



Giuseppe Andrea Fontanelli

Ph.D. candidate

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CURRENT POSITION

Ph.D candidate at Università degli Studi di Napoli “Federico II”, department of Information Technology and Electrical Engineering, [PRISMA Lab](#) and [ICAROS](#) center. Supervisor: Prof. Bruno Siciliano.

Research interests: Mechatronic design of advanced surgical instruments and sensors, force control and robot dynamic model identification aimed at the development of control strategies for human-robot interaction, human-in-the-loop shared control strategy in surgical robotics.

Co-founder of the S4E-Impianti s.r.l. Napoli (Italy). Startup for Engineering E-plants Expertize Eco-robotics. Specialized in developing of eco systems for industry energy monitoring and optimization.

ONGOING PROJECTS

Feb. 2017
ongoing

MUSHA at ICAROS center.

Work topic: design and control of a miniaturized, underactuated 3 fingered robotic hand for laparoscopy. Development of miniaturized FBG-based (Fiber Bragg Gratings) force-torque sensors.

Jan. 2017
ongoing

REFILLS at Prisma Lab.

Work topic: design and control of a depalletizing gripper.

PAST EXPERIENCES

Jan. 2014
Jan. 2015

Fixed-term contract at [S4e-systems s.r.l.](#), Napoli (Italy).

Work topic: CAD design of a clean room used for the air treatment of a submarine cables taping system, in collaboration with [PRYSMIAN Group](#).

Jan. 2015
Nov. 2016

Fixed-term contract at [PRISMA Lab](#).

Member of the [RoDyMan](#) project. Work topic: Mechanical and electrical design of a humanoid robot platform, design of a humanoid sensorized head, synthesis and implementation of the 21 DOF kinematic and dynamic model. Development of a symbolic MATLAB Toolbox for the kinematic and dynamic modelling and identification of a multi-chain robot.

Oct. 2017
Mar. 2018

Visiting student at [Hamlyn Centre, Imperial College](#), London (UK).

Work topic: Development of shared control algorithms to assist the surgical suturing procedure.

EDUCATION

- Oct. 2013 | **MSc in Automation Engineering** at Università degli Studi di Napoli “Federico II”,
Jan. 2015 | department of Information Technology and Electrical Engineering.
Dissertation: Development of an 8 DOF Omnidirectional mobile robotic platform with integrated torque sensors (**SHERPA** project). Final vote: 110/110 cum laude.
- Sep. 2010 | **BSc in Automation Engineering** at Università degli Studi di Napoli “Federico II”,
Oct. 2013 | department of Information Technology and Electrical Engineering.
Dissertation: Development of an experimental setup aimed at the characterization of a flexinol wire. Final vote: 110/110.

SKILLS

CAD-CAM: AutoCad, SolidWorks, SolidEdge, Autodesk Inventor, Autodesk Fusion 360, Mach3, CAM-Works
Programming language: C/C++, Lua, Matlab, Java, Labview
Hardware platforms: Schunk poweball arm, Schunk 5-Finger-hand, da Vinci Research Kit (DVRK), Xsens MVN inertial motion capture, force-torque sensors
Robotics environments: ROS, V-REP, Labview, OpenCV
Embedded systems: Arduino, Mbed
Design and Office: Photoshop, InkSkape, Illustrator, LaTeX, Microsoft Office

PUBLICATIONS

Journal articles

1. A. Petit, V. Lippiello, **G.A. Fontanelli**, B. Siciliano. “Tracking elastic deformable objects with an RGB-D sensor for a pizza chef robot.” *IEEE Robotics and Autonomous Systems*, Vol. 88, September 2017, Pages 187-201.
2. **G.A. Fontanelli**, M. Selvaggio, L.R. Buonocore, F. Ficuciello, L. Villani, B. Siciliano. “A New Laparoscopic Tool with In-Hand Rolling Capabilities for Needle Reorientation.” *IEEE Robotics and Automation Letters*, Vol. 99, 2018, Pages 1-1. *Presented at ICRA 2018*
3. M. Selvaggio, **G.A. Fontanelli**, F. Ficuciello, L. Villani, B. Siciliano. “Passive Virtual Fixtures Adaptation in Minimally Invasive Robotic Surgery .” *IEEE Robotics and Automation Letters*, 2018.
4. V. Lippiello, **G.A. Fontanelli**, F. Rugiero. “Image-Based Visual-Impedance Control of a Dual-Arm Aerial Manipulator.” *IEEE Robotics and Automation Letters*, Vol. 99, 2018, Pages 1-1. *Presented at ICRA 2018*
5. F. Ruggiero, A. Petit, D. Serra, A. C. Satici, J. Cacace, A. Donaire, F. Ficuciello, L. R. Buonocore, **G.A. Fontanelli**, V. Lippiello, L. Villani, B. Siciliano . “Nonprehensile manipulation of deformable objects: Achievements and perspectives from the RoDyMan project.” *IEEE Robotics and Automation Magazine*, Vol. 99, 2017, Pages 1-1.

