

Matteo Fumagalli

Resume

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Personal data

Date of birth January 22nd, 1982
Place of birth Rochester (Minnesota), United States of America
Gender Male
Nationality Italian, American
Titles Dr. Ing. (equivalent to the Dutch *ir*).

Areas of Specialization

I am a specialist in the area of Robotics and Mechatronics. I have more than 8 years of practice in design and control of robotic devices. My experience covers the areas of *humanoid robotics*, *aerial robotics*, *compliant mechanisms*. My achievements have resulted in the design, construction, implementation (both hardware and software) and testing of multiple robotics systems, including force controlled manipulators and compliant grippers. My research has led to the discovery of new insights in the field of floating-base robotic systems physically interacting with the environment, such as aerial manipulators.

Educational Background

Jan 2007 - Apr 2011 **PhD student**, *Italian Institute of Technology (IIT) and University of Genoa.*
Apr 2004 - Jul 2006 **Postgraduate**, *Mechanical Engineering, specialization in Mechatronics, Politecnico di Milano, Grade: 110/110.*
Sep 2000 - Apr 2004 **Undergraduate**, *Mechanical Engineering, Politecnico di Milano, Grade:100/110.*

Postgraduate courses:

July 2012 **AIRobots Summer School**, *ETH Zurich.*
July 2010 **VeniVidiVici 2010 - iCub Summer School**, *Sestri Levante.*
July 2010 **SIDRA, Italian Society of Doctors and Researchers in Automatica**, *Bertinoro.*
Topic: *Robotics*
July 2008 **SIDRA, Italian Society of Doctors and Researchers in Automatica**, *Bertinoro.*
Topic: *Introduction to the Control of Non-Linear Systems.*

Scientific Qualifications

December 2015 - now **Assistant Professor in Mechatronics**, *in Aalborg University of Copenhagen.*
Jan 2015 - Dec 2015 **Project Manager and Principal Investigator**, *for the University of Twente, of the EU H2020 project Aeroworks.*
Mar 2015 - Dec 2015 **Researcher**, *(Onderzoek 3) University of Twente.*

- Apr 2011 - Feb 2015 **Postdoctoral fellow** , (*Onderzoek 4*) *University of Twente*.
- April 2011 **PhD degree in Humanoid Technologies**, *Italian Institute of Technology and University of Genoa*.
- August - December 2006 **Research fellow**, *Politecnico di Milano*.
- Jul 2006 **MsC**, in *Mechanical Engineering*, *Politecnico di Milano*, Grade:110/110.
- Apr 2004 **BsC**, in *Mechanical Engineering*, *Politecnico di Milano*, Grade:100/110.

Dissemination Skills

My work on aerial robots have been advertised by invitation to international conferences and in both national and local newspapers.

- May 2016 **Invited speaker at the workshop: *Aerial Robotics Manipulation: from Simulation to Real-Life***, *A workshop within the ICRA 2016 conference*, Stockholm, Sweden.
- March 2016 **Invited speaker at the workshop: *Aerial Robotics for Inspection and Maintenance (ARIM)***, *A workshop within the European Research Forum (ERF 2016)*, Ljubljana, Slovenia.
- Jul 2015 **UT News**, *our work on the Aeroworks project appeared in the local magazine of the University of Twente*.
- Feb 2015 **De Volkskrant**, *appeared in the magazine Mr.Edmund*.
- Jan 2015 **UT News**, *appeared in the local magazine of the University of Twente*.

I have organised the following international and European events:

- June 2016 **Invited session "On Aerial Manipulators: Design and Control"**, *Mediterranean Conference on Control and Automation, MED 2016* , Athens, Greece.
- May 2016 **Aerial Robotics Manipulation: from Simulation to Real-Life**, *A workshop within the ICRA 2016 conference*, Stockholm, Sweden.
- Mar 2014 **Aerial Robots: Towards a New Generation of Manipulators That Fly.**, *A workshop within the ERF (European Robotics Forum)*, Rovereto, Italy.
- Nov 2013 **From Remotely-Controlled to Autonomous-Collaborative Robots**, *Full-day workshop held at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2013)*, Tokyo Big Sight, Japan.

I have presented my work at major robotics conferences:

- May 2014 **Analysis of a variable stiffness differential drive (VSDD)**, *IEEE International Conference on Robotics and Automation (ICRA 2014)*, Hong Kong.
- Nov 2013 **A modified impedance control for physical interaction of UAVs**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2013)*, Tokyo Big Sight, Japan.
- Oct 2012 **Modeling and control of a flying robot for contact inspection**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2012)*, Faro, Portugal.

