Matteo Bianchi, Eng PhD - Curriculum Vitae

Informazioni di Contatto

Dep. of Information Engineering
"Research Center E. Piaggio"

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Research Interests

- Haptics and Haptic Interfaces
- Force and Tactile Sensing
- Compliant Joint/Mechanism
- Dexterous Manipulation
- Tendon/Wire Mechanism
- Biomimetics
- Grasp and Manipulation analysis

- Human and robotic hands: optimal sensing and control
- Human-robot interaction
- Tele-robotics
- Assistive and rehabilitation robotics
- Machine learning applications to robotics

Education

University of Pisa, Pisa, Italy

PhD in Automatics, Robotics and Bio-Engineering with "International Doctorate" qualification, June 2012

- PhD dissertation: *On the Role of Haptic Synergies in Modelling the Sense of Touch and in Designing Artificial Haptic Systems*
- Advisers: Prof. Antonio Bicchi, Prof. Enzo P. Scilingo
- Area of study: haptics, robotics, bio-engineering, control engineering

National professional qualification as Engineer (Information Engineering), 2007

MS in Biomedical Engineering, July 2007

- *Magna cum laude*
- Electronic specialization (emphasis on biomedical electronics)
- Thesis topic: *Characterization of NO_2 Gas Sensors for Lab On Chip Systems*

BS in Biomedical Engineering, October 2004

- *Magna cum laude*
- Thesis topic: *Image Processing for Electrophoresis Gel Applications*

Academic Appointments

Associate Professor June 2021--

Department of Information Engineering, School of Engineering, University of Pisa
Research activity: Robotics, Haptics, Human-Robot Interaction.

Assistant Professor Sept 2016 – June 2021

Department of Information Engineering, School of Engineering, University of Pisa
Research activity: Robotics, Haptics, Human-Robot Interaction.

Research Affiliate Appointment February 2015 –

Mayo Clinic – Rochester, US - MN,

Research activity: within private funding grant (2014-2016): on the usage, testing and re-design of the Pisa/IIT SoftHand for prosthetic applications, and withinh NIH (National Institutes of Health) US grant: 1R21HD081938-01 Soft Synergy-Based Artificial Hand for Prosthetic Applications (2014- 2016), to develop and test novel prosthetic solutions for upper-limb amputees, in- cluding patient testing and haptic feedback.

Research Collaborator   January 2013 – present

Research Center "E. Piaggio", School of Engineering, University of Pisa
Research activity: analysis of human tactile perception and object manipu- lation to develop haptic interfaces for HRI and sense robotic hands within the European Commission Collaborative Projects: "WEARable HAPtics for Humans and Robots", "PaCMan: Probabilistic and Compositional Represen- tations of Objects for Robotic Manipulation", "SOMA: Soft Manipulation" and "SoftPro: Synergy-based Open-source Foundations and Technologies for Prosthetics and RehabilitatiOn".

Past Academic Appointments

Post-doctoral researcher   January 2013 – September 2016

Advanced Robotics Department (ADVR), Italian Institute of Technology (IIT)
Research activity: computational and experimental models of tactile inter- action and sensorimotor apparatus of the human hand, to develop haptic systems and sensing schemes for artificial and human hands. The final goal is to define sensing primitives for the realization of haptic interfaces and sensor nets. This activity is supported by the European Research Council under the ERC Advanced Grant no. 291166 "Soft-Hands (A Theory of Soft Synergies for a New Generation of Artificial Hands)".

Advisory Board and Main Research Collaborator March 2014 – July 2015

Rehab Technologies Department, Italian Institute of Technology (IIT)
Research activity: advisory board and leader of the workpackage on human- machine interfaces for the development of a prosthetic hand within the project Project PPR1A, joint venture between Italian Institute of Technology (IIT) and INAIL (Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro e le Malattie Professionali) - Italian Insurance and Rehabilitation Institute

Post-doctoral researcher   June 2012 – January 2013

Research Center "E. Piaggio", School of Engineering, University of Pisa
Research activity: investigation of human tactile interaction and manipula- tion to develop synergy-inspired robotic hands and artificial systems. This activity was supported by the European Commission Collaborative Project no. 248587, "THE Hand Embodied", within the FP7-ICT-2009-4-2-1 pro- gram "Cognitive Systems and Robotics".

Research collaboration   November 2007 – December 2008

Research Center "E. Piaggio", School of Engineering, University of Pisa
Research activity: rendering softness, cutaneous and kinaesthetic cues in real and artificial touch. This activity was supported by the European Com- mission integrated Project "IMMERSENCE", contract number: IST-2006- 027141, Call FP6-2004-IST-4 FET (Presence II).
Supervisor: Prof. Antonio Bicchi.

Awards and Honors	**2020: IEEE Haptics Symposium.**

2020: IEEE Haptics Symposium.

- ***Finalist for the Best Transactions on Haptics Short Paper***
- *Design and Validation of the Readable Device: A Single-Cell Electromagnetic Refreshable Braille Display*

2018 IEEE Haptics Symposium

- *The work: "Separating haptic guidance from task dynamics: A practical solution via cutaneous devices" by E. Pezent, S. Fani, J. Bradley, M. Bianchi and M. K. O'Malley evaluated as one of the outstanding papers submitted to the conference referred to the IEEE Transactions on Haptics. San Francisco (US). March 2018.*

2017: IEEE International Congress on Ultra Modern Telecommunications and Control Systems (ICUMT)

- ***Best Paper Award*** *in Session* ***Robotics***
- ***Best Student Paper Award***
- *From Humans to Robots: the Role of Cutaneous Impairment in Human Environmental Constraint Exploitation to Inform the Design of Robotic Hands*

2017: IEEE RAS Worldhaptics: Best Paper Award Finalist
Tactile Slip and Hand Displacement: Bending Hand Motion with Tactile Illusions

2017: IEEE RAS Worldhaptics: Best Student Paper and Best Paper Award Finalist
The Rice Haptic Rocker: skin stretch haptic feedback with the Pisa/IIT SoftHand

2016: IEEE-RAS Haptics Symposium: Best Paper Award
A wearable fabric-based display for haptic multi-cue delivery

2015: Meritorious Service Award for the work as a Reviewer for the IEEE RAS Transactions on Haptics

2015: Automatica.it (Italian Conference of Researchers in Automation): Best Oral Presentation

2015: International Conference on Computer-Aided Engineering: Best Poster Award
Finite Element Model of Human Fingertip

2014: Eurohaptics Conference: Best Paper Award (Category: Poster Presentation)
A change in thefingertip contactareainduces an illusory displacement of thefinger

2013: Georges Giralt PhD Award by EURON (European robotics research forum) for the best European PhD thesis in Robotics: Top 9 theses
On the Role of Haptic Synergies in Modelling the Sense of Touch and in Designing Artificial Haptic Systems

2013: Automatica.it (Italian Conference of Researchers in Automation): Best Oral Presentation Finalist

2012: IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): JTCF Novel Technology Paper Award for Amusement Culture
Synergy-based Optimal Design of Hand Pose Sensing

2012: Automatica.it : Best Interactive Presentation Finalist

2010: IEEE Symposium on Haptic Interfaces for Virtual Environments and Teleoperator Systems: Best Student Paper and Best Paper Award Finalist
A new fabric–based softness display

2009: Shape Memory Award by SAES Getters - Italy

Project: *Shape Memory Alloys for hand rehabilitation (SMhAnd)*
SAES Getters Italia, SAES Group: Viale Italia 77, 20020 Lainate – Milano, Italy

Students' Awards and Honors	· Giuseppe Bruno Averta (PhD Student, graduated in 2020) · Georges Giralt PhD Award · Best PhD Thesis in Robotics in Europe, 2021 · Edoardo Battaglia (PhD Student, graduated in 2018) · Best PhD Thesis in Engineering of the University of Pisa, 2018 · Gemma Carolina Bettelani (PhD Student, graduated in 2021) · Gemma received funding from the IEEE Robotics and Automation society Technical Committee on Haptics under the: Innovation in haptics research programme, for her grant proposal READABLE: Reliable ElectromAgnetic DynAmic BrailLE, 2018

Grants and Participation to Research Projects	**On-going projects (selection)**
	
	· Research Center "E. Piaggio" – School of Engineering – University of Pisa
	
	- **Co-coordinator** of the research group on"Haptic Interfaces and Human Modeling for Robotics and Advanced Human Robot Interaction"
	   Co-tutor: 6 PhD students, 18 MSc students, 3 BSc students
	   Duration: 2009 - on going
	
	- **'' Socio-physical Interaction Skills for Cooperative Human-Robot Systems in Agile Production SOPHIA''**, project no. 871237, funded under H2020 EU.2.1.1.
	   Role**: co-Prinicipal Investigator (co-PI) of the University of Pisa**
	   Leader of the workpackage on Fellow-Feeling Wearables: Smart and Wearable Monitoring and Feedback Interfaces
	   Duration: 2019—on going
	
	- **University of Pisa Contribution BANDO INCENTIVI DI ATENEO PROPOSTE HORIZON E OLTRE** for the *excellent results achieved in the ERC-STG-2019 Call*
	   Budget: 50000 Euros
	
	- **PRIN grant "TIGHT: Tactile InteGration for Humans and arTificial systems",** grant number 2017SB48FP, Italian ministry of education and research (miur)
	
	   Role: **principal investigator of the University of Pisa**
	   Budget (Responsible of): ***170000 Euros***
	   Duration: 2020-2023
	   Starting Date: End of January 2020

- **"Perception-guided robust and reproducible robotic grasping and manipulation"**, CHIST-ERA Call 2017

  Role: co-writer of the project proposal and main research collaborator for the work packages on perception and grasping/manipulation
  Duration: 2019 - 2022

Past projects (selection)

· **Research contract with Oculus VR, LLC (Menlo Park, CA -USA)**
  Title: Understanding tactile motion for rendering: from modelling to phe-nomenology
  Role: **Principal Investigator (PI)**
  Budget : **109560 Euros**
  Duration: 2017 --- 2021

· **"SoftPro: Synergy-based Open-source Foundations and Technologies for Prosthetics and RehabilitatiOn"**, European Commission Collaborative Project no. 688857, within the Horizon 2020 Framework program
  Role: **Local Scientific Coordinator of University of Pisa (principal investigator)**; **leader of work packages** on "Fundamentals of synergy- based motor control" and "Interfaces from artificial to natural"; co-writer of the project proposal
  Budget (Responsible of): **1101565.93 Euros**
  Duration: 2016 - 2020

- **"WEARable HAPtics for Humans and Robots"**, European Commission Collaborative Project no. 601165, within the FP7-ICT-2011-9 program "Cognitive Systems and Robotics"

  Role: co-writer of the project proposal and main research collaborator for the work packages: computational models of human touch; multisensory tracking and sensing; wearable and distributed multi-degree of freedom haptic systems; wearable haptics for human robot interaction and cooperation
  Duration: 2013 – 2017

- **Seed grant between University of Pisa and Massachusetts Institute of Technology (MIT) (Cambridge, MA-USA)**
  Title: Haptic Assistance in Autonomous Walking for Visually Impaired People
  Role: **Principal Investigator (PI) of the University of Pisa**
  Principal Investigator at MIT : Prof. Daniela Rus
  Budget : **9000 Dollars**
  Duration: 2018 - 2019
  Starting date: March 2018

- **"SOMA: Soft Manipulation"**, European Commission Collaborative Project no. 645599, within the Horizon 2020 Framework program
  Role: co-writer of the project proposal and main research collaborator for the work packages: human grasping and manipulation and hand design *Duration*: 2015 - 2019

- **"THE Hand Embodied"**, European Commission Collaborative Project no. 248587, within the FP7-ICT-2009-4-2-1 program "Cognitive Systems and Robotics"

  Role: main research collaborator and **scientific leader** of the Project Tech-nical Integration (Work Package 9)
  Duration: 2010 - 2014

Ended : July 2014

- **"PaCMan: Probabilistic and Compositional Representations of Objects for Robotic Manipulation"**, European Commission Collaborative Project no. 600918, within the FP7-ICT-2011-9 program "Cognitive Systems and Robotics"

  Role: main research collaborator
  Duration: 2013 - 2016

- **"IMMERSENCE"**, contract number: IST-2006-027141, Call FP6-2004-IST-4 FET – Presence II (Research Center "E. Piaggio", School of Engineering, University of Pisa) - Ended : 2008.