Conference papers

1. F. Fazioli, F. Ficuciello, **G. A. Fontanelli**, B. Siciliano, L. Villani. “Implementation of a Soft-Rigid Collision Algorithm in an Open-Source Engine for Surgery Realistic Simulation.” *IEEE International Conference on Robotics and Biomimetics, ROBIO 2016*, 2204-2208, -. **2016**
2. A. Petit, F. Ficuciello, **G.A. Fontanelli**, L. Villani and B. Siciliano. “Using Physical Modeling and RGB-D Registration for Contact Force Sensing on Deformable Objects .” *IEEE International conference on informatics in control, automation and robotics ICINCO*, -, -. **2017**
3. **G.A. Fontanelli**, L. Buonocore, F. Ficuciello, L. Villani, B. Siciliano. “A Novel Force Sensing Integrated into the Trocar for Minimally Invasive Robotic Surgery.” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, -, -. **2017**

4. **G.A. Fontanelli**, F. Ficuciello, L. Villani, B. Siciliano. “Modelling and identification of the da Vinci Research Kit robotic arms.” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, -, -. **2017**
5. R. Caccavale, M. Saveriano, **G. A. Fontanelli**, F. Ficuciello, D. Lee, A. Finzi. “Imitation Learning and Attentional Supervision of Dual-Arm Structured Tasks.” *IEEE International Conference on Development and Learning and on Epigenetic Robotics* , -, -. **2017**
6. **G. A. Fontanelli**, M. Selvaggio, M. Ferro, F. Ficuciello, M. Vendittelli, B. Siciliano. “A V-REP Simulator for the da Vinci Research Kit Robotic Platform .” *IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics*, -, in press. **2018**
7. **G.A. Fontanelli**, G.Z. Yang, B. Siciliano. “Interactive Wound Segmentation and Automatic Stitch Planning.” *Hamlyn Symposium on Medical Robotics*, -, . **2018**
8. M. Selvaggio, **G.A. Fontanelli**, F. Ficuciello, L. Villani, B. Siciliano. “Enhancing Dexterity with a 7-DoF Laparoscopic Suturing Tool.” *Hamlyn Symposium on Medical Robotics*, -, . **2018**

Workshop papers

1. F. Fazioli, F. Ficuciello, **G. A. Fontanelli**, B. Siciliano, L. Villani. “Implementation of a Soft-Rigid Collision Algorithm in an Open-Source Engine for Surgery Realistic Simulation.” *CRAS workshop, HFR workshop*, -, -. **2016**
2. M. Selvaggio, **G.A. Fontanelli**, F. Ficuciello, L. Villani, B. Siciliano. “Task Classification of Robotic Surgical Reconstructive Procedures using Force Measurements.” *CRAS workshop*, -, -. **2017**
3. **G.A. Fontanelli**, F. Ficuciello, L. Villani, B. Siciliano. “A Novel Force Sensor Integrated into the da Vinci Trocar for Minimally Invasive Robotic Surgery.” *CRAS workshop*, **finalist best paper award**, -. **2017**
4. M. Ferro, **G.A. Fontanelli**, F. Ficuciello, B. Siciliano, M. Vendittelli. “Vision-based suturing needle tracking with Extended Kalman Filter.” *CRAS workshop*, -, -. **2017**

COMMITTEES

1. Organizer, Workshop: ”Learning and Autonomy for Medical Robotics”, Hamlyn Symposium on Medical Robotics, London, UK, June 24, 2018.

AWARDS

1. **Switch 2 Product Innovation in Bioengineering Award** (S2P GNB 2018), The MUSHA project
2. **Best paper runner-up** CRAS workshop 2017
3. **Finalist we start challenge II ed**, Hand Shake project: low cost 3d printed customizable robotic hand.
4. **Best project runner-up** Hamlyn winter school 2016

Napoli June 28, 2018