Leonardo Serra De Mattos

HOME ADDRESS

Via San Luca D'Albaro 35/8
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WORK ADDRESS

IIT - Via Morego 30
16163 Genoa, Italy
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PERSONAL INFO

Citizenship: USA and Brazil (dual citizenship; fluent in English, Portuguese and Italian)
Marital Status: Married

EDUCATION

DOCTOR OF PHILOSOPHY IN ELECTRICAL ENGINEERING 6/2003 – 5/2007
North Carolina State University (NCSU), Raleigh, NC, USA
Supervisor: Edward Grant
Commission: Donald Bitzer, Troy Nagle, John Muth, Randy Thresher

MASTER OF SCIENCE IN ELECTRICAL ENGINEERING 1/2001 – 5/2003
North Carolina State University (NCSU), Raleigh, NC, USA
Supervisor: Prof. Edward Grant
Commission: Troy Nagle, John Muth, Mark White

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING 2/1994 – 12/1998
Universidade de São Paulo (USP), São Carlos, SP, Brazil

TECHNICAL DEGREE IN ELECTRONICS 2/1990 – 12/1992
Colégio Técnico de Campinas (COTUCA – UNICAMP), Campinas, SP, Brazil

EXPERIENCE

TEAM-LEADER, *Istituto Italiano di Tecnologia (IIT), Genoa, Italy* 10/2011 – Present

- Principal Investigator and Coordinator of the €1.03 million translational project **Robotic Microsurgery**, a 2-year project (2017–2019) funded by Fondazione Istituto Italiano di Tecnologia
- Work Package Leader of the €3.5 million project **INAL-Teleop**, a 3-year project (2017–2020) funded by INAIL
- Principal Investigator and Coordinator of the €1.13 million research project **TEEP-SLA** (Tecnologie Espressive ed Empatiche per Persone con SLA), a 3-year project (2015–2018) funded by Fondazione Roma
- Principal Investigator and Coordinator of the €3.6 million research project **µRALP** - Micro-Technologies and Systems for Robot-Assisted Laser Phonomicrosurgery, a 3-year project (2012–2015) funded by the European Commission under the Seventh Framework Programme (FP7). Rated "Excellent" at final assessment
- Head of the Biomedical Robotics Laboratory of the Department of Advanced Robotics (ADVR): 3 Senior Researchers, 4 Post-Docs, 8 PhD students, 3 Research Fellows
- Graduated 11 PhD students, 2 MSc students
- Conducting, supervising and coordinating research in surgical robotics, medical imaging, assistive systems, user interfaces, and biomanipulation automation
- Strong collaboration with surgeons (San Martino Hospital, Genoa; AIMS Academy, Milan), clinicians (Fondazione Roma, Rome), industries (El.En. Group; ValueBiotech S.R.L.), and other research groups (Politecnico di Milano, University of Verona, North Carolina State University)

POST-DOCTORAL RESEARCHER, *Istituto Italiano di Tecnologia (IIT), Genoa, Italy* 10/2007 – 10/2011

- Created a new research laboratory for biomedical robotics research
- Initiated research in biomanipulations and laser phonomicrosurgeries within the Advanced Robotics Dept.
- Developed a new system for the automation of adherent cell and embryo microinjections, which is used for research in: microinjection control methods; biomedical image processing; mixed-reality training; visual servoing; user interfaces; and teleoperation.
- Designed and developed a new robotic system for laser phonomicrosurgery, including a novel motorized laser scanner; new user interfaces and associated control systems. System continues to be used for research in user interfaces; assistive systems; surgical safety; new surgical strategies and protocols; new calibration and control

methods for micro-robotic systems; image processing for disease detection; and surgical automation
- Supervised a PhD student conducting research in biomedical image processing
- Supervised a PhD student researching safety and user interfaces for laser phonomicrosurgeries
- Initiated research collaborations with: IIT's Neuroscience Department; Center for Robotics and Intelligent machines (CRIM, NCSU, USA); Animal Models Core (AMC, UNC-CH, USA); ENT Department of the San Martino's Hospital (Genoa, Italy); Femto-ST (Besançon, France); University Hospital of Besançon (France); Leibniz Universität Hannover (Germany)