· Rehab Technologies Department, Italian Institute of Technology (IIT):

  - **Project PPR1A, joint venture between Italian Institute of Technology (IIT) and INAIL (Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro e le Malattie Professionali) - Italian Insurance and Rehabilitation Institute**

    Title of the project: development of a prosthesis for the upper limb (prosthetic hand and wrist)
    Role: advisory board member. Leader of the haptic interface area and co-leader of human - robot interaction and electronic control area *Duration*: 2014 - 2017

· Advanced Robotics Department (ADVR), Italian Institute of Technology (IIT):

  - **European Research Council Advanced Grant no. 291166 "Soft-Hands (A Theory of Soft Synergies for a New Generation of Artificial Hands)"**

    Role: main research collaborator
    Duration: 2012 - 2017

Professional Membership	**Co-chair** of the IEEE Robotics and Automation Society **(RAS) Technical Committee on Robot Hands, Grasping and Manipulation**. 2017 – present
	Vice chair for Information Dissemination of the IEEE Robotics and Automation Society **(RAS) Technical Committee on Haptics**. 2018 – 2021
	Institute for Electrical and Electronics Engineers (IEEE), Member: 2012 – present
	IEEE Robotics and Automation Society, Member: 2015 – present
	Technical Committee on Haptics, Member: 2013 – present
	Eurohaptics Society, Member: 2014 – present

Research Evaluations	2021. Expert Evaluator. Agence Nationale de la Recherche, France.
	CHIST-ERA Call 2020
	2016. Expert Evaluator. Agence Nationale de la Recherche, France
	2016. 2017. Expert Evaluator. Estonian Research Council (ETAg), Estonia

International Experience

Research Appointment   April 2015

Mayo Clinic, Rochester (MN, USA)
> *Research activity:* technical support and clinical trials for the evaluation of a novel prototype of hand prosthesis

Visiting scholar   March 2014

School of Biological and Health Systems Engineering (sbhse), Arizona State University (ASU)
> *Research activity:* Workshop on Rehabilitation Robotics. Research planning and experiments with ASU faculty members (Prof. Marco Santello) and MayoClinic (Rochester, USA) members for the usage of the Pisa/IIT robotic SoftHand for prosthetic applications. Responsible of the haptic feedback system and the safety evaluation of the device.

Visiting student   January 2011 – June 2011

Laboratory for Computational Sensing and Robotics (LCSR), The Johns Hopkins University
> *Research activity:* characterization and design of an air-jet lump display for Robot-assisted Minimally Invasive Surgery (RMIS)
> *Supervisor* : Prof. Allison M. Okamura

Visiting student   March 2009

School of Biological and Health Systems Engineering (sbhse), Arizona State University (ASU)
> *Research activity:* analysis of anticipatory modulation of digit forces and position with Virtual Reality Environment (VRE) applications.
> *Supervisor* : Prof. Marco Santello

Editorial Activity (Selection)

Editor

Springer series on Touch and Haptic Systems
   Human and Robot Hands - Sensorimotor Synergies to Bridge the Gap Between Neuroscience and Robotics
   DOI: 10.1007/978-3-319-26706-7

Editorial Board

Associate Editor for IEEE Transactions on Haptics (2020--)
Associate Editor for Robotics and Automation Letters (2016—2019)
International Journal of Advanced Robotic Systems – *Topic*: Medical Robotics;
Guest Associate Editor for Robotics and Automation Letters: Special Issue (RA-L ICRA 2019 Conference Option) on Soft Haptic Interaction: Modeling, Design, and Application
Guest Editor in Bionics and Biomimetics, part of the Frontiers in Bioengineering and Biotechnology and Robotics and AI– *Topic*: Mapping Human Sensory-Motor Skills for Manipulation onto the Design and Control of Robots
Review Editor in Bionics and Biomimetics, part of the Frontiers in Bioengineering and Biotechnology and Robotics and AI– *Topic*: Human-Robot Interaction

Reviewer
Activity
(Selection)

International Journals

· Science Advances

· IEEE Transactions on Robotics
· IEEE Transactions on Haptics
· International Journal of Robotics Research
· IEEE Robotics and Automation Magazine
· Robotics and Autonomous Systems
· IEEE Robotics and Automation Letters
· IEEE Transactions on Biomedical Engineering
· IEEE Transactions on Mechatronics
· IEEE Transactions on Human-Machine Systems
· IEEE Transactions on Cybernetics
· Journal of Human–Robot Interaction
· Soft Robotics
· International Journal of Advanced Robotic Systems
· Sensors
· Frontiers in Robotics and AI
· IEEE Transactions on Visualization and Computer Graphics
· Journal of Biomechanics
· Probabilistic Engineering Mechanics
· ASME Journal of Mechanisms and Robotics
· Computers in Biology and Medicine
· PLOS ONE
· ACM Transactions on Applied Perception
· Biomedical Microdevices (Springer)
· Human Movement Science

International Conferences

· IEEE International Conference on Robotics and Automation (ICRA)
· IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
· IEEE RAS World Haptics Conference
· IEEE RAS Haptics Symposium
· Robotics: Science and Systems Conference (RSS)
· IEEE/RAS International Conference on Humanoid Robots (Humanoids)
· IEEE/RAS-EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob)

- IEEE/RAS-EMBS International Conference on Rehabilitation Robotics (ICORR)
- EuroHaptics Conference
- IEEE Virtual Reality
- International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)
- Asiahaptics Conference
- Myoelectric Controls Symposium
- EAI International Conference on Wireless Mobile Communication and Healthcare - MobiHealth
- International Workshop on Human-Friendly Robotics

<table>
<tr><td>Student
Advising</td><td></td></tr>
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PhD students

- Edoardo Battaglia, (2018):
  PhD in Information Engineering at the University of Pisa
  Now: Post-Doc at University of Pisa

- Simone Ciotti, (2019):
  PhD in Information Engineering at the University of Pisa

- Simone Fani, (2020):
  PhD in Information Engineering at the University of Pisa

- Giuseppe Averta, (2020):
  PhD in Information Engineering at the University of Pisa

- Gemma Carolina Bettelani, (2021):
  PhD in Information Engineering at the University of Pisa

- Federica Barontini (Expected: 2022):
  PhD in Information Engineering at the University of Pisa

Master's thesis students

- Alessandro Serio, 2009:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Progetto e sperimentazione di un'interfaccia uomo macchina per l'interazione aptica*
  PhD in Automatics, Robotics and Bio-Engineering at the University of Pisa
  Now: Project Manager at ROBOT SYSTEM AUTOMATION SRL, Perignano (Pisa) – Italy

- Stefano Mastria, 2011:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Metodo per la ricostruzione della postura della mano da misure parziali*
  Now: IT Consultant at Reply

- Mattia Poggiani, 2014:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Development of a tactile display for softness and texture rendering, in human-robot and tele-operation applications*
  Now: Research Engineer at University of Pisa

- Edoardo Battaglia, 2014:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Thimble-Sense: an individual-digit wearable tactile sensor for experimental grasp studies*
  Now: Post-Doc at University of Pisa

- Simone Fani, 2015:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Design and Assessment of a Myoelectric Controller for Prosthetics and Assistive Applications*
  Now: PhD student in Information Engineering at University of Pisa

- Simone Ciotti, 2015:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Technologies and algorithms for the development of distributed intrinsic tactile sensors*
  Now: PhD student in Information Engineering at University of Pisa

- Brigida Viggiano, 2015:
  Master's thesis in Biomedical Engineering, School of Engineering, University of Pisa – Thesis title: *Sviluppo di un'interfaccia sensorizzata per la mano secondo criteri di design ottimo*

- Alba Russo, 2015:
  Master's thesis in Biomedical Engineering, School of Engineering, University of Pisa – Thesis title: *Riconoscimento dei movimenti funzionali della mano attraverso sistemi indossabili sotto-sensorizzati*

- Federica Barontini, 2016:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Wearable Technologies and algorithms for the guidance of blind people*
  Now: research technician at Istituto Italiano di Tecnologia

- Nicoletta Colella, 2016:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Design and characterization of a wearable haptic system for assistive applications*
  Now: Research Engineer at University of Pisa

- Giuseppe Averta, 2016:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Mathematical modeling and analysis of human upper limb kinematics*
  Now: PhD student in Information Engineering at University of Pisa

- Franco Angelini, 2016:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Trajectory Tracking with Flexible Joint Robots for Robust Interaction via Iterative Learning Control*
  Now: PhD student in Information Engineering at University of Pisa

- Visar Arapi, July 2017:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Supervised machine learning methods for automatic human hand pose recognition for robotics and human robot interaction*
  Now: Research Engineer at University of Pisa

- Gemma Carolina Bettelani, July 2017:
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis topic: *Mathematical modeling of Tactile illusions*
  Now: PhD student in Information Engineering at University of Pisa

- Davide Doria, (2017):
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa – Thesis title: *Wearable haptic interfaces for robot-assisted surgery*
  Now: Research Engineer at University of Pisa

- Lapo Frati, (2018)
  Master's thesis in Informatics, University of Pisa – Thesis title: *Vision-based Deep Learning Model for Guiding Multi-fingered Robotic Grasping*

- Katia Di Blasio, (2019)
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa. Thesis title: Rendering high-frequency contact information with a soft prosthetic hand.

- Massimiliano Abbinante, (2019)
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa. Thesis title: Robotics-enabled assessment and rehabilitation for post-stroke upper limb: an Equilibrium Point-based approach.

- Alfredo Bagalà, (2020)
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa.

- Marco Baracca (2021)
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa.

- Lorenzo Collodi, (2021)
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa.

- Paolo Cheli (2021)
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa.

- Irene Valdambrini, (2021)
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa.

- Paolo Bonifati (Expected Fall 2021)
  Master's thesis in Automation and Robotics Engineering, School of Engineering, University of Pisa.