- Jun 2012 **The mVSA-UT: A miniaturized differential mechanism for a continuous rotational variable stiffness actuator**, *IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob)*, Rome, Italy.
- Oct 2010 **Exploiting proximal F/T measurements for the iCub torque control**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2010)*, Taipei, Taiwan.
- Dec 2009 **A force sensor for the control of a human-like tendon driven neck**, *IEEE-RAS International Conference on Humanoid Robots (Humanoids 2009)*, Paris, France.

Participation in Committees and Boards

- 2016 **Associate Editor of the 2016 IEEE International Conference on Biomedical Robotics and Biomechatronics.**
- 2014 - now **Reviewer for the European Research Council (ERC).**
- Sept 2014-Dec 2015 **Member of the Faculty Council**, *Faculty of Electrical Engineering, Mathematics and Computer Science, University of Twente.*
- 2014 **Associate Editor of the 2014 IEEE International Conference on Biomedical Robotics and Biomechatronics.**
- May 2014 **Chair of the regular session "Compliance: Design and Analysis" at the 2014 IEEE International Conference on Robotics and Automation (ICRA 2014)**, Hong Kong, China.
- 2013-now **Program Committee member of the 2013 IEEE Symposium on Safety, Security and Rescue Robotics.**
- 2013-now **Editorial Board member**, *International Journal of Advanced Robotic Systems*, ISI Thomson IF: 0.826.
- 2009-now **Reviewer for the major conferences and journals in the field of robotics**, *Among the conferences I served as reviewer for, there are ICRA, IROS, BIOROB. Among the journals I served as reviewer for T-RO, T-MECH, T-CST. .*

Accademic Experience and Awards

- 2016 Assistant Professor, teaching classes of mechanics, engineering design and advanced robotics.
- 2015 Teaching assistant for the course Optimal State Estimation, University of Twente, Department of Robotics And Mechatronics.
- 2014 Cover picture of the Robotics and Automation Magazine, issue of December 2013.
- 2012 PhD thesis nominated as outstanding PhD thesis, awarded and published in Springer Theses. (<http://www.springer.com/engineering/control/book/978-3-319-01121-9>)
- 2011-now Supervision of PhD, Master and Bachelor students at the University of Twente.

2010 Teaching assistant for the course Robotics, taught at the University of Genoa, Department of communication, Computer and System Sciences, Autumn-Winter 2010/2011, <http://www.liralab.it/teaching/ROBOTICA/>.

2007 Scholarship of the *Italian Ministry of Education, University and Research* (MIUR) after a public exam and admission to the PhD courses, XXIInd cycle.

Participation to Funded projects

- January 2015 - **AEROWORKS project**, **Aim:** *development of a team of aerial robotic workers that perform collaborative inspection and maintenance of infrastructures by means of onboard manipulators.* **Responsibilities:** **Principal Investigator** within the University of Twente and **Workpackage Leader**.
December 2015 **Achievements:** design and test of aerial manipulators; Supervision of 1 PhD student, 2 technicians, MSc and BsC students.
- July 2014 - **EuRoC Challenge**, **Aim:** *integration of existing algorithms to achieve scores in the field of localization, mapping, control and navigation.* **Responsibilities:** **Team Leader** and coordinator of the activities related to the participation of the LEO Team to the European Robotic Competition. Project Leader of a Team composed by 4 PhD students and 12 MSc and BsC students.
Now **Achievements:** Succeeded to the second stage.
- February 2013 - **SHERPA project**, **Aim:** *multi-robot collaboration for enhancing the capability of alpine rescue teams.* **Responsibilities:** guiding the design and control of a Variable Stiffness manipulator to be mounted on a ground vehicle, **Achievements:** construction of a multi-dof VSA mechanisms. Design and utilization of a wearable device to transfer human properties to robotic system. Supervision of MSc and BsC students..
Now
- April 2011 - **AIRobots project**, **Aim:** *development of an aerial service robot for industrial inspection.* **Responsibilities:** mechatronic design of the aerial manipulator, **Achievements:** first physical aerial interaction with a multi-dof manipulator using an underactuated aerial vehicle. Supervision of MSc and BsC students..
December 2012
- 2008 - April 2011 **CHRIS Project**, **Aim:** *collaborative human-robot interactions from the aspect of physical safety, behavioural safety, and cognitive understanding.* **Achievements:** implementation of force control and impedance control using proximal force/torque sensors, inertial sensors and tactile sensors on the iCub humanoid robot.