RESEARCH ASSISTANT, *Center for Robotics and Intelligent Machines, NCSU* 1/2002 – 8/2007
- Designed, implemented and evaluated an automated system for the microinjection of embryonic stem cells into blastocysts. Research conducted in collaboration with the Animal Models Core Facility at UNC-Chapel Hill.
- Designed and prototyped a wireless aircraft structural monitoring system in collaboration with the Institute for Maintenance Science and Technology at NCSU and the company DRS Technical Services, Inc.
- Worked on a multidisciplinary team to research and develop new tools for minimally invasive robotic heart surgery. Funded by a $1.5 Million NIH Grant
- Created an automatic control and calibration module for a commercial biological tissue strain device. Funded by Flexcell International
- Created the EvBot-II (an autonomous robot for evolutionary robotics research)
- Designed and developed an USB DAQ system with simultaneous sampling of audio 8 channels
- Designed and developed a navigation and tracking system for the EvBot-II based on a small-scale acoustic array
- Participated in the designed and construction of a large-scale e-textiles acoustic array with the College of Textiles (NCSU) and Draper Labs. Funded by DARPA
- Designed the electrical system and PLC code for a garment compression machine. Funded by Sara Lee Intimate Apparel Division
- Designed and built an RFID-based sensor system to detect and identify thread breaks in textile machines. Funded by the National Textile Center (NTC)
- Collaborated in the designed and developed of a capacitive sensor to measure the mass of fiberglass for on-line quality control during the manufacturing process. Funded by PPG Industries Fiber Glass Products
- Constructed an actigraph for wireless sleep motion monitoring
- Created code for automatic color segmentation on digital images based on neural networks
- Developed experimental setup for the characterization of photoluminescent materials
- Created a 360° camera system based on an inexpensive web-camera

TEACHING ASSISTANT, *ECE Department, NCSU* 8/2001 – 5/2002
- TA for ECE435 – Feedback Control Systems

ELECTRICAL ENGINEER, *Aerodyn Wind Tunnel, Charlotte, NC* 2/2001 – 7/2001
- Developed a pressure data acquisition system with 288 input channels to be used on the wind tunnel
- Created the software for data acquisition, experiments control, data logging and MS Excel interface using SoftWire and Visual Basic
- Implemented a LAN and the necessary software for real time sharing of experimental data

FIELD SERVICE ENGINEER, *FANUC America Corporation, Charlotte, NC* 5/1999 – 1/2001
- Performed on-site customer assistance
- Troubleshot and repaired CNCs, motors, drivers, industrial lasers and other precision machine components

PROJECT ENGINEER, *Psychology Department, UFSCar, São Carlos, SP, Brazil* 7/1998 – 1/1999
- Designed and implemented an automated system for experimental learning studies on mice
- Created software for automatic experiment control and data logging

ELECTRICAL ENGINEER INTERN, *FMC Brazil, Araraquara, SP, Brazil* 1/1998 – 5/1998
- Participated in the project and construction of a new automated machine to make plastic bags
- Designed electrical diagrams, connection boxes and cabinets for the new machine
- Wrote installation check-up procedures for the new machine

UNDERGRADUATE RESEARCH, *Medical Image Analysis Laboratory (ALADIM)* 7/1997 – 2/1999
Electrical Engineering Dept., USP, São Carlos, SP, Brazil
- Researched the quality of X-Ray images, particularly the influence of the Heel Effect

UNDERGRADUATE RESEARCH, *Optics Lab., EE Dept., USP,São Carlos, SP, Brazil* 8/1995 – 2/1997
- Designed and developed circuits to test wireless optical communication systems
- Researched optical sensors for electrical currents

ELECTRONICS TECHNICIAN INTERN, *AsGa Microeletronica, Paulinia, SP,Brazil* 2/1993 – 8/1993
- Designed and developed an equipment for coupling optical fibers to PIN-FET's
- Supported engineering team with the design and development of test circuits for product quality control

FUNDED PROJECTS

ATLAS - AUTONOMOUS INTRALUMINAL SURGERY
- Partner for training and secondments
- 3 years (2018 – 2021)
- Funded by European Commission's Marie Sklodowska Curie Innovative Training Networks

ROBOTIC MICROSURGERY
- Principal Investigator and Project Coordinator
- €1.03 million, 2 years (2017 – 2019), funded by IIT

INAIL TELEOPERATION
- Work package leader and member of steering committee
- €3.5 million, 3 years (2017 – 2020), funded by INAIL