Bachelor's thesis students

- Massimiliano Abbinante, 2015:
  Bachelor's thesis in Mechanical Engineering, School of Engineering, University of Pisa

- Marco Baracca, 2016:
  Bachelor's thesis in Biomedical Engineering, School of Engineering, University of Pisa

- Armando Aveta, 2016:
  Bachelor's thesis in Biomedical Engineering, School of Engineering, University of Pisa

- Sergio Domenici, 2021:
  Bachelor's thesis in Informatics Engineering, School of Engineering, University of Pisa

Master's student projects (2009–present)

- Supervisor of student design projects (more than 40) for: visual and non visual hand tracking, tactile sensing; machine learning for robotic manipulation; identification of dynamic systems; robot hands: sensing and control; haptic

interfaces for grasping analysis, tactile displays, VRE programming to study visuo-haptic integration in human manipulation and haptic interac- tions, mechatronic devices for softness rendering and vibrational cue delivery in tele-operation, haptic feedback for assistive technologies, prosthetics and rehabilitation; analysis of kinematic data of upper limb in manipulation tasks

- Master's degree in Automation and Robotics Engineering, School of Engineering, University of Pisa
- Master's degree in Mechanical Engineering, School of Engineering, University of Pisa
- Course of Robotics
- Prof. Antonio Bicchi

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<tr><td>Teaching
Experience</td><td>

University of Pisa - School of Engineering

Teacher (Course-holder - Professor):

· PhD in Information Engineering
· Course: *Introduction to Haptics and Haptic Interfaces*
· December 2018

Teacher (Course-holder - Professor):

· Bachelor's degree in Energy Engineering
· Course: *System Theory*
· March 2017 – present

Teacher (Course-Co-holder - Professor):

· Master's degree in Robotics Engineering
· Course: *Biological Cybernetics*
· March 2019 – present

Teacher (Course-Co-holder - Professor):

· Master's degree in Robotics Engineering
· Course: *Sensors for Robotics and Automation (Process Control)*
· March 2020 – present

Teacher (Course-Co-holder - Professor):

· Master's degree in Robotics Engineering
· Course: *Digital Control*
· September 2019 – present

Teacher (Not Course-holder):

· Bachelor's degree in Biomedical Engineering
· Course: *Automatic Control*
· September 2017 – December 2017

Teacher (Not Course-holder):

· Master's degree in Automation and Robotics Engineering
· Course: *Distributed Robotics*
· March 2018– present

Teaching assistant :

· Bachelor's degree in Mechanical Engineering
· Course: *Regulation and Control of Mechanical Systems (Control Engineering)*
· October 2009 to February 2010; March 2012 to August 2012; December 2012 to February 2013; June 2013 to December 2013
· Prof. Antonio Bicchi

Teaching assistant :

· Master's degree in Robotics and Automation Engineering
· Master's degree in Mechanical Engineering
· Lectures on Haptic Interfaces and Rendering – Course: *Robotics*
· Spring 2010; Spring 2012
· Prof. Antonio Bicchi

Teaching assistant and lab instructor :

· Bachelor's degree in Biomedical Engineering
· Lectures on Haptic Interfaces and Rendering – Course: *Bio–Engineering Lab*
· Spring 2010; Spring 2012 -Prof. Enzo Pasquale Scilingo

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Panelist and Reviewer of PhD Thesis	· *Candidate*: Manish Chauhan · *PhD Program*: PhD Program in Bioengineering and Robotics · *Institution(s)*: Istituto Italiano di Tecnologia, Universita degli studi di Genova · *Year*: 2017

· *Candidate*: Manish Chauhan
· *PhD Program*: PhD Program in Bioengineering and Robotics
· *Institution(s)*: Istituto Italiano di Tecnologia, Universita degli studi di Genova
· *Year*: 2017

· *Candidate*: Mariacarla Memeo
· *PhD Program*: PhD Program in Bioengineering and Robotics
· *Institution(s)*: Istituto Italiano di Tecnologia, Universita degli studi di Genova
· *Year*: 2017

· *Candidate*: Mariacarla Memeo
· *PhD Program*: PhD Program in Bioengineering and Robotics
· *Institution(s)*: Istituto Italiano di Tecnologia, Universita degli studi di Genova
· *Year*: 2017

· *Candidate*: Edwin Avila
· *PhD Program*: PhD Program in Bioengineering and Robotics
· *Institution(s)*: Istituto Italiano di Tecnologia, Universita degli studi di Genova
· *Year*: 2018

· *Candidate*: Riccardo Iandolo
· *PhD Program*: PhD Program in Bioengineering and Robotics
· *Institution(s)*: Istituto Italiano di Tecnologia, Universita degli studi di Genova
· *Year*: 2018

· *Candidates*: Vincenzo Manzari, Matteo Razzanelli, Cosimo Della Santina
· *PhD Program*: PhD Program in Information Engineering
· *Institution(s)*: Universita di Pisa
· *Year*: 2019

· *Candidates*: Anna Mannucci
· *PhD Program*: PhD Program in Information Engineering
· *Institution(s)*: Universita di Pisa
· *Year*: 2020

· *Candidates*: Pietro Balatti, Simon Lemerle
· *PhD Program*: PhD Program in Information Engineering
· *Institution(s)*: Universita di Pisa
· *Year*: 2021

· *Candidate:* Jordan Montero Aragon

· *PhD Program in BioRobotics - Scuola Superiore Sant'Anna*

· *2020*

Professional Service	**Conference Service (Selection)**

- *2022* **IEEE - RAS Haptics Symposium 2020**. *Chair Work in Progress*
- *2021* **IEEE RAS ICRA**. *Associate Editor*
- *2021* **IEEE RAS IROS**. *Associate Editor*

- 2020 **IEEE - RAS Haptics Symposium 2020**. *Program Committee and Work In Progress Editorial Board*

- 2020 **Eurohaptics 2020**. *Program Committee*
-
- 2020 **IEEE-RAS/RSJ International Conference on Intelligent Robots and System (IROS 2020)**. *Associate Editor.*

- 2020 **IEEE-RAS International Conference on Robotics and Automation (ICRA 2020).** *Associate Editor*

- **IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics - BioRob 2020** *Associate Editor*

- 2019 **IEEE-RAS/RSJ International Conference on Intelligent Robots and System (IROS 2019)**. Macau, China. November 3 - 8. *Associate Editor.*

- 2019 **IEEE RAS Worldhaptics Conference**. Tokyo, Japan, July 9 – 12. *Associate Editor.*

- 2019 **IEEE-RAS International Conference on Robotics and Automation (ICRA 2019)**. Montreal (Canada), May 20-24, 2019. *Associate Editor. Co-organizer of the Workshop on: Soft Haptics: Modeling, Design and Application.*

- 2018 **Robotics Science and Systems (RSS) 2018**. Pittsburgh (US-PA), June 26–30, 2018: *Senior Member of the Program Committee: Area Chair for Mechanisms and Design; Human-Robot Interaction and Human Centered Systems; Manipulation*

- 2018 **IEEE-RAS International Conference on Robotics and Automation (ICRA 2018)**. Brisbane (Australia), May 21-25, 2018. *Associate Editor*

- 2018 **IEEE- RAS International Conference on Biomedical Robotics and Biomechatronics - BioRob 2018**. Enschede, The Netherlands, 26-29 August, 2018. *Associate Editor.*

- 2018 **IEEE/RSJ International Conference on Intelligent Robots and Systems IROS 2018**. Madrid (Spain), 1-5 October, 2018: *Associate Editor and Co-organizer of the Workshop on "User-Centered Methods in Human-Robot Interaction".*

- 2018 **International Congress on Ultra Modern Telecommunications and Control Systems – ICUMT 2018**. Moscow (Russia), November 5–9, 2018: *Program Committee – Control Systems TPC Chair*

- 2018 **International Conference on Neuro-Rehabilitation (ICNR)**. Pisa (Italy). October 16–19, 2018. *Co-organizer of the Special Session on: New perspectives in upper limb prosthetics: from the robotics laboratory to clinical use*

- 2018 **IEEE - RAS Haptics Symposium 2018**. San Francisco (CA, US), 25-29 March 2018. Co-chair of the regular session *Designing Interactions.*

- 2018 **1st IEEE - RAS International Conference on Soft Robotics - RoboSoft 2018**. Co-organizer of the Workshop: *Soft haptics: what has been done and what can be done.* Livorno (Italy), 24 April 2018.

- 2018 **2018 IEEE Conference on Control Technology and Applications (CCTA)**. Copenhagen (Denmark). August 21–24, 2018. *Associate Editor*

- 2018 **Eurohaptics Conference**. Pisa (Italy), June 13–16, 2018: *Member of the Organizing Committee: Student Volunteer Chair - Poster Award Chair and Associate Editor.*

- 2017 **10th International Workshop on Human-Friendly Robotics (HFR 2017)**. *Program committee member.* Naples (Italy), 6-7 November 2017.

- **International Congress on Ultra Modern Telecommunications and Control Systems – ICUMT 2017**. Munich (Germany), November 6–8, 2017: *Program Committee – Control Systems TPC Chair*

- **IEEE International Conference on Rehabilitation Robotics – ICORR 2017**. London (UK), July 17–20, 2017: *Associate Editor*

- **Worldhaptics 2017**. Munich (Germany), June 6–10, 2016: *Associate Editor*

- **International Congress on Ultra Modern Telecommunications and Control Systems – ICUMT 2016**. Lisbon (Portugal), October 18–20, 2016: *Program Committee – Control Systems TPC Chair*

- **IEEE International Conference on Robotics and Automation –ICRA 2016** – Stockholm, Sweden, May 16–21, 2016: *main organizer of the Workshop on "Grasping and Manipulation Datasets" – co-organized with Yu Sun (University of South Florida), Aaron Dollar (Yale University) and Jeannette Bohg (Max Planck Institute for Intelligent Systems (MPI-IS))*

- **IEEE Haptics Symposium 2016** – Philadelphia (PA, US), April 8–11, 2016: *co-chair of the regular session "Tactile Sensing and Perception" and main organizer of the Workshop on "Human and Robot Hands, Human and Robot Touch: Sensorimotor Synergies to Bridge the Gap Between Neuroscience and Robotics" – co-organized with Alessandro Moscatelli (University of Rome Tor Ver- gata)*

- **IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics - BioRob 2016** – Singapore (SGP), June 26–29, 2016: *Associate Editor*

- **IEEE International Conference on Rehabilitation Robotics – ICORR 2015**– Singapore (SGP), June 23–28, 2015: *Scientific Committee member, Associate Editor*

- **IEEE International Conference on Biomedical Robotics and Biomechatronics - BioRob 2014** – São Paulo (Brazil), August 12–15, 2014: *Associate Editor*

- **Eurohaptics Conference 2014** – Versailles (France), June 24–27, 2014:
  - *main organizer of the Workshop on "Haptics in Rehabilitation, Prosthetics and Neural Engineering : Robotic Aspects and Neuro-scientific Principles " – co-organized with Marcia O'Malley (Rice University), Antonio Frisoli (Scuola Superiore Sant'Anna) and Lorenzo Masia (Nanyang Technological University);*

- *main organizer of the Workshop on **"Multisensory Softness "** – co-organized with Massimiliano Di Luca (University of Birmingham) and Gabriel Baud Bovy (Istituto Italiano di Tecnologia)*

- **IEEE Haptics Symposium 2014** – Houston (TX, US), February 23–26, 2014: *main organizer of the Workshop on **"Artificial Softness: Design and Perception"** – co-organized with Massimiliano Di Luca (University of Birmingham)*

- **IEEE/RSJ International Conference on Intelligent Robots and Systems – IROS 2012** – Vila Moura, Algarve (Portugal), October 7–12, 2012: *co-chair of the Regular Session "Human Performance Augmentation"*

Presentations and Seminars

Invited Talks/Public Speeches (Selection)

- 2020 IEEE International Conference on Robotics and Automation (ICRA 2020) - Workshop on Learning of Manual Skills in Humans and Robots. Title: Human and robot use of artificial hands.

- 2019. *Invited Talk. Workshop on "Haptic Assistance and Augmented Sensing for Enhancing Autonomy of Visually Impaired People".* Robotics Science and Systems 2019. Freiburg, Germany

- 2019. *Invited Talk. Workshop on "Task-Informed Grasping (TIG-II): From Perception to Physical Interaction".* Robotics Science and Systems 2019. Freiburg, Germany

- 2019. *Invited Talk. Workshop on '' Optimal Planning and Control Fusing Offline and Online Algorithms. IEEE-RAS ICRA. Montreal, Canada 2019.*

- *2018. Invited Talk. Visual Computing Lab, CNR.* Pisa, Italy. Title of the Talk: Tecnologie aptiche indossabili per interazione avanzata uomo macchina. November, 2018

- 2018. *Invited Talk.* 2018 IEEE-RSJ International Conference on Intelligent Robots and Systems (IROS). Workshop on:"Experimental Robotic Grasping and Manipulation – Benchmarks, Datasets, and Competitions". Title of the Talk: *From human hands to soft artificial hands for robots and humans: datasets and lessons learned from competitions.* Madrid, Spain. October, 2018.

