



Sara Moccia

Education

- May 2015 – **PhD in Biomedical Engineering-Advanced Robotics.**
present
Genoa (GE), Italy
Milan (MI), Italy
- o Department of Advanced Robotics - Istituto Italiano di Tecnologia / DEIB - Politecnico di Milano
 - Duration of the program of study: 3 years
 - Project: *Supervised tissue classification for surgical scene understanding with applications in optical imaging*
 - Supervisor: *Leonardo S. Mattos, PhD; Elena De Momi, PhD*
- Sept 2012 – **Master in Biomedical Engineering.**
Dec 2014
Milan (MI), Italy
- o DEIB - Politecnico di Milano, 110/110 cum laude
 - Duration of the program of study: 2 years
 - Final Project: *Statistical segmentation techniques of liver metastases and necroses in FDG-PET for the automatic evaluation of pre and post thermo ablation PET/CT studies*
 - Supervisor: *Prof. Giuseppe Baselli*
- Sept 2009 – **Bachelor in Biomedical Engineering.**
July 2012
Milan (MI), Italy
- o DEIB - Politecnico di Milano, 108/110
 - Duration of the program of study: 3 years
 - Final Project: *Calcolo di volume, massa e frazione di eiezione del ventricolo sinistro in pazienti affetti da infarto del miocardio a partire da immagini di risonanza magnetica cardiaca*
 - Supervisor: *Prof. Enrico Caiani*
- Sept 2004 – **Scientific High School Degree.**
July 2009
Conversano (BA), Italy
- o Liceo Scientifico Sante Simone, 100/100 cum laude
 - Duration of the program of study: 5 years

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🌐 <http://nearlab.polimi.it/medical/saram/>

in <https://www.linkedin.com/in/sara-moccia-b8294796/>

Work experience

Oct 2016 – **Internship as PhD student.**

- Mar 2017
Heidelberg,
Germany
- Computer-Assisted Medical Interventions (CAMI) - German Cancer Research Center (DKFZ)
 - Project: *Classification of abdominal tissues from in-vivo laparoscopic multispectral data*
 - Supervisor: *Prof. Lena Maier-Hein*

Jan 2015 – **Research Fellow.**

- May 2015
Milano (MI),
Italy
- DEIB - Politecnico di Milano / Dipartimento di Neuroscienze - Niguarda Hospital
 - Project: *Electrode trajectory planning for StereoElectroEncephaloGraphy (SEEG)*
 - Supervisor: *Elena De Momi, PhD*

Training courses

June 2017 **NAMIC project week.**

- Catanzaro (CZ),
Italy
- MICCAI society
 - Course: *25th NAMIC Project Week ([Link to the project](#))*

Aug 2016 **Summer school.**

- Favignana (TP),
Italy
- University of Cambridge, Università di Catania, King's College London
 - Course: *Medical Imaging Summer School 2016 - Medical Imaging meets Machine Learning*

Sept 2015 **Summer school.**

- Bressanone
(BZ), Italy
- Gruppo Nazionale di Bioingegneria
 - Course: *XXXIV Scuola Annuale del Gruppo Nazionale di Bioingegneria - Approcci ingegneristici per lo sviluppo di metodiche alternative alla sperimentazione in vivo*

July 2015 **Summer school.**

- Paris, France
- Institut Henri Poincaré
 - Course: *3rd Biomedical Image Analysis Summer School: Modalities, Methodologies & Clinical Research*

Nov 2013 **Athens programme.**

- Istanbul, Turkey
- Istanbul Teknik Universitesi
 - Course: *Radiation Physics and Environment*

Mar 2013 **Athens programme.**

- Prague, Czech
Republic
- Czech Technical University
 - Course: *Ionizing Radiation*

Teaching activity

Spring 2017 – **Seminars/Lectures.**

- present
Milano (MI),
Italy
- DEIB - Politecnico di Milano
 - Course: *Image processing laboratory, Prof. Enrico Caiari (Master of Science in Biomedical Engineering)*

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- Jan 2015 – **Tutoring.**
 present ○ DEIB - Politecnico di Milano
 Milano (MI), Italy
- Course: *Technologies for motor behavior analysis and virtual modeling*, Prof. Giancarlo Ferrigno (Master of Science in Biomedical Engineering)
 - Course: *Instrumentation and functional evaluation*, Prof. Guido Baroni (Bachelor of Science in Biomedical Engineering)
 - Course: *Medical robotics and technologies for computer aided surgery laboratory*, Prof. Giancarlo Ferrigno (Master of Science in Biomedical Engineering)
- Jan 2015 – **Thesis supervisor.**
 present ○ DEIB - Politecnico di Milano
 Milano (MI), Italy
- Michele Gazzara, **Using deep-learning algorithms to segment axons in microscopy images**, Master of Science in Biomedical Engineering, ongoing
 - Anna Morelli, **Intra-operative abdominal tissue registration for augmented reality applications**, Master of Science in Biomedical Engineering, ongoing
 - Gabriele Omodeo Vanone, **Learning-based classification of informative endoscopic frames with applications in laryngoscopy**, Master of Science in Biomedical Engineering, ongoing
 - Simone Foti, **Micron-A handeld robotic tool for safe neurosurgery**, Master of Science in Biomedical Engineering, ongoing
 - Marco Guarnaschelli, Matteo Savazzi: **Machine learning for tissue classification in laryngeal endoscopic videos**, Master of Science in Biomedical Engineering, 2017
 - Francesca Prudente, **Safety enhancement in neurosurgery**, Master of Science in Biomedical Engineering, 2017. Winner of PREMIO DI LAUREA, GRUPPO NAZIONALE DI BIOINGEGNERIA, the Italian award for the best Bioengineering thesis.
 - Giacomo D'Alessandro, Claudia D'Ettore, **Segmentazione su immagini PET di aree necrotiche sviluppate in seguito a termoablazione di tumori epatici**, Bachelor of Science in Biomedical Engineering, 2015