TEEP-SLA - Tecnologie Espressive ed Empatiche per Persone con SLA (*Technologies for ALS patients*)
- Principal Investigator and Project Coordinator
- €1.13 million, 3 years (2015 – 2018), funded by Fondazione Roma

ROBOT-ASSISTED LASER MICROSURGERY
- Research collaboration with the company ELEN SpA (2015 – 2017)
- €100K in equipment and technical support provided by the company

μRALP - Micro-Technologies and Systems for Robot-Assisted Laser Phonomicrosurgery
- Principal Investigator and Project Coordinator
- €3.6 million, 3 years (2012 – 2015), funded by European Commission's FP7 Framework Programme
- Small and Targeted Research Project (STREP)
- 3 countries (Italy, Germany, France); 5 institutions (2 hospitals, 3 engineering centers); 75 people involved

PATENTS AND INVENTION DISCLOSURES

1. **Mattos**, L., Cheng, Z., Davies, B., Caldwell, D., "Dispositivo portatile per l'inserimento di un ago in un materiale non omogeneo, particolarmente per cateterizzazione endovenosa" (short English title: "Hand-held device for assistive venous catheterization"), Italian Patent Application IT 102017000059659 (PT170362), May 31th, **2017**
2. **Mattos**, L., Pane, G., Caldwell, D., "Device for the spherical orientation of an optical element, in particular for directing a light beam, such as a laser beam", WO2015181771A1, TO2014A000432, May 30th, **2014**
3. **Mattos**, L., Olivieri, E., Caldwell, D., "Distal scanning module, in particular to control the aiming and the movement of an optical apparatus of a medical device, such as a diagnostic or surgical instrument," Patent numbers: IT TO2013A000943, PCT/IB2014/066127, US 10,045,684, November 20th, **2013**
4. Grant, E., **Mattos**, L.S., Thresher, R., "Methods, Systems, and Computer Readable Media for Facilitating Automation of Blastocyst Microinjection," WO Patent 2,009,079,474, June **2009**
5. Grant, E., **Mattos**, L.S., Luthy, K., Merritt, C., Craver, M., Simmons, J., Roberts, K., Scurria, N., Roth, R., Sanwald, R., Strenkowski, J., "Methods, Systems, and Computer Readable Media for Wireless Crack Detection and Monitoring," Patent numbers: US8510061B2, US20100094566, August **2008**
6. Grant, E., **Mattos**, L.S., Thresher, R., "A Controllable and Automated Micro/Nano-Injection System," NCSU Invention Disclosure No. 08-018, US Provisional Patent Application No. 421/221PROV, December **2007**
7. Buckner, G.D., Cormier, D.R., Laffitte, B.W., **Mattos**, L.S., Adcock, D.B., "Nitinol Mesh Retractor for Minimally Invasive Cardiac Surgery," NCSU Invention Disclosure No. 06-005, October **2005**

GRADUATED AND CURRENT STUDENTS

1. André Augusto Geraldes, PhD student, "Robot-Assisted Endoluminal Laser Microsurgery"
2. Fanny Larradet, PhD student, "Novel Interfaces and Assistive Systems for ALS Patients"

3. Andrea Cimolato, PhD student, “Intelligent Controllers for Lower Limb Prosthesis”
4. Louis King, PhD student, “New Human-Machine Interaction Technologies”
5. Nabeel Kamal, PhD student, “Robotic technologies for pediatric neurosurgery”
6. Sara Moccia, PhD, “Supervised Tissue Classification in Optical Images: Towards New Applications for Surgical Data Science,” May **2018**
7. Alperen Acemoglu, PhD, “A Magnetic Laser Scanner for Microsurgery,” February **2018**
8. Cheng Zhuoqi, PhD, “Development and Evaluation of Hand-Held Robotic Technology for Safe and Successful Peripheral Intravenous Catheterization on Pediatric Patients,” February **2018**
9. Lucia Schiatti, PhD, “Co-adaptive Control Strategies in Assistive Brain-Machine Interfaces,” February **2018**
10. Veronica Penza, PhD, “Study of Computer Vision Algorithms to Enhance the Surgeon’s Capabilities in Robotic Minimally Invasive Surgery,” May **2017**
11. Manish Chauhan, PhD, “Towards robot-assisted, multiple degrees of freedom microsurgical forceps for Transoral Laser Microsurgery,” April **2017**
12. Emidio Olivieri, PhD, “Bringing Haptics to Laser Microsurgery,” April **2016**
13. Andrea Ciullo, MSc, “Synthetic Abdominal Phantom for Benchmarking of CAS Systems,” April **2016**
14. Loris Fichera, PhD, “Cognitive Supervision for Robot-Assisted Minimally Invasive Laser Microsurgery,” April **2015**
15. Giacinto Barresi, PhD, “Brain-Controlled Augmented Reality: Feedback Design in Applied Scenarios,” April **2015**
16. Corina Barbalata, MSc, “Vocal Cord Tumor Segmentation in Endoscopic Video,” June **2013**
17. Giulio Dagnino, PhD, “New Technologies for Robot-Assisted Laser Phonomicrosurgery,” April **2013**
18. Gabriele Becattini, PhD, “Automated System for the Microinjection of Adherent Cells Culture”, April **2012**
19. Médhi Khoja, BSc, Internship on Robotic Microinjection with Force Sensing, **2011**