- 2018. *Invited Talk. The 19th World Congress of Psychophysiology.* Lucca, Italy. Title of the Talk: Sensory Synergies and Tactile Illusions: a backdoor for human touch modeling and human-machine interface design. September, 2018.

- 2018. *Invited Talk. International Conference on Neuro-rehabilitation.* Pisa, Italy. Title of the Talk: Human hand sensing and motor control: from postural synergies to dynamic integration of touch and proprioception. October, 2018.

- 2018. *Invited Talk. International Conference on Neuro-rehabilitation.* Pisa, Italy. Title of the Talk: On the Role of Postural Synergies for Grasp Force Generation and Upper Limb Motion Control. October, 2018.

- 2018. *Invited Talk. Symposium organized within Robotics Science and System 2018 Program Committee Meeting.* Cornell University, Ithaca , NY-USA. Title of the Talk: Bio-aware design of robotic systems and haptic-interfaces. April, 2018.

- 2018. *Invited Talk* at *Stanford University*, Stanford, CA-USA. Title: *Towards a new generation of bio-aware artificial systems and advanced human-robot and haptic interfaces.* March 2018

- 2017. *Invited Lecture* at *Centre for Robotics Research - King's College London.* Title: *From neuroscience to robotics and advanced human-machine interaction: lessons learned and mutual inspiration.* London (UK). November 2017

- 2017. IEEE RAS International Conference on *Humanoid Robots 2017.* Invited Talk at Workshop: *Towards robust grasping and manipulation skills for humanoids.* Title: *Human grasping and manipulation: lesson learned for the design, control and sensing of robotic hands.* Birmingham (UK). November 2017

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2017. *Automatica.it.* Invited talk at Round Table on: *Perspectives and new technological and scientific challenges in Automation.* Milano (Italy). September 2017

- 2017 IEEE-RSJ International Conference on Intelligent Robots and Systems (IROS). Workshop on: *Morphological Computation in Soft Robotics.* Title of the talk: *From soft robotics to soft haptics: sensing principles and wearable tactile displays.* Vancouver, BC- Canada. September 2017.

- 2017 Summer School on Soft Manipulation 2017. Supported by RAS-TCs on: Robotic Hands, Grasping and Manipulation; Mobile Manipulation; Soft Robotics.

  Invited Lecture. Title of the talk: *Modeling hand kinematics and the sense of touch for grasping and environmental constraints exploitation: from humans to robots and back again.* Lake Chiemsee, Germany. July 2017.

- 2017 IEEE-RAS Worldhaptics Conference. Workshop on: *Wearable haptic systems: design, applications, and perspectives.* Title of the talk: *Wearable haptics and affective computing: towards a novel paradigm for HRI,* Furstenfeldbruck (Munich), Germany, June 2017.

- 2017 IEEE-RAS Worldhaptics Conference. Workshop on: *Haptics interfaces for accessibility.* Title of the talk: *Augmented white cane performance with wearable haptics and navigation,* Furstenfeldbruck (Munich), Germany, June 2017.

- 2017 Toscana Technologica. Title of the talk: *Wearable Haptic Systems,* Firenze (Italy), Februrary 2017

- Title of the talk: *From Sensory-Motor Synergies to Haptic Interfaces: Applications in Assistive Robotics and Human Robot-Interaction,* Department of Mechanical Engineering - Rice University - Houston (TX, USA), January 2017

- 2016 IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN). Workshop on: *2nd Workshop on human-oriented approaches for assistive and rehabilitation robotics* – Title of the talk: *Sensory-motor synergies for human-robot interaction and assistive robotics,* Columbia University – Teachers College, New York (NY, USA), August 2016

- 2016 Fondazione Santa Lucia, Rome (Italy). Invited talk on: *Sensory-motor synergies and robotics research: a mutual inspiration,* July 2016

- 2016: Robotics Research Jam Sessions - 2016 – Title of the talk: *Sensory-motor synergies for the design of robotic and haptic systems,* University of Pisa (Pisa, Italy), July 2016

- 2016 International Society of Motor Control. Invited Lecture. *Motor Control Summer School - XIII* – Title of the talk: *Sensory-motor synergies: An Inspiration for the Design of Robotic and Artificial Haptic Systems,* Kibbutz Tzuba (Israel), June 2016

- 2016 Robotics: Science and Systems Conference. Workshop on: *Robot Makers: The future of digital rapid design and fabrication of robots* – Title of the talk: *Fast prototyping of soft robots and human-robot interfaces: methods, applications and open platforms,* Ann Arbor (MI, USA), June 2016

- 2016 Robotics: Science and Systems Conference. Workshop on: *Minimality and Desing Automation* – Title of the talk: *Minimality and Under-Sensing: A human-inspired Approach,* Ann Arbor (MI, USA), June 2016

- IEEE International Conference on Robotics and Automation (ICRA 2016): Workshop on: *Grasping and Manipulation Datasets* – Title of the talk: *An open-access repository to share data and tools for the study of human and robotic hands: the Hand Corpus initiative,* Stockholm (Sweden), May 2016

- IEEE Haptics Symposium 2016: Workshop on *Human and Robot Hands, Human and Robot Touch: Sensorimotor Synergies to Bridge the Gap Between Neuroscience and Robotics* – Title of the talk: *Sensorimotor Synergies for the Design of Haptic, Sensing and Robotic Systems,* Philadelphia (PA, USA), April 2016

- IEEE/RAS-EMBS International Conference on Rehabilitation Robotics (ICORR 2015): Workshop on *Human-Oriented Approaches for Assistive and Rehabilitation Robotics* – Title of the talk: *Human Hands and SoftHands: from neurosci-*

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entic studies to assisitive applications, Singapore (SGP), August 2015
Eurohaptics Conference 2014: Workshop on *Haptics in Rehabilitation, Prosthetics and Neural Engineering: Robotic Aspects and Neuro-scientific Principles* – Title of the talk: *Tactile feedback for the Pisa/IIT SoftHand*, Versailles (France), June 2014

- IEEE Haptics Symposium 2014: Workshop on *Wearable haptics: from neuro-physiology foundations to new wearable haptic designs and exoskeletons* – Title of the talk: *Sensing the Human Hand: Simplicity and Optimality Criteria for Wearable Systems*, Houston (TX, USA), February 2014
- IEEE Haptics Symposium 2014: Workshop on *Artificial Softness: Design and Perception* – Title of the talk: *Which(fabric – based) approach for softness displays?*, Houston (TX, USA), February 2014
- AMARSi European project Symposium: *Adaptive Motor Primitives in Brain and Machines* – Title of the talk: *Haptic Synergies, i.e. How to Cope with Hand Sensorimotor Complexity*, University Clinic Tübingen (Germany), Medical Clinic-Lecture Hall, November 2012
- Title of the talk: *A New Paradigm for Haptic Display Design: Mathematical Modelling and Applications*, Laboratory for Computational Sensing and Robotics (LCSR) - The Johns Hopkins University - Baltimore (MD, USA), February 2011

Conference Presentations (Selection)

- Automatica.it (Italian Conference of Researchers in Automation), Ancona (Italy), September 2019. (Oral Presentation).

- IEEE-RAS ICRA 2019, Montreal, May 2019. (Oral Presentation).

- Automatica.it (Italian Conference of Researchers in Automation), Firenze (Italy), September 2018. (Oral Presentation).

- IEEE-RAS Haptics Symposium. San Francisco (CA-USA). Interactive presentation at Cross-Cutting Challenge Session. March 2018.

- IEEE-RAS Worldhaptics 2017. Furstenfeldbruck (Munich), Germany, June 2017. (Oral Presentation: **Best Paper Award Finalist**.

- IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), Columbia University – Teachers College, New York (NY, USA), August 2016 (Oral Presentation)

- IEEE Haptics Symposium, Philadelphia (PA, USA), April 2016. (Oral Presentation). **Best Paper Award**

- Automatica.it (Italian Conference of Researchers in Automation), Bari (Italy), September 2015. (Oral Presentation). **Best Oral Presentation**

- IEEE/RAS-EMBS International Conference on Rehabilitation Robotics, Singapore (SGP), August 2015. (Oral Presentation).

- IEEE Worldhaptics Conference, Evanston (IL, USA), June 2015. (Oral and Demo Presentation).

- Eurohaptics Conference, Versailles (France) – (Poster and Teaser Presentation). June 2014. **Best Paper Award (Category: Poster Presentation)**

- IEEE Haptics Symposium, Houston (TX, USA) – (Poster, Teaser and Demo Presentation). February 2014

- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Tokyo (Japan), November 2013. (Oral Presentation).

- Automatica.it (Italian Conference of Researchers in Automation), Palermo (Italy), September 2013. (Oral Presentation). **Best Oral Presentation Finalist**

- Automatica.it (Italian Conference of Researchers in Automation), Benevento (Italy), September 2012. (Poster Presentation). **Best Interactive Presentation Finalist**

- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Vila Moura, Algarve (Portugal), October 2012. (Oral Presentation). **JTCF Novel Technology Paper Award for Amusement Culture**

- IEEE Haptics Symposium, Vancouver (BC, Canada), March 2012. (Oral Presentation).

- IEEE Symposium on Haptic Interfaces for Virtual Environments and Teleoperator Systems - Waltham (MA, USA), March 2010. (Oral and Demo Presentation). **Best Student Paper and Best Paper Award Finalist**

- IEEE EuroHaptics, Amsterdam (The Netherlands), June 2010. (Oral Presentation).

- Workshop on Human Friendly Robotics (HFR) - Symposium, Sestri Levante (Italy), December 2009. (Oral Presentation).

- IEEE World Haptics, Salt Lake City (UT, USA), March 2009 – (Poster and Demo Presentation)

PhD Thesis (Th1)   M. Bianchi – PhD dissertation: *On the Role of Haptic Synergies in Modelling the Sense of Touch and in Designing Artificial Haptic Systems* - University of Pisa, 2012.

(LIST OF PUBLICATIONS updated *Jan. 2021* – *a complete list of my publications is available* here)

Peer-Reviewed Journal Publications

(J1) V. Ortenzi, M. Controzzi, F. Cini, J. Leitner, **M. Bianchi**, M.A. Roa, & P.Corke. (2019). Robotic manipulation and the role of the task in the metric of success. Nature Machine Intelligence, 1(8), 340-346.ozzi, M., Cini, F., Leitner, J., Bianchi, M., Roa, M. A., & Corke, P. (2019). Robotic manipulation and the role of the task in the metric of success. Nature Machine Intelligence, 1(8), 340-346.

(J2) A. Moscatelli*, **M. Bianchi***, S. Ciotti, G.C. Bettelani, C.V. Parise, F. Lacquaniti,, & A. Bicchi,(2019). Touch as an auxiliary proprioceptive cue for movement control. Science advances, 5(6), eaaw3121.

(J3) E. Pezent, S. Fani, J. Clark, **M. Bianchi**, & O'Malley, M. K. (2019). Spatially Separating Haptic Guidance from Task Dynamics through Wearable Devices. IEEE transactions on haptics.

(J4) G. Averta, G. Valenza, V. Catrambone, F. Barontini, E.P. Scilingo, A. Bicchi, & **M. Bianchi**. (2019). On the time-invariance properties of upper limb synergies. IEEE Transactions on Neural Systems and Rehabilitation Engineering.

