

# Sara Moccia

**Nationality:** Italian

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## Education

- May. 2015 – present **PhD in Biomedical Engineering.**  
Milan (MI), Italy  
Genoa (GE), Italy
- DEIB, Politecnico di Milano and Department of Advanced Robotics, Istituto Italiano di Tecnologia
    - Duration of the program of study: 3 years
    - Project: *Machine learning techniques for automatic diagnosis on laryngeal narrow band endoscopic images*
    - Supervisors: *Elena De Momi, Leonardo De Mattos*
    - Thesis goal: *Merging the well-established clinical knowledge in the field of laryngeal tumor development with the most recent computer vision techniques, as to develop a new automatic tool able to offer a reliable early-stage diagnosis based on the analysis of the vascular tree.*
- Aug. 2016 **Summer school.**  
Favignana (TP), Italy
- Università di Catania
    - Course: *Medical Imaging Summer School (MISS) 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*
- Sept. 2012 – Dec. 2014 **Master in Biomedical Engineering.**  
Milan (MI), Italy
- 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: *Giuseppe Baselli*
    - Thesis goal: *Implementation of two innovative algorithms for liver metastasis segmentation and for the segmentation of the necrotic areas generated after the tumor thermal ablation treatment in PET/CT images.*
- Sept. 2009 – July 2012 **Bachelor in Biomedical Engineering.**  
Milan (MI), Italy
- 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: *Enrico Caiani*
    - Thesis goal: *Analyzing and evaluating different semi-automatic algorithms for endocardial and epicardial surface segmentation on MR images.*
- Sept. 2004 – July 2009 **Scientific High School Degree.**  
Conversano (BA), Italy
- Liceo Scientifico Sante Simone, 100/100 cum laude
    - Duration of the program of study: 5 years

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## Stages and studies abroad

- Oct 2016 – March 2017 **Internship as PhD student.**  
*Heidelberg, Germany*
- Department of Computer Assisted Medical Interventions (CAMI), German Cancer Research Center (DKFZ)
    - The research project focused on developing an uncertainty-aware organ classification method for Surgical Data Science with application in multispectral laparoscopy.
- July 2015 **Summer school.**  
*Paris, France*
- Institut Henri Poincaré
    - Course: *3<sup>rd</sup> 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*

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## Work Experience

- Jan 2015 – May 2015 **Research Fellow.**  
*Milano (Mi), Italy*
- Politecnico di Milano and Niguarda Hospital
    - The research focused on the planning of electrodes trajectory in StereoElectroEncephaloGraphy (SEEG), developed with *3D Slicer*, in collaboration with *Claudio Munari* center for Epilepsy and Parkinson surgery.
- Jan 2015 – May 2015 **Research Fellow.**  
*Milano (Mi), Italy*
- Politecnico di Milano
    - Master degree student tutor in *Medical Robotics and Technologies for computer aided surgery laboratory*.
    - Bachelor students project tutor in *Instrumentation and functional evaluation project course*.

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## Publications.

- Feb 2017 **Safe electrode trajectory planning in SEEG via MIP-based vessel segmentation.**  
*Orlando, Florida, US*
- D. Scorza, S. Moccia, G. De Luca, L. Plaino, F. Cardinale, Leonardo S. Mattos, L. Kabongo, E. De Momi, *SPIE medical imaging, 2017 (in press)*
- Sep 2016 **Laryngeal Vascular Tree Segmentation for Early Stage Tumor Detection.**  
*San Diego, California, US*
- S. Moccia, L. Guastini, A. Laborai, F. Mora, G. Peretti, E. De Momi, L. S. Mattos, *AAO-HNSF Annual Meeting & OTO EXPO<sup>SM</sup>*
- Sep 2016 **Safety enhancement in robotic neurosurgery through vessel tracking.**  
*Pisa, Italy*
- S. Moccia, F. Prudente, E. De Momi, and L. S. Mattos, *6<sup>th</sup> joint workshop on New Technologies for Computer/Robot Assisted Surgery*
- Aug 2016 **Automatic Workflow for Narrow-Band Laryngeal Video Stitching.**  
*Ornlando, Florida, US*
- S. Moccia, V. Penza, G.O. Vanone, E. De Momi, and L. S. Mattos, *38<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society*
- June 2016 **Supervised Hessian-based vessels segmentation in Narrow-Band laryngeal images.**  
*Heidelberg, Germany*
- S. Moccia, E. De Momi, A. Ghilardi, A. Lad, and L. S. Mattos, *Computed Assisted Radiology and Surgery, 30<sup>th</sup> International Congress and Exhibition on*
- Oct. 2015 **Vocal Folds Disorders Detection and Classification in Endoscopic Narrow-Band Images.**  
*Bruxelles, Belgium*
- S. Moccia, E. De Momi, G. Baselli, and L. S. Mattos, *5<sup>th</sup> joint workshop on New Technologies for Computer/Robot Assisted Surgery*
- Aug. 2015 **Pre and Post Liver Lesion Thermal Ablation FDG-PET: Background Driven GMM Segmentation.**  
*Milan, Italy*
- S. Moccia, M. Solbiati, C. D. Soffientini, G. Baselli, L. A. Solbiati, *37<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society*

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## Languages

Italian	<b>Native or bilingual proficiency</b>	French	<b>Elementary proficiency</b>
English	<b>Full professional proficiency</b>		

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## Computer skills

Operating Systems	Microsoft Windows, Mac OS, Linux OS
Languages and Scripts	C++, C, Matlab, Simulink, R, Python, Java
Libraries	OpenCv, dlib C++ library, scikit-learn
Software/Applications	Microsoft Office Package, 3DSlicer, LateX, Inkscape

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## Interests

- 12 year playing classic guitar, 5 year acting school, class representative, volunteering