PHD EXAMINER

1. A. Devreker, “Design and Control of Continuum Robots for Minimally Invasive Surgical Applications,” KU Leuven, Belgium, **2017**
2. J.A.C. Pena, “Balancing and Walking of Humanoid Robots Using Robust MPC Techniques,” UNIGE, Italy, **2016**
3. D. Mazzanti, “Enhancing User Experience in Interactive Environments,” UNIGE, Italy, **2015**

HONORS & PROFESSIONAL AFFILIATIONS

PRIMAGA AWARD WINNER: Best Paper in “Artificial intelligence applied to the analysis of images and videos,” GNB 2018, June 2018

BEST PAPER AWARD FINALIST, IEEE ISMR 2018, March 2018

BEST PAPER AWARD FINALIST, CRAS 2017, September 2017

BEST PAPER RUNNER-UP, Hamlyn Symposium on Medical Robotics, June 2017

BEST PAPER AWARD, CRAS 2016, September 2016

BEST POSTER AWARD, CRAS 2016, September 2016

WINNER SMART CUP LIGURIA 2015 (Start-Up contest, €5,000.00 prize), November 2015

BEST PAPER AWARD FINALIST, IEEE ICRA 2015, May 2015

BEST AUGMENTED-REALITY VIDEO AWARD, Hamlyn Symposium Workshop on AR and Surgical Vision, July 2014

BEST PAPER AWARD, ACHI 2010, February 2010

BEST LABORATORY AUTOMATION PAPER AWARD FINALIST, IEEE CASE 2009, August 2009

BEST PRESENTATION AWARD, ECE GSA Seminar, NCSU, April 2006

THE CHANCELLOR’S LIST, 2004-2005, Vol. 1, ISBN 1-56244-412-3

NCEES CERTIFIED ENGINEERING INTERN (E.I.), May 2003

IEEE, Member since 2003, Senior Member since 2018

IEEE ROBOTICS AND AUTOMATION SOCIETY (RAS), Member since 2005

IEEE ENGINEERING IN MEDICINE & BIOLOGY SOCIETY (EMBS), Member since 2010

ETA KAPPA NU (HKN), Member since 2003

COMMUNITY ACTIVITIES

Conference & Workshop Organization

- General Chair, CRAS 2019, Genoa, Italy, March 2019
- Program Chair, IEEE ICAR 2019, Belo Horizonte, Brazil, November 2019
- Publication Chair, IEEE ICARM 2017, Heifei, China, August 27-31, 2017
- Organization Committee Member, CRAS 2017, Montpellier, France, Sept. 14–15, 2017
- Organization Committee Member, CRAS 2016, Pisa, Italy, Sept. 12–14, 2016
- Organization Committee Member, CRAS 2015, Brussels, Belgium, Sept. 10–12, 2015
- General Chair, CRAS 2014, Genoa, Italy, Oct. 14–16, 2014
- Chair, IEEE BioRob 2014 Workshop on Robotic Microsurgery and Image-Guided Surgical Interventions, Sao Paulo, Brazil, 2014
- Organization Committee Member, CRAS 2013, Verona, Italy, Sept. 11–13, 2013
- Chair, IEEE BioRob 2012 Workshop on Robot-Assisted Laryngeal Microsurgery, Rome, Italy, 2012