(J5) G. C. Bettelani, A. Moscatelli and **M. Bianchi**, "On the Role of Lateral Force in Texture-Induced Motion Bias During Reaching Tasks," in *IEEE Transactions on Haptics*. doi: 10.1109/TOH.2020.2970927

(J6) G. C. Bettelani, G. Averta, M. G. Catalano, B. Leporini and **M. Bianchi**, "Design and Validation of the Readable Device: a single-cell Electromagnetic Refreshable Braille Display," in IEEE Transactions on Haptics. doi: 10.1109/TOH.2020.2970929

(J7) Giannini, A., **Bianchi, M**., Doria, D. et al. Wearable haptic interfaces for applications in gynecologic robotic surgery: a proof of concept in robotic myomectomy. J Robotic Surg 13, 585–588 (2019). https://doi.org/10.1007/s11701-019-00971-w

(J8) N. Colella, **M. Bianchi**, G. Grioli, A. Bicchi and M. G. Catalano. A Novel Skin-Stretch Haptic Device for Intuitive Control of Robotic Prostheses and Avatars. in *IEEE Robotics and Automation Letters*. doi: 10.1109/LRA.2019.2896484

(J9) C. Della Santina, V. Arapi, G. Averta, F. Damiani, G. Fiore, A. Settimi, M.G. Catalano, D. Bacciu A. Bicchiand **M. Bianchi**. Learning from human show to grasp: a data-driven architecture for autonomous grasping with anthropomorphic soft hands. in *IEEE Robotics and Automation Letters*. doi: 10.1109/LRA.2019.2896485

(J10) S. Fani, K. D. Blasio, **M. Bianchi**, M. G. Catalano, G. Grioli and A. Bicchi. Relaying the High-Frequency Contents of Tactile Feedback to Robotic Prosthesis Users: Design, Filtering, Implementation, and Validation. in *IEEE Robotics and Automation Letters*, vol. 4, no. 2, pp. 926-933, April 2019.

(J11) A. Greco, G. Valenza, A. Bicchi, **M. Bianchi**, and E.P. Scilingo. Assessment of Muscle Fatigue during Isometric Contraction using Autonomic Nervous System Correlates. In: *Biomedical Signal Processing and Control*. In Press.

(J12) V. Catrambone, A. Greco, G. Averta, **M. Bianchi**, G. Valenza, and E.P. Scilingo. Predicting object-mediated gestures from brain activity: an EEG study on gen- der differences. In *IEEE Transactions on Neural Systems and Rehabilitation*. In Press.

(J13) **M. Bianchi** and G. Salvietti. Editorial: Mapping Human Sensory-Motor Skills for Manipulation Onto the Design and Control of Robots. In *Frontiers in Neurorobotics*. Vol. 13. 2019

(J14) V. Arapi, C. Della Santina, D. Bacciu, **M. Bianchi**, and A. Bicchi. DeepDynamicHand: A Deep Neural Architecture for Labeling Hand Manipulation Strate- gies in Video Sources Exploiting Temporal Information. In *Front Neurorobot. 2018*,12:86. Published 2018 Dec 17. doi:10.3389/fnbot.2018.00086

(J15) F. Angelini, C. Della Santina, M. Garabini, **M. Bianchi**, G.M. Gasparri, G. Grioli, M.G. Catalano, A. Bicchi. Decentralized Trajectory Tracking Control for Soft Robots Interacting With the Environment. In: *IEEE Transactions on Robotics*. 2018.

(J16) P. Beckerle, **M. Bianchi**, C. Castellini, and G. Salvietti. Mechatronic designs for a robotic hand to explore human body experience and sensory-motor skills: a Delphi study. In: *Advanced Robotics*, 32(12), 670–680. 10.1080/01691864.2018.1489737. 2018.

(J17) S. Fani, S. Ciotti, M.G. Catalano, G. Grioli, A. Tognetti, G. Valenza, A. Ajoudani, and **M. Bianchi**. Simplifying Telerobotics: Wearability and Teleimpedance Improves Human-Robot Interactions in Teleoperation. In: *IEEE Robotics and Automation Magazine*.10.1109/MRA.2017.2741579

(J18) S. Fani, S. Ciotti, E. Battaglia, A. Moscatelli, and **M. Bianchi**. W-FYD: a Wearable Fabric-based Display for Haptic Multi-Cue Delivery and Tactile Augmented Reality. In: *IEEE Transactions on Haptics*. 10.1109/TOH.2017.2708717.

(J19) G. Averta, F. Angelini, M. Bonilla, **M. Bianchi**, and A. Bicchi. 2018. Incremental-ity and Hierarchies in the Enrollment of Multiple Synergies for Grasp Planning. In: *IEEE Robotics and Automation Letters*. In press.

(J20) G.M., Gasparri, S. Manara, D. Caporale, G. Averta, M., Bonilla, H., Marino, M. Catalano, G., Grioli, **M. Bianchi**, A. Bicchi, and M. Garabini. 2018. Efficient Walking Gait Generation via Principal Component Representation of Optimal Trajectories: Application to a Planar Biped Robot With Elastic Joints. In: *IEEE Robotics and Automation Letters*, 3(3), pp.2299-2306.

(J21) M. Rossi, **M. Bianchi**, E. Battaglia, M. Catalano and A. Bicchi. HapPro: a wearable haptic device for proprioceptive feedback. In: *IEEE Transactions on Biomedical Engineering*. Accepted.

(J22) G. Valenza, A. Greco, **M. Bianchi**, M. Nardelli, S. Rossi, and E.P. Scilingo. EEG Oscillations during Caress-like Affective Haptic Elicitation. *Psychophysiology*. Accepted.

(J23) M. Nardelli, A. Greco, **M. Bianchi**, E.P. Scilingo, G. Valenza. Classifying Af-fective Haptic Stimuli through Gender-specific Heart Rate Variability Nonlinear Analysis. In: *IEEE TRANSACTIONS ON AFFECTIVE COMPUTING*, p. 1-9, ISSN: 1949-3045, doi: 10.1109/TAFFC.2018.2808261. 2018.

(J24) C. Della Santina, **M. Bianchi**, G. Grioli, F. Angelini, M. Catalano, M. Garabini, and A. Bicchi. Controlling Soft Robots: Balancing Feedback and Feedforward Elements. In: *IEEE ROBOTICS AND AUTOMATION MAGAZINE*, vol. 24, p. 75-83. doi: 10.1109/MRA.2016.2636360. 2017

(J25) G. Averta, C. Della Santina, E. Battaglia, F. Felici, **M. Bianchi**, and A. Bic-chi. Unvealing the Principal Modes of Human Upper Limb Movements through Functional Analysis. In: *Frontiers in Robotics and AI*. 4. 37, 2017. https://doi.org/10.3389/frobt.2017.00037

(J26) C. Della Santina, **M. Bianchi**, G. Averta, S. Ciotti, V. Arapi, S. Fani, E. Battaglia, M.G. Catalano, M. Santello, and A. Bicchi. Postural Hand Synergies during Environmental Constraint Exploitation. In:*Frontiers in Neurorobotics*. 11, 41. 2017.
10.3389/fnbot.2017.00041

(J27) C. Piazza, M.G. Catalano, S.B. Godfrey, M. Rossi, G. Grioli, **M. Bianchi**, K. Zhao, and A. Bicchi. The SoftHand Pro-H. A Hybrid Body-Controlled, Elec- trically Powered Hand Prosthesis for Daily Living and Working. In: *IEEE Robotics and Automation Magazine*. vol. 24, p. 87-101, ISSN: 1070-9932, doi: 10.1109/MRA.2017.2751662. 2017

(J28) . S.B. Godfrey, M. Rossi, C. Piazza, M. Catalano, **M. Bianchi**, G. Grioli, K.D. Zhao, and A. Bicchi. (2017). SoftHand at the CYBATHLON: A user's experience Olivier Lambercy; Roger Gassert. In: *JOURNAL OF NEUROENGINEERING AND REHABILITATION*, vol. 14, 124, ISSN: 1743-0003, doi: 10.1186/s12984- 017-0334-y

(J29) M.L. D'Angelo, F. Cannella, M.D'Imperio, and **M. Bianchi**. A preliminary ap-proach to study the behavior of human fingertip at contact via experimental test and numerical model. In: *ACTA IMEKO*. 6(2), 81–88,2017.

(J30) P. Beckerle, G. Salvietti, R. Unal, D. Prattichizzo, S. Rossi, C. Castellini, S. Hirche, S. Endo, H. Ben Amor, M. Ciocarlie, F. Mastrogiovanni, B.D. Argall, and **M. Bianchi**. A Human–Robot Interaction Perspective on Assistive and Rehabilitation Robotics. In: *Front Neurorobot*, 11: 24, 2017.

(J31) Y. Huang, **M. Bianchi**, M. Liarokapis and Y. Sun. Recent Data Sets on Object Manipulation: A Survey. In: *Big Data*. 4(4), 2016.

(J32) S. Fani, **M. Bianchi**, S. Jain, J.S. Pimenta Neto, S. Boege, G. Grioli, A. Bicchi, M. Santello. Assessment of Myoelectric Controller Performance and Kinematic Behavior of a Novel Soft Synergy-Inspired Robotic Hand for Prosthetic Applications. In:*Frontiers in Neurorobotics*, 10, 2016.

(J33) M.L. D'Angelo, F. Cannella, **M. Bianchi**, M. D'Imperio, E. Battaglia, M. Pog- giani, G. Rossi, A. Bicchi and D. Caldwell. An Integrated Approach to Charac- terize the Behavior of a Human Fingertip in Contact with a Silica Window. In: *IEEE Transactions on Haptics*. 10(1): 123–129. 2017.

(J34) **M. Bianchi**. Haptic Devices. In: *Wiley Encyclopedia of Electrical and Electronics Engineering*. Published Online: 16 Nov 2016.

(J35) **M. Bianchi**. A Fabric-based Approach for Wearable Haptics. In: *Electronics - Special Issue on Wearable Electronics and Embedded Computing Systems for Biomedical Application*. 5(3), 44, 2016. doi: 10.3390/electronics5030044.

(J36) **M. Bianchi**, R. Haschke, G. Buscher, S. Ciotti, N. Carbonaro and A. Tognetti. Multi-modal Sensing Glove for Human Manual-Interaction Studies. In: *Electron- ics - Special Issue on Wearable Electronics and Embedded Computing Systems for Biomedical Application*. 5(3), 42, 2016. doi:10.3390/electronics5030042

(J37) M. Santello, **M. Bianchi**, M. Gabiccini, E. Ricciardi, G. Salvietti, D. Prattichizzo, M. Ernst, A. Moscatelli, H. Jorntell, A.M.L. Kappers, K. Kyriakopoulos, A. Albu Schaeffer, C. Castellini and A. Bicchi. Towards a synergy framework across neu-roscience and robotics: Lessons learned and open questions. Reply to comments on: Hand synergies: Integration of robotics and neuroscience for understand-ing the control of biological and artificial hands. In: *Physics of Life Reviews*. 17:54–60, 2016. http://dx.doi.org/10.1016/j.plrev.2016.06.007

(J38) **M. Bianchi**, G. Valenza, A. Lanata, A. Greco, M. Nardelli, A. Bicchi and E.P. Scilingo. On the role of affective properties in hedonic and discriminant haptic systems. In: *International Journal of Social Robotics*. 1–9, 2016. http://dx.doi.org/10.1007/s12369-016-0371-x

(J39) S. Ciotti, E. Battaglia, N. Carbonaro, A. Bicchi, A. Tognetti and **M. Bianchi**. A Synergy-Based Optimally Designed Sensing Glove for Functional Grasp Recog-nition. In:*Sensors*. 16(6), 811, 2016. doi:10.3390/s16060811

(J40) G. Valenza, A. Greco, L. Citi, **M. Bianchi**, R. Barbieri and E.P. Scilingo. Inhomo-geneous Point-Processes to Instantaneously Assess Affective Haptic Perception through Heartbeat Dynamics Information. In: *Nature Scientific Reports*. 6, Article number: 28567 (2016). doi:10.1038/srep28567

(J41) A. Greco, G. Valenza, M. Nardelli, **M. Bianchi**, A. Lanata, L. Citi and E.P. Scilingo. Force-Velocity Assessment of Caress-like Stimuli through the Electrodermal Ac-tivity Processing: Advantages of a Convex Optimization Approach. In: *IEEE Transactions on Human-Machine System*. vol. PP, no. 99: 1–10, 2016. doi: 10.1109/THMS.2016.2586478

(J42) A. Moscatelli*, **M. Bianchi***[1], A. Serio, A. Terekhov, V. Hayward, M.O. Ernst and A. Bicchi. A change in the fingertip contact area as a novel proprioceptive cue. In: *Curr Biol (2016)*. 26(9):1159–63. doi: 10.1016/j.cub.2016.02.052

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[1]Both authors contributed equally to this paper

(J43) M. Santello, **M. Bianchi**, M. Gabiccini, E. Ricciardi, G. Salvietti, D. Prattichizzo, M. Ernst, A. Moscatelli, H. Jorntell, A.M.L. Kappers, K. Kyriakopoulos, A. Albu Schaeffer, C. Castellini and A. Bicchi. Hand synergies: Integration of robotics and neuroscience for understanding the control of biological and artificial hands. In: *Physics of Life Reviews*. 17:1–23. http://dx.doi.org/10.1016/j.plrev.2016.02.001

(J44) A. Leo, G. Handjaras, **M. Bianchi**, H. Marino, M. Gabiccini, A. Guidi, E.P. Scilingo, P. Pietrini, A. Bicchi, M. Santello and E. Ricciardi. A synergy-based hand control is encoded in human motor cortical areas. In: *eLife (2016)*. http://dx.doi.org/10.7554/eLife.13420.