Scientific service

- 2017 – **Journal reviewer.**
 present ○ Journal of Medical Robotics Research (World Scientific)
- 2017 – **Journal reviewer.**
 present ○ Medical & Biological Engineering & Computing (Springer)
- 2017 – **Conference reviewer.**
 present ○ CRAS Joint Workshop on New Technologies for Computer/Robot Assisted Surgery
- 2016 – **Journal reviewer.**
 present ○ Signal, Image and Video Processing (Springer)

Invited talks

- June 2017 **Machine Learning Tools for Surgical Training and Situation Awareness.**
 London, UK ○ E. De Momi, S. Moccia, H. Nakawala, and G. Ferrigno, *The 10th Hamlyn Symposium on Medical Robotics*
- Oct 2016 **Constrained Minimally Invasive Surgery.**
 Daejeon, Korea ○ N. Enayati, V. Penza, S. Moccia, L. S. Mattos, E. De Momi, and G. Ferrigno, *Workshop on Frontiers of Endoluminal Robotic Surgery, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2016)*

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Publications

- [1] Sara Moccia, Elena De Momi, Matteo Savazzi, Marco Guarnaschelli, Andrea Laborai, Luca Guastini, Giorgio Peretti, and S Mattos Leonardo. Confident texture-based laryngeal tissue classification for early stage diagnosis support. *Journal of Medical Imaging*, 4(03):1–10, 2017.
- [2] Sebastian J Wirkert, Anant S Vemuri, Hannes G Kenngott, Sara Moccia, Michael Götz, Benjamin FB Mayer, Klaus H Maier-Hein, Daniel S Elson, and Lena Maier-Hein. Physiological parameter estimation from multispectral images unleashed. In *International Conference on Medical Image Computing and Computer-Assisted Intervention*, pages 134–141. Springer, 2017.
- [3] Sara Moccia, Sebastian J. Wirkert, Hannes Kenngott, Anant Vemuri, Martin Apitz, Benjamin Mayer, Elena De Momi, Leonardo S. Mattos, and Lena Maier-Hein. Uncertainty-aware organ classification for surgical data science applications in laparoscopy. *Transaction on Biomedical Engineering*, under revision.
- [4] Sara Moccia, Gabriele Omodeo V., Elena De Momi, Andrea Laborai, Luca Guastini, Giorgio Peretti, and Leonardo S. Mattos. Learning-based classification of the informative-level of laryngoscopic frames. *Computer Methods and Programs in Biomedicine*, in preparation.
- [5] Sara Moccia, Sebastian J. Wirkert, Hannes Kenngott, Anant Vemuri, Martin Apitz, Benjamin Mayer, Elena De Momi, Leonardo S. Mattos, and Lena Maier-Hein. Confidence-based abdominal tissue classification in laparoscopy. In *Proc 7th Joint Workshop on New Technologies for Computer/Robot Assisted Surgery*, 2017.
- [6] Sebastian J. Wirkert, Anant Vemuri, Hannes Kenngott, Sara Moccia, Michael Gotz, Benjamin Mayer, Klaus Maier-Hein, Daniel S. Elson, and Lena Maier-Hein. Physiological parameter estimation from multispectral images unleashed. In *Proc 7th Joint Workshop on New Technologies for Computer/Robot Assisted Surgery*, 2017.
- [7] Davide Scorza, Sara Moccia, Giuseppe De Luca, Lisa Plaino, Francesco Cardinale, Leonardo S. Mattos, Luis Kabongo, and Elena De Momi. Safe electrode trajectory planning in seeg via 7-based vessel segmentation. In *SPIE Medical Imaging*, pages 101352C–101352C. International Society for Optics and Photonics, 2017.
- [8] Francesca Prudente, Sara Moccia, Alessandro Perin, Raymond Sekula, Leonardo S. Mattos, Jeffrey Balzer, Wendy Fellows-Mayle, Elena De Momi, and Cameron Riviere. Toward safety enhancement in neurosurgery using a handheld robotic instrument. In *Proc the Hamlyn Symposium on Medical Robotics*, 2017.
- [9] Sara Moccia, Veronica Penza, Gabriele Omodeo Vanone, Elena De Momi, and Leonardo S. Mattos. Automatic workflow for narrow-band laryngeal video stitching. In *Engineering in Medicine and Biology Society (EMBC), 2016 IEEE 38th Annual International Conference of the*, pages 1188–1191. IEEE, 2016.
- [10] Sara Moccia, Elena De Momi, Andrea Ghilardi, Akash Lad, and Leonardo S. Mattos. Supervised hessian-based vessels segmentation in narrow-band laryngeal images. In

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Computer Assisted Radiology and Surgery, Proceedings of the 2016 International Congress and Exhibition on.

- [11] Sara Moccia, Francesca Prudente, Elena De Momi, Cameron Riviere, Alessandro Perin, Raymond Sekula, and Leonardo S. Mattos. Safety enhancement in robotic neurosurgery through vessel tracking. In *Proc 6th Joint Workshop on New Technologies for Computer/Robot Assisted Surgery*, 2016.
- [12] Sara Moccia, Marco Solbiati, Chiara D. Soffientini, Giuseppe Baselli, and Luigi Solbiati. Pre and post liver lesion thermal ablation FDG-PET: background driven GMM segmentation. In *Engineering in Medicine and Biology Society (EMBC), 2015 IEEE 37th Annual International Conference of the*, 2015.

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