-08-28.
- Title: Technological aid for transfemoral amputees; Inventors: Vitiello Nicola, Lenzi Tommaso, De Rossi Stefano Marco Maria, Giovacchini Francesco, CEMPINI MARCO, Maria Chiara Carrozza; Applicant: Scuola Superiore Sant'Anna; Publication info: US2015190248 (A1)(2015-07-09); Application number: US201314409465, WO2013190495 (A1), WO2013190495 (A9), ITFI20120129 (A1), EP2863846 (A1), CN104394806 (A); Priority date: 2012-06-21.
- Title: Self-contained multifunctional hand prosthesis; Inventors: Controzzi Marco, Clemente Francesco, Cipriani Christian, Maria Chiara Carrozza; Applicant: Prensilia SRL; Publication info: EP2653137 (A1)(2013-10-23); Application number: EP20130164114, ITPI20120049 (A1); Priority date: 2012-04-20. Sfruttato commercialmente da Prensilia SRL.
- Title: Structure of sensorized mat; Inventors: De Rossi Stefano Marco Maria, Lenzi Tommaso, Vitiello Nicola, Persichetti Alessandro, Giovacchini Francesco, Maria Chiara Carrozza; Applicant: Scuola Superiore Sant'Anna; Publication info: CN103930026 (A)(2014-07-16); Application number: CN2012852075, WO2013027145 (A2), WO2013027145 (A3), ITPI20110091 (A1), EP2747645 (A2); Priority date: 2011-08-23.
- Title: Dispositivo di interfaccia tra un individuo ed una macchina e relativo metodo di interfacciamento; Inventors: Maria Chiara Carrozza, Cipriani Christian; Applicant: Prensilia SRL; Publication info: ITLU20100008 (A1)(2012-02-04); Application number: IT2010LU00008; Priority date: 2010-08-03. Sfruttato commercialmente da Prensilia SRL.



- Title: Sole for footwear; Inventors: Roccella Stefano, Vecchi Fabrizio, Maria Chiara Carrozza; Applicant: Lion Calzature SPA e Scuola Superiore Sant'Anna; Publication info: CN102843926 (A)(2012-12-26); Application number: CN2010861140, WO2011108011 (A1), WO2011108011 (A8), EP2542112 (A1), EA201290369 (A1); Priority date: 2010-03-02. Sfruttato commercialmente da Lion Calzature SPA.
- Title: Electromagnetic step-by-step wobble-type micromotor; Inventors: Stefanini Cesare, Dario Paolo, Maria Chiara Carrozza, De Cristofaro Sarah; Applicant: Stefanini Cesare, Dario Paolo, Maria Chiara Carrozza, De Cristofaro Sarah, Scuola Superiore Sant'Anna; Publication info: US2011210627 (A1)(2011-09-01), US8704413 (B2)(2014-04-22); Application number: US200913121129, US8704413 (B2), WO2010035244 (A2), WO2010035244 (A3), ITFI20080185 (A1), EP2380264 (A2); Priority date: 2008-09-29. In licenza di sfruttamento a Faulhaber
- Title: Robotic device for lower limb functionality recovery in bed-bound post-stroke patients; Inventors: Micera Silvestro, Galardi Giuseppe, Maria Chiara Carrozza, Jung Je Hyung, Monaco Vito, Lefebvre Olivier, Macrì Giovanna, Bagnato Sergio; Applicant: Scuola Superiore Sant'Anna e Fondazione Istituto San Raffaele Giglio Di Cefalu; Publication info: EP2306957 (A2)(2011-04-13); Application number: EP20090730719, WO2009125347 (A2), WO2009125347 (A3), ITFI20080071 (A1); Priority date: 2008-04-09
- Title: Dispositivo Meccatronico Indossabile; Inventors: Maria Chiara Carrozza, Cattin Emanuele, Giovacchini Francesco, Roccella Stefano, Vecchi Fabrizio, Vitiello Nicola; Applicant: Scuola Superiore Sant'Anna; Publication info: ITPI20070102 (A1)(2009-02-11); Priority date: 2007-08-10.
- Title: Wearable mechatronic device; Inventors: Cattin Emanuele, Vitello Nicola, Giovacchini Francesco, Vecchi Fabrizio, Maria Chiara Carrozza; Applicant: Scuola Superiore Sant'Anna; Publication info: WO2009016478 (A2)(2009-02-05), WO2009016478 (A8)(2009-09-11), WO2009016478 (A3)(2010-06-03); Application number: WO2008IB01990, WO2009016478 (A8), WO2009016478 (A3), EP2178680 (A2), EP2178680 (B1); Priority date: 2007-07-30.
- Title: Ortesi meccatronica per la mano; Inventors: Maria Chiara Carrozza, Cattin Emanuele, Roccella Stefano, Vecchi Fabrizio, Vitello Nicola; Applicant: Scuola Superiore Sant'Anna; Publication info: ITPI20070088 (A1)(2009-01-31); Application number: IT2007PI00088; Priority date: 2007-07-30.
- Title: Conformant and flexible tactile sensor and method therefor; Inventors: Maria Chiara Carrozza, Persichetti Alessandro, Vecchi Fabrizio; Applicant: Scuola Superiore Sant'Anna; Publication info: ITPI20070085 (A1)(2009-01-24), WO2009013599 (A1), EP2176632 (A1); Priority date: 2007-07-23. Licenza di sfruttamento a Fastenica SRL.
- Title: Robot, and robot control method; Inventors: Konosu Hitoshi, Ota Yasuhiro, Paolo Dario, Cecilia Laschi, Eugenio Guglielmelli, Zbigniew Wasik, Edoardo Datteri, Gioel Asuni, Maria Chiara Carrozza, Giancarlo Teti; Applicant: Toyota Motor Corp; Publication info: JP2007245326 (A)(2007-09-27); Priority date: 2006-02-17.
- Title: Mano artificiale attiva articolata; Inventors and applicants: Barboni Luca, Cappiello Giovanni, Maria Chiara Carrozza, Dario Paolo, Lazzarini Roberto, Roccella Stefano, Sebastiani Francesco, Suppo Carlo, Vecchi Fabrizio; Publication info: ITLU20030012 (A1)(2005-03-16); Priority date: 2003-09-15.
- Title: Proportional valve with shape memory alloy (sma) actuator; Inventors: Paolo Dario, Maria Chiara Carrozza, Alberto Arena; Applicant: Paolo Dario, Maria Chiara Carrozza, Alberto Arena; Publication info: US2004129315 (A1)(2004-07-08); Publication number: US20030477625, US6691977 (B2)(2005-01-11), US6840257 (B2), WO02090807 (A1), ES2246323 (T3), EP1386103 (A1), EP1386103 (B1), DE60112477 (T2), AT301261 (T); Priority date: 2001-05-08. Alla base dispositivi sviluppati da Era Endoscopy SRL.

- Title: Endoscopic robot; Inventors: Paolo Dario, Maria Chiara Carrozza, Pietrabissa Andrea, Magnani Bernardo, Lencioni Lucia; Applicant: Scuola Superiore Sant'Anna; Publication info: US5906591 (A)(1999-05-25), EP0838200 (A2), EP0838200 (A3), ITMI962188 (A1), IT1285533 (B1), JPH10216076 (A); Priority date: 1996-10-22. Alla base dispositivi sviluppati da Era Endoscopy SRL. .

Pisa, March the 14<sup>th</sup>, 2020

A handwritten signature in blue ink, appearing to read 'M. Carrozza', is written on a light-colored background.