(J45) E. Battaglia, **M. Bianchi**, A. Altobelli, G. Grioli, M.G. Catalano, A. Serio, M. Santello, and A. Bicchi. ThimbleSense: a fingertip-wearable tactile sensor for grasp analysis. In: *IEEE Transactions on Haptics*. 9(1): 121–133, 2016. http://dx.doi.org/10.1109/TOH.2015.2482478.

(J46) **M. Bianchi** and A. Serio. Design and characterization of a fabric-based softness display. In: *IEEE Transactions on Haptics*. 8(2):152-63, 2015. http://dx.doi.org/10.1109/TOH.2015.2404353.

(J47) A. Ajoudani, S.B. Godfrey, **M. Bianchi**, M.G. Catalano, G. Grioli, N. Tsagarakis, and A. Bicchi. Exploring teleimpedance and tactile feedback for intuitive control of the Pisa/IIT SoftHand. In: *Special Issue on "Haptics in Rehabilitation and Neural Engineering" - IEEE Transactions on Haptics*. 7(2):203–215, 2014. http://dx.doi.org/10.1109/TOH.2014.2309142.

(J48) J.C. Gwilliam, **M. Bianchi**, L.K. Su, and A.M. Okamura. Characterization and psychophysical studies of an air-jet lump display. *IEEE Transactions on Haptics*. 6(2):156–166, 2013. http://dx.doi.org/10.1109/TOH.2012.71.

(J49) **M. Bianchi**, P. Salaris, and A. Bicchi. Synergy-based hand pose sensing: Recon- struction enhancement. *International Journal of Robotics Research*. 32(4):396– 406, 2013. http://dx.doi.org/10.1177/0278364912474078.

(J50) **M. Bianchi**, P. Salaris, and A. Bicchi. Synergy-based hand pose Sensing: Optimal glove design. *International Journal of Robotics Research*. 32(4):407–424, 2013. http://dx.doi.org/10.1177/0278364912474079.

(J51) E.P. Scilingo, **M. Bianchi**, G. Grioli and A. Bicchi. Rendering Softness: Integration of kinaesthetic and cutaneous information in a haptic device. *IEEE Transactions on Haptics*. 3(2):109–118, 2010. http://dx.doi.org/10.1109/TOH.2010.2

(J52) A. Landi, A. Mazzoldi, C. Andreoni, **M. Bianchi**, A. Cavallini, M. Laurino, L. Ri- cotti, R Iuliano, B. Matteoli, and L. Ceccherini-Nelli. Modelling and control of HIV dynamics. *Computer Methods and Programs in Biomedicine*. 89: 161–168, 2008. http://dx.doi.org/10.1016/j.cmpb.2007.08.003.

Peer-Reviewed Conference Publications

(P1) S. Ciotti, T. Sun, E. Battaglia, A. Bicchi, H. Liu, and **M. Bianchi**. Soft tactile sensing: retrieving force, torque and contact point information from deformable surfaces. In *IEEE-RAS ICRA Conference* 2019

(P2) J. Clark, G. Lentini, F. Barontini, M.G. Catalano, **M. Bianchi**, M. O'Malley . On the role of wearable haptics for force feedback in teleimpedance control for dual- arm robotic teleoperation. In *IEEE-RAS ICRA Conference* 2019

(P3) Schwarz, Anne, Averta, Giuseppe, Veerbeek, Janne M., Luft, Andreas R., Held, Jeremia P. O., Valenza, Gaetano, Biechi, Antonio, **Bianchi, Matteo** (2019). A functional analysis-based approach to quantify upper limb impairment level in chronic stroke patients: a pilot study. In: Proceedings of the 2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS). PROCEEDINGS OF THE ANNUAL INTERNATIONAL CONFERENCE OF THE IEEE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY, p. 4198-4204

(P4) Kieliba P. J., Veltink P. H., Lisini Baldi T., Prattichizzo D., Santaera G., Bicchi A., **Bianchi M**., Van Beijnum B. J. F. (2019). Comparison of Three Hand Pose Reconstruction Algorithms Using Inertial and Magnetic Measurement Units. In: IEEE-RAS International Conference on Humanoid Robots. IEEE-RAS INTERNATIONAL CONFERENCE ON HUMANOID ROBOTS, vol. 2018-, p. 676-683, IEEE Computer Society, ISBN: 978-1-5386-7283-9, ISSN: 2164-0572, Friendship Palace, Beijing Friendship Hotel, 1 Zhongguancun South Street, Haidian District, chn, 2018, doi: 10.1109/HUMANOIDS.2018.8624929

(P5) Bettelani G. C., Moscatelli A., **Bianchi M**. (2019). Contact with Sliding over a Rotating Ridged Surface: The Turntable Illusion. In: 2019 IEEE World Haptics Conference, WHC 2019. p. 562-567, Institute of Electrical and Electronics Engineers Inc., ISBN: 978-1-5386-9461-9, jpn, 2019, doi: 10.1109/WHC.2019.8816119

(P6) G. Averta, F. Angelini, A. Bicchi, G. Valenza, and **M. Bianchi**. On the role of postural synergies for grasp force generation and upper limb motion control. In *Biosystems and Biorobotics*, 21, pp. 344-348. 2019.

(P7) G. Averta, E. Battaglia, C. Della Santina, M.G. Catalano and **M. Bianchi**. A synergistic behavior underpins human hand grasping force control during environmental constraint exploitation. In *Biosystems and Biorobotics*, 21, pp. 67-71. 2019.

(P8) C. Piazza, M.G. Catalano, **M. Bianchi** et al. The softpro project: Synergy-based open-source technologies for prosthetics and rehabilitation. In *Biosystems and Biorobotics*, 22, pp. 370-374. 2019.

(P9) P.J. Kieliba, P.H. Veltink, T. Lisini Baldi, D. Prattichizzo, G. Santaera, A. Bicchi, **M. Bianchi**, B.J.F. van Beijnum. Comparison of Three Hand Pose Reconstruction Algorithms Using Inertial and Magnetic Measurement Units. In: *IEEE RAS Humanoids 2018*, 1-9.

(P10) G.C. Bettelani, A. Moscatelli and **M. Bianchi**. Towards a Technology-Based Assessment of Sensory-Motor Pathological States through Tactile Illusions. In: *nternational Conference on Biomedical Robotics and Biomechatronics -BioRob 2018*. In press.

(P11) **M, Bianchi**, G. Averta, E. Battaglia, C. Rosales, M. Bonilla, A. Tondo, M. Poggiani, G. Santaera, S. Ciotti, M. Catalano, and A. Bicchi. Touch-Based Grasp Primitives for Soft Hands: Applications to Human-to-Robot Handover Tasks and Beyond. In: *ICRA 2018*. In press

(P12) E. Battaglia, M. Catalano, G. Grioli, **M. Bianchi**, and A. Bicchi. ExoSense: Measuring Manipulation in a Wearable Manner. In: *ICRA 2018*. In press

(P13) E. Pezent, S. Fani, J. Bradley, **M. Bianchi**, and M.K. O' Malley. Separating Haptic Guidance from Task Dynamics: A Practical Solution via Cutaneous Devices. In:

IEEE-RAS Haptics Symposium. In press.

(P14) V. Catrambone, A. Greco, G. Averta, **M. Bianchi**, A. Bicchi, E.P. Scilingo, and G. Valenza. EEG Complexity Maps to Characterize Brain Dynamics during Upper Limb Motor Imagery. In: *IEEE-EMBC 2018.* In press

(P15) V. Catrambone, A. Greco, G. Averta, **M. Bianchi**, N. Vanello, A. Bicchi, E.P. Scilingo, and G. Valenza. EEG Processing to Discriminate Transitive-Intransitive Motor Imagery Tasks: Preliminary Evidences using Support Vector Machines. In: *IEEE-EMBC 2018.* In press

(P16) A. Greco, M. Nardelli, **M. Bianchi** , G. Valenza, and E.P. Scilingo. Recognition of affective haptic stimuli conveyed by different fabrics sing EEG-based sparse SVM. In:*2017 IEEE 3rd International Forum on Research and Technologies for Society and Industry (RTSI).* 1–5. 2017. 10.1109/RTSI.2017.8065933

(P17) G. Averta, C. Della Santina, E. Battaglia, S. Ciotti, V. Arapi, S. Fani, and **M. Bianchi**. From humans to robots: The role of cutaneous impairment in human environmental constraint exploitation to inform the design of robotic hands. In: *Proceedingsonthe 20179th International Congress on Ultra Modern Telecommu- nications and Control Systems and Workshops (ICUMT).* **Best Student Paper Award** and **Best Paper in Session Robotics**.

(P18) S. Ciotti, E. Battaglia, I. Oikonomidis, A. Makris, A. Tsoli, A. Bicchi, A. Argyros, and **M. Bianchi**. Synergy-driven performance enhancement of vision-based 3D hand pose reconstruction. In: *LECTURE NOTES OF THE INSTITUTE FOR COMPUTER SCIENCES, SOCIAL INFORMATICS AND TELECOMMUNI- CATIONS ENGINEERING (LNICST).* 2017

(P19) **M. Bianchi***, A. Moscatelli*, S. Ciotti, G.C. Bettelani, F. Fioretti, F. Lacquaniti, and A. Bicchi. Tactile Slip and Hand Displacement: Bending Hand Motion with Tactile Illusions. In: *Worldhaptics 2017.* 2017. **Best Paper Award Finalist**.

(P20) E. Battaglia, J. Clark, **M. Bianchi**, M. Catalano, A. Bicchi, M. O'Malley. The Rice Haptic Rocker: skin stretch haptic feedback with the Pisa/IIT SoftHand . In: *Worldhaptics 2017.* 2017. **Best Student Paper and Best Paper Award Finalist**.

(P21) S. Casini, V. Tincani, G. Averta, M. Poggiani, C. Della Santina, E. Battaglia, M.G. Catalano, **M. Bianchi**, G. Grioli, A. Bicchi. Design of an Under-Actuated Wrist Based on Adaptive Synergies . In: *International Conference on Robotics and Automation (ICRA).* 2017.