Editor

- Journal of Medical Robotics Research – CRAS 2016 Special Issue
- Journal of Medical Robotics Research – CRAS 2015 Special Issue

Associate Editor

- IEEE ICRA 2018, 2017, 2016
- IEEE BioRob 2018, 2016, 2014
- IEEE MFI 2015, 2010

Technical Program Committee

- International Symposium on Medical Robotics (ISMR) 2019, 2018
- Hamlyn Symposium 2018, 2017
- CRAS 2018, 2017, 2016, 2015, 2014
- MIAR 2016
- ICINCO 2016, 2014
- IEEE MFI 2015, 2010, 2008
- Russian-German Conference 2013 (RGC2013)
- IADIS MCCSIS 2011
- IARIA/IEEE ACHI 2010

INVITED TALKS

1. "Laser Microsurgery Technologies: Current needs and potential solutions," lecture at the *IEEE COSUR Summer School*, Verona, Italy, July 13, **2018**
2. "Tecnologie IIT per le chirurgie di precisione," CoffeeTech, Confindustria, Genova, June 1, 2018
3. "Computer-Assisted Technologies for Laser Microsurgery," International Symposium on Medical Robotics, Atlanta, USA, March 1, 2018
4. "Assistive Robotic Systems for Medicine and Biology," North Carolina State University, Raleigh, USA, February 27, 2018
5. "Medical Robotics – Current Activities & Potential Areas for Bilateral Collaboration," The 11th Korea-Italy Joint Committee on Science and Technology Cooperation, Seoul, Korea, November 28, **2017**
6. "La straordinaria robotica del futuro," Vodafone Technology Roadshow 2017, Milan, November 7, **2017**
7. "Il Mestiere del Ricercatore," Associazione Amici del Festival della Scienza, Genoa, October 20, **2017**
8. "Laser Microsurgery – Better with Robots?," KU Leuven, Belgium, June 9, **2017**
9. "Innovation in Medical Robotics: The IIT Experience," *Gynecological Robotic Surgery Club – 2nd Italian Meeting*, Genova, Italy, April 6, **2017**
10. "Surgical robotics for the benefit of humanity," IIT NEXT workshop, March 29, **2017**
11. "TEEP-SLA – Tecnologie Empatiche ed Espressive per Persone con SLA," *Congresso Nazionale SICP – Il Tempo delle Cure Palliative*, Rome, Italy, November 18, **2016**
12. "Robot-Assisted Laser Microsurgery," lecture at the *IEEE COSUR Summer School*, Verona, Italy, September 8, **2016**

13. "Robot-Assisted Transoral Laser Microsurgery: Enhancing Surgical Precision, Safety and Quality," *Robotics Research Jam Sessions*, Pisa, Italy, July 18, **2016**
14. "Robot-Assisted Laser Microsurgery: Overcoming Translational Barriers," *IEEE BIOROB 2016 Workshop in Surgical Robotics*, Singapore, June 26, **2016**
15. "Precision Medicine: the future of robotics in microsurgery," *Not Only Robotics… Minimally Invasive Digestive Surgery and Beyond*, Florence, Italy, June 7, **2016**
16. "Assistive Robotic Systems for Medicine and Biology," *Lecture at Medical School*, University of Genova, Genova, Italy, May 24, **2016**
17. "Robotic Systems for Medicine and Biology," *International Workshop on Cognitive Development for Friendly Robots and Rehabilitation*, Genova, Italy, December 2, **2015**
18. "Assistive Systems for Enhancing Surgical Safety, Precision and Quality," *University of Pavia*, Pavia, Italy, November 16, **2015**
19. "Human Centered R&D at the IIT's Biomedical Robotics Laboratory," *University College London*, London, UK, October 21, **2015**
20. "Detection and Classification of Laryngeal Tumors Using Endoscopic Narrow-Band Imaging," *Surgical Imaging, Guidance and Augmented Reality Workshop*, *The Hamlyn Symposium on Medical Robotics*, London, UK, June 20, **2015**
21. "Cognitive Modeling and Control in Laser Microsurgery," *Cognitive Surgical Robotics Workshop*, *The Hamlyn Symposium on Medical Robotics*, London, UK, June **2015**
22. "Human-Centered R&D at the Biomedical Robotics Lab" *Human-Centered and Rehabilitation Robotics Workshop*, Genoa, Italy, March 24, **2015**
23. "The µRALP Project", *The 2015 Innovative Surgical Robotics Forum*, London, UK, March 18, **2015**
24. "Biomedical Technologies at the IIT – Technology Transfer Challenges and Opportunities", *Tecnologie Biomediche: Sfide e opportunità per l'Italia, MedTechCatalyst Forum*, Milan, Italy, October 23, **2014**
25. "Robot-Assisted Laser Microsurgery", *IEEE BioRob 2014 Workshop on Robotic Microsurgery and Image-Guided Surgical Interventions*, Sao Paulo, Brazil, August 12, **2014**
26. "Biomedical Robotics – From Single Cell Manipulation to Microsurgery," *IIT Scientific Planning Workshop,* Genoa, Italy, March 20, **2014**
27. "Un approccio robotico per microchirurgia della laringe e presentazione progetto µRALP," *Chirurgia Robotica nella Sua Evoluzione,* Rapallo, Italy, September 28, **2013**
28. "The µRALP approach to safer vocal cord surgeries," *Workshop on Safety in Robotic Surgery*, *Hamlyn Symposium,* London, UK, June 25, **2013**
29. "The Micro-RALP Project: New Technologies and Systems for Robot-Assisted Microsurgery," *Bioengineering12*, Oxford, UK, September 6, **2012**
30. "µRALP – Micro-Technologies and Systems for Robot-Assisted Laser Phonomicrosurgery," *European Commission FP7 Info Day*, Paris, France, December 1, **2011**
31. "Biomedical Robotics Research at the Italian Institute of Technology," *FEMTO-ST Institute, University of France-Comté*, Besançon, France, November 16, **2010**