(P22) S. Ciotti, E. Battaglia, I. Oikonomidis, A. Makris, A. Tsoli, A. Bicchi, A.A. Argy- ros, **M. Bianchi**. Synergy-Driven Performance Enhancement of Vision-Based 3D Hand Pose Reconstruction. In: *International Conference on Wireless Mo- bile Communication and Healthcare.* 328–336. Milano (Italy). November 14–16, 2016.

(P23) S. Condino, R.M. Viglialoro, S. Fani, **M. Bianchi**, L. Morelli, M. Ferrari, A. Bic- chi, V. Ferrari. Tactile augmented reality for arteries palpation in open surgery training. In: *International Conference on Medical Imaging and Augmented Re- ality.* 2016. .

(P24) **M. Bianchi**, G. Valenza, A. Greco, M. Nardelli, E. Battaglia, A. Bicchi and E.P. Scilingo. Towards a Novel Generation of Haptic and Robotic Interfaces: In- tegrating Affective Physiology in Human-Robot Interaction. In: *IEEE Interna-*

tional Symposium on Robot and Human Interactive Communication (RO-MAN) 2016.

(P25) M. Garabini, C. Della Santina, **M. Bianchi**, M.G. Catalano, G. Grioli and A. Bicchi. Soft robots that mimic the neuromusculoskeletal system. International Conference on NeuroRehabilitation (ICNR 2016).

(P26) S.B. Godfrey, **M. Bianchi**, A. Bicchi and M. Santello. Influence of Force Feedback on Grasp Force Modulation in Prosthetic Applications: a Preliminary Study. In: *Engineering in Medicine and Biology Society (EMBC), 2016 38th Annual International Conference of the IEEE.*

(P27) M. Nardelli, A. Greco, **M. Bianchi**, E.P. Scilingo and G. Valenza. On the Pleas- antness of a Haptic Stimulation: How Different Textures can be Recognized through Heart Rate Variability Nonlinear Analysis. In: *Engineering in Medicine and Biology Society (EMBC), 2016 38th Annual International Conference of the IEEE.*

(P28) Sasha B. Godfrey, **M. Bianchi**, K. Zhao, M.G. Catalano, R. Breighner, A. Theuer, K. Andrews, G. Grioli, M. Santello and A. Bicchi. The SoftHand Pro: Trans- lation from Robotic Hand to Prosthetic Prototype. International Conference on NeuroRehabilitation (ICNR 2016).(Accepted).

(P29) **M. Bianchi**, E. Battaglia, M. Poggiani, S. Ciotti, A. Bicchi. A wearable fabric- based display for haptic multi-cue delivery. In: *IEEE Haptics Symposium 2016.* Philadelphia (PA, USA). April 8-11, 2016 (Accepted). **Best Paper Award**.

(P30) S. Casini, M. Morvidoni, **M. Bianchi**, M.G. Catalano, G. Grioli, A. Bicchi. De- sign and realization of the CUFF - clenching upper-limb force feedback wearable device for distributed mechano-tactile stimulation of normal and tangential skin forces. In: *Intelligent Robots and Systems (IROS), 2015 IEEE/RSJ Interna- tional Conference on.* 1186-1193. Hamburg (Germany). Sept. 28 - Oct. 2, 2015.

(P31) M.L. D'Angelo, F. Cannella, M. Memeo, M. D'Imperio, **M. Bianchi**. Preliminary fingertip pressure area distribution via experimental test and numerical model. In: *XXI IMEKO World Congress on Measurement in Research and Industry.* Prague (Czech Republic). Aug. 30 - Sept. 4, 2015.

(P32) M. Nardelli, G. Valenza, **M. Bianchi**, A. Greco, A. Lanata, A. Bicchi, E.P. Scilingo. Gender-specific velocity recognition of caress-like stimuli through nonlinear anal- ysis of Heart Rate Variability. In: *Engineering in Medicine and Biology Society (EMBC), 2015 37th Annual International Conference of the IEEE.* 298-301. Mi- lano (Italy). August 25-29, 2015.

(P33) G. Valenza, A. Greco, M. Nardelli, **M. Bianchi**, A. Lanata, S. Rossi, E.P. Scilingo. Electroencephalographic spectral correlates of caress-like affective haptic stimuli. In: *Engineering in Medicine and Biology Society (EMBC), 2015 37th Annual International Conference of the IEEE.* 4733-4736. Milano (Italy). August 25-29, 2015.

(P34) A. Greco, G. Valenza, M. Nardelli, **M. Bianchi**, A. Lanata, E.P. Scilingo. Elec- trodermal activity analysis during affective haptic elicitation. In: *Engineering in Medicine and Biology Society (EMBC), 2015 37th Annual International Con- ference of the IEEE.* 5777-5780. Milano (Italy). August 25-29, 2015.

(P35) E. Battaglia, **M. Bianchi**, M.L. D'Angelo, M. D'Imperio, F. Cannella, E.P. Scilingo, A. Bicchi. A Finite element model of tactile flow for softness perception. In: *Engineering in Medicine and Biology Society (EMBC), 2015 37th Annual In-*

ternational Conference of the IEEE. 2430-2433. Milano (Italy). August 25-29, 2015.

(P36) A. Altobelli, **M. Bianchi**, M.G. Catalano, A. Serio, G. Baud-Bovy, A. Bicchi. An instrumented manipulandum for human grasping studies. In: *Rehabilitation Robotics (ICORR), 2015 IEEE International Conference on.* 169-174. Singapore (SGP). August 11-14, 2015.

(P37) E. Miguel, M.L. D'Angelo, F. Cannella, **M. Bianchi**, M. Memeo, A. Bicchi, D.G. Caldwell, M.A. Otaduy. Characterization of nonlinear finger pad mechanics for tactile rendering. In: *World Haptics Conference (WHC), 2015 IEEE.* 63-68. Evanston (IL, USA). June 22-26, 2015.

(P38) **M. Bianchi**, M. Poggiani, A. Serio, A. Bicchi. A novel tactile display for softness and texture rendering in tele-operation tasks. In: *World Haptics Conference (WHC), 2015 IEEE.* 49-56. Evanston (IL, USA). June 22-26, 2015. **Top 10% Submissions**.

(P39) **M. Bianchi**, N. Carbonaro, E. Battaglia, F. Lorussi, A. Bicchi, D. De Rossi and A. Tognetti Exploiting hand kinematic synergies and wearable under-sensing for hand functional grasp recognition. In: *Proc. of the 2014 International Con- ference on Wireless Mobile Communication and Healthcare.* 168-171. Athens (Greece). November 3–5, 2014.

(P40) A. Moscatelli*, **M. Bianchi***[2], A. Serio, O. Al Atassi, S. Fani, A. Terekhov, V. Hayward, M. Ernst and A. Bicchi. A change in the fingertip contact area induces an illusory displacement of the finger. In: *Proc. of the 2014 Eurohap- tics Conference - Haptics: Neuroscience, Devices, Modeling, and Applications.* 72-79. Versailles (France). June 23–27, 2014.

(P41) A. Altobelli, **M. Bianchi**, A. Serio, G. Baud-Bovy, M. Gabiccini and A. Bicchi. Three-Digit Grasp Haptic Device with Variable Contact Stiffness for Rehabilita- tion and Human Grasping Studies. In: *Proc. of the 2014 IEEE 22nd Mediter- ranean Conference on Control and Automation.* 346-350. Palermo (Italy). June 16–19, 2014.

(P42) **M. Bianchi**, G. Valenza, A. Serio, A. Lanata, A. Greco, M. Nardelli, E.P. Scilingo and A. Bicchi. Design and preliminary affective characterization of a novel fabric-based tactile display. In: *Proc. of the 2014 IEEE Haptics Symposium.* 591–596. Houston (TX, USA). February 23–26, 2014.

(P43) A. Serio, **M. Bianchi**, and A. Bicchi. A device for mimicking the contact force/contact area relationship of different materials with applications to softness rendering. In: *Proc. of the 2013 IEEE/RSJ International Conference on Intelligent Robots and Systems - IROS*, 4484–4490. Tokyo (Japan). November 3–8, 2013

(P44) M. Gabiccini, G. Stillfried, H. Marino and **M. Bianchi**. A data-driven kinematic model of the human hand with soft-tissue artifact compensation mechanism for grasp synergy analysis. In: *Proc. of the 2013 IEEE/RSJ International Con- ference on Intelligent Robots and Systems - IROS*, 3738–3745. Tokyo (Japan). November 3–8, 2013

(P45) **M. Bianchi**, P. Salaris, and A. Bicchi. Synergy-based optimal design of hand pose sensing. In: *Proc. of the 2012 IEEE/RSJ International Conference on Intelli- gent Robots and Systems - IROS*, 3929–3935. Vilamoura - Algarve (Portugal). October 7–12, 2012

(P46) **M. Bianchi**, P. Salaris, A. Turco, N. Carbonaro, and A. Bicchi. On the use of postural synergies to improve human hand pose reconstruction. In: *Proc. of the*

2012 IEEE Haptics Symposium, 91–98. Vancouver (BC, Canada). March 4–7, 2012

(P47) J.C. Gwilliam, A. Degirmenci, **M. Bianchi**, and A.M. Okamura. Design and control of an air-jet lump display. In: *Proc. of the 2012 IEEE Haptics Symposium*, 45–49. Vancouver (BC, Canada). March 4–7, 2012

(P48) **M. Bianchi**, J.C. Gwilliam, A. Degirmenci, and A.M. Okamura. Characterization of an air jet haptic lump display. In: *Proc. of the Annual International Confer- ence of the IEEE Engineering in Medicine and Biology Society (EMBC 2011)*, 3467–3470. Boston (MA, USA). August 30 – September 3, 2011

(P49) **M. Bianchi**, G. Grioli, E.P. Scilingo, M. Santello, and A. Bicchi. Validation of a virtual reality environment to study anticipatory modulation of digit forces and position. In: *Proc. of the 2010 IEEE EuroHaptics conference*, 136–143. Amsterdam (The Netherlands). July 8–10, 2010

(P50) **M. Bianchi**, A. Serio, E.P. Scilingo, and A. Bicchi. A new fabric-based softness display. In: *Proc. of the IEEE 2010 Symposium on Haptic Interfaces for Virtual Environments and Teleoperator Systems*, 105–112. Waltham (MA, USA). March 25–26, 2010

(P51) **M. Bianchi**, A. Serio, E.P. Scilingo, and A. Bicchi. A new softness display based on bi-elastic fabric. In: *Proc. of the IEEE World Haptics 2009 - Third Joint EuroHaptics conference and Symposium on Haptic Interfaces for Virtual Environments and Teleoperator Systems*, 382–383. Salt Lake City (UT, USA). March 18–20, 2009

(P52) A. Landi, A. Mazzoldi, C. Andreoni, **M. Bianchi**, A. Cavallini, L. Ricotti, L. Cec- cherini Nelli, R. Iapoce. Modelling and control of HIV dynamics. In *Proc. of the 2006 VI International Federation of Automatic Control (IFAC) Symposium: "Modelling and Control in Biomedical Systems"*, 6(1):501–506. Reims (France). September 20–22, 200

Peer-Rev. Chapters in Books	(CH1) G. Averta, G.C. Bettelani, C. Della Santina, and **M. Bianchi**. Kineto-dynamic modeling of human upper limb for robotic manipulators and assistive applications. *Advances in Motor Neuroprostheses*. In Press.

(CH2) M. Bonilla, C. Della Santina, A. Rocchi, E. Luberto, G. Santaera, E. Farnioli, C. Piazza, F. Bonomo, A. Brando, A. Raugi, M.G. Catalano, **M. Bianchi**, M. Garabini, G. Grioli and A. Bicchi. Advanced grasping with the Pisa/IIT SoftHand. *Robotic Grasping and Manipulation – Communications in Computer and Information Science*. In press.

(CH3) **M. Bianchi** and M. Moscatelli. Introduction. *Human and Robot Hands - Sensorimotor Synergies to Bridge the Gap Between Neuroscience and Robotics – Springer Series on Touch and Haptic Systems*. 1–5, Springer 2016.

(CH4) **M. Bianchi**, P. Salaris, A. Bicchi. Synergy-based Optimal Sensing Techniques for Hand Pose Reconstruction. *Human and Robot Hands - Sensorimotor Synergies to Bridge the Gap Between Neuroscience and Robotics – Springer Series on Touch and Haptic Systems*. 259–283, Springer 2016.

(CH5) A. Moscatelli, **M. Bianchi**, A. Serio, A. Bicchi, M.O. Ernst. Sensorymotor Synergies: Fusion of Cutaneous Touch and Proprioception in the Perceived Hand Kinematics. *Human and Robot Hands - Sensorimotor Synergies to Bridge the Gap Between Neuroscience and Robotics – Springer Series on Touch and Haptic Systems*. 87–98. Springer 2016.

(CH6) A. Leo, G. Handjaras, H. Marino, **M. Bianchi**, P. Pietrini, E. Ricciardi. The motor control of hand movements in the human brain: toward the definition of a cortical representation of postural synergies. *Human and Robot Hands - Sensorimotor Synergies to Bridge the Gap Between Neuroscience and Robotics – Springer Series on Touch and Haptic Systems*. 41–60. Springer 2016.

(CH7) **M. Bianchi**, A. Serio, E.P. Scilingo, and A. Bicchi. A Fabric–based Approach for Softness Rendering. *Multisensory Softness: Perceived Compliance from Multiple Sources of Information – Springer Series on Touch and Haptic Systems*. 219–240. Springer, 2014

(CH8) E.P. Scilingo, **M. Bianchi**, N. Vanello, V. Hartwig, L. Landini, and A. Bicchi. Artificially Rendered Cutaneous Cues for a New Generation of Haptic Displays. *Immersive Multimodal Interactive Presence– Springer Series on Touch and Haptic Systems – part 2*: 171–188. Springer, 2012

Patent	(PA1) A. Bicchi, **M. Bianchi** and P. Salaris. A method for optimal hand pose reconstruction. *Italian Patent*. Number 0001410855. Approved, 25 September 2014.

Peer-Reviewed Short Conference/ Workshop Contributions

(S1) S. Fani, S. Ciotti, M.G. Catalano, G. Grioli, A. Tognetti, G. Valenza, A. Ajoudani and **M. Bianchi**. Integrating wearable haptics and teleimpedance methods for augmented human-robot interaction in tele-robotics. In:*Automatica.it 2018*. Firenze (Italy). September 2018.

(S2) **M. Bianchi**, A. Bicchi, C. Della Santina, L. Cenceschi, M. Garabini, G. Gri- oli, M.G. Catalano, F. Angelini, Q. Fu, and M. Santello. Iterative Learning Control to Model Human Behavior and for Human-Inspired Robot Control. In:*Automatica.it 2017*. Milano (Italy). September 2017.

(S3) S.B. Godfrey, C. Piazza, M.G. Catalano, M. Rossi, **M. Bianchi**, G. Grioli, and A. Bicchi. The SoftHand Pro-H: A prosthetic platform for work oriented ap- plications. In: *MEC '17: Myoelectric Controls Symposium*. Fredericton, New Brunswick (Canada). August 2017.

(S4) **M. Bianchi**. From Natural to Artificial and Back Again: Human-oriented Ap- proaches and Interfaces for Assistive and Rehabilitation Robotics. In: *Auto- matica.it 2015 – Italian Conference of Researchers in Automation*. Bari (Italy). September 2015.

(S5) K. Zhao, R. Breighner, A. Theuer, S.B Godfrey, **M. Bianchi**, M.G. Catalano, G. Grioli, M. Santello, A. Bicchi, K. Andrews. Application of a novel robotic hand as a myoelectric prosthetic prototype: Proof of concept in a single patient. In: *ISPO World Congress 2015*. Lion (France). June 2015.

(S6) S.B. Godfrey, A. Ajoudani, **M. Bianchi**, M.G. Catalano, G. Grioli and A. Bicchi. Translating Soft Robotics Technologies To Prosthetics: Early Results With A Softhand Prosthesis. In: *MEC '14: Myoelectric Controls Symposium*. Frederic- ton, New Brunswick (Canada). August 2014.

(S7) A. Leo, G. Handjaras, **M. Bianchi**, H. Marino, M. Gabiccini, A. Bicchi, M. San- tello, P. Pietrini, E. Ricciardi. The 'alphabet' of human hand movements: a fMRI study on the neural correlates of postural synergies. In: *Organization Human Brain Mapping 2014*. Hamburg (Germany). June 2014.

(S8) **M. Bianchi**, L.S. Mattos, G. Grioli, M. Garabini, M.G. Catalano and A. Bicchi. End user interfaces and actuation systems for (micro)surgical robotics: technolo- gies and future directions. In: *Workshop on Soft and stiffness-controllable robots for MIS – 2014 IEEE International Conference on Robotics and Automation (ICRA)*. Hong Kong (China). June 2014

(S9) **M. Bianchi** and M.V. Liarokapis. HandCorpus: The Open-Access Repository for Human and Robotic Hand Data. In: *The Industrial Technologies 2014 Future- Flash Conference*. Athens (Greece). April 2014

(S10) **M. Bianchi** and M.V. Liarokapis. Handcorpus: The Open-Access Repository for Sharing and Retrieving Data, Tools, and Analyses about Human and Robotic Hands. In: *2014 Rehabilitation Robotics Workshop*. Arizona State University - Tempe (AZ, USA). March 2014

(S11) **M. Bianchi**, P. Salaris, A. Serio, G. Grioli, E.P. Scilingo, and A. Bicchi. On the Role of Haptic Synergies in Modelling the Sense of Touch and in Designing Artificial Haptic and Robotic Systems. In: *Automatica.it – Italian Conference of Researchers in Automation*. Palermo (Italy). September 2013

(S12) A. Altobelli, **M. Bianchi**, A. Serio, A. Di Basco, M. Gabiccini, and A. Bicchi. A tripod grasp device with controllable stiffness at contact points for grasping property analysis and haptic exploration. In: *Workshop on Human-Friendly Robotics (HFR) - Symposium*. Rome (Italy). September 2013

(S13) A. Serio, **M. Bianchi**, and A. Bicchi. A "haptic synergy -based" approach to con- vey softness information: a fabric - based tactile display. In: *IEEE International Conference on Robotics and Automation (ICRA) Workshop: "Hand synergies: how to tame the complexity of grasping"*. Karlsruhe (Germany). May 2013

(S14) M. Gabiccini, G. Stillfried, H. Marino and **M. Bianchi**. Grasp Synergies: Data Gathering and Analysis. In: *IEEE International Conference on Robotics and Automation (ICRA) Workshop: "Hand synergies: how to tame the complexity of grasping"*. Karlsruhe (Germany). May 2013

(S15) **M. Bianchi**, P. Salaris, and A. Bicchi. Synergy-Based Hand Pose Sensing. In: *Automatica.it 2012 – Italian Conference of Researchers in Automation.* Benevento (Italy). September 2012

(S16) **M. Bianchi**, E.P. Scilingo, and A. Bicchi. Haptic interfaces: new strategies to convey tactile information. In: *Automatica.it 2011 – Italian Conference of Researchers in Automatics*. Pisa (Italy). September 2011

(S17) **M. Bianchi**, A. Serio, E.P. Scilingo, and A. Bicchi. Rendering softness: a new fabric yielding display. In: *Workshop on Human-Friendly Robotics (HFR) - Symposium*. Sestri Levante (Italy). December 2009

Hands-On

Demonstrations

(D1) S. Fani, F. Barontini, N. Colella, G.C. Bettelani, E. Battaglia, A. Bicchi, G. Griol, M. Catalano, and **M. Bianchi**. Wearable Haptics to Enhance Tactile Capabil- ities of a Synergy-Based Prosthetic Hand. Eurohaptics Conference. Pisa(Italy). 13- 16 June, 2018.

(D2) E. Pezent, S. Fani, J. Bradley, M.G. Catalano, **M. Bianchi**, and M. O'Malley. Rice OpenWrist and CUFF Integration: Single DOF Haptic Feedback for Trajectory- tracking. In: *2017 IEEE Worldhaptics Conference*, Furstenfeldbruck (Munich), Germany. June 2017

(D3) E. Battaglia, J. Clark, **M. Bianchi**, M. Catalano, A. Bicchi, M. O'Malley. The Rice Haptic Rocker: skin stretch haptic feedback with the Pisa/IIT SoftHand. In: *2017 IEEE Worldhaptics Conference*, Furstenfeldbruck (Munich), Germany. June 2017

(D4) E. Battaglia, S. Ciotti, A. Bicchi and **M. Bianchi**. W-FYD: A Wearable Fabric- based Display for Haptic Multi-Cue Delivery. In: *2016 IEEE Haptics Symposium Conference*, Philadelphia (PA, USA). April 2016

(D5) M. Poggiani, **M. Bianchi**, and A. Bicchi. A Novel Tactile Display for Softness and Texture Rendering in Tele-Operation Tasks. In: *2015 IEEE Worldhaptics Conference*, Evanston (IL, USA). June 2015

(D6) S.B. Godfrey, A. Ajoudani, **M. Bianchi**, M.G Catalano, G. Grioli, and A. Bicchi. Exploring Haptic Feedback for the Pisa/IIT SoftHand. In: *2014 IEEE Haptics Symposium Conference*, Houston (TX, USA). February 2014

(D7) A. Serio, **M. Bianchi**, M. Gabiccini, and A. Bicchi. The Tactile Toolbox. In: *2014 IEEE Haptics Symposium Conference*, Houston (TX, USA) February 2014.

(D8) E. Battaglia, G. Grioli, M.G. Catalano, **M. Bianchi**, A. Serio, M. Santello, and A. Bicchi. ThimbleSense: A New Wearable Tactile Device for Human and Robotic Fingers. In: *2014 IEEE Haptics Symposium Conference*, Houston (TX, USA). February 2014

(D9) **M. Bianchi** and M.V. Liarokapis. Handcorpus, a new open-access repository for sharing experimental data and results on human and artificial hands. In: *2013 IEEE World Haptics Conference (WHC)*. Daejeon (Korea). April 2013

(D10) A. Serio, **M. Bianchi**, E.P. Scilingo and A. Bicchi. A New Fabric-based Softness Display. In: *2010 IEEE Haptics Symposium*. Waltham (MA, USA). March 2010

(D11) **M. Bianchi**, A. Serio, E.P. Scilingo and A. Bicchi. A New Softness Display Based on Bi-Elastic Fabric. In: *2009 IEEE World Haptics Conference (WHC)*. Salt Lake City (UT, USA). March 2009

Other Projects

· Together with Dr. M.V. Liarokapis (Auckland University), I am the coordinator of the project HandCorpus.
The **HandCorpus** (http://www.handcorpus.org) is an open access repository for sharing datasets, tools and experimental results about human and robotic hands. The HandCorpus was originally created in 2011, within the European Project "The Hand Embodied (THE)", with the objective of making data collections and analyses about human hand publicly available. Today (August 2018), the HandCorpus repository contains human hand kinematic data, with suitably provided tools for data visualization, related publications and videos. Furthermore, 6 European Research Council/European Commission funded projects sponsor the HandCorpus, and the HandCorpus community consists of more than 20 international research groups (universities and research institutes), across Europe and United States of America. Handcorpus is supported by the IEEE RAS Technical Committee on Robot Hands, Grasping and Manipulation.

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More Information

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