PUBLICATIONS - THESIS

1. **Mattos**, L.S., "Towards the Automation of Embryonic Stem Cell Microinjections into Blastocysts," *Ph.D. Dissertation*, Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, May **2007** (Committee Chair: Dr. Edward Grant)
2. **Mattos**, L.S., "The EvBot II: An enhanced evolutionary robotics platform equipped with integrated sensing for control," *M.S. Thesis*, Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, May **2003** (Committee Chair: Dr. Edward Grant)

PUBLICATIONS - JOURNALS

1. Penza, V., Ciullo, A., Moccia, S., **Mattos**, L., De Momi, E., "EndoAbS Dataset: Endoscopic Abdominal Stereo Image Dataset for Benchmarking 3D Stereo Reconstruction Algorithms," *The International Journal of Medical Robotics and Computer Assisted Surgery*, e1926, https://doi.org/10.1002/rcs.1926, July 3, **2018**

2. Prudente, F. Moccia, S., Perin, A., Sekula, R. F., **Mattos**, L., Balzer, J. R., Fellows-Mayle, W., De Momi, E., Riviere, C., "Toward Improving Safety in Neurosurgery with an Active Handheld Instrument," (in press) *Annals of Biomedical Engineering*, June **2018**
3. Olivieri, E., Barresi, G., Caldwell, D., **Mattos**, L., "Haptic Feedback for Control and Active Constraints in Contactless Laser Surgery: Concept, Implementation and Evaluation," *IEEE Transactions on Haptics*, vol. 11, issue 2, pp. 241-254, ISSN 1939-1412, http://dx.doi.org/10.1109/TOH.2017.2786243, April-June **2018**
4. Moccia, S., **Mattos**, L., Poté, N., Dondero, F., Cauchy, F., Sepulveda, A., Soubrane, O., De Momi, E., Diaspro, A., Cesaretti, M., "Computer-assisted liver graft steatosis assessment via learning-based texture analysis," (in press) *International Journal of Computer Assisted Radiology and Surgery*, May **2018**
5. Cheng, Z., Davies, B., Caldwell, D., **Mattos**, L., "A new venous entry detection method based on electrical bio-impedance sensing," *Annals of Biomedical Engineering*, pp. 1–10, https://doi.org/10.1007/s10439-018-2025-7, April **2018**
6. Moccia, S., Vanone, G.A., Laborai, A., De Momi, E., Guastini, L., Peretti, G., **Mattos**, L., "Learning-based classification of informative laryngoscopic frames," *Computer Methods and Programs in Biomedicine*, vol. 158, pp. 21–30, https://doi.org/10.1016/j.cmpb.2018.01.030, May **2018**
7. Moccia, S., Wirkert, S., Kenngott, H., Vemuri, A., Apitz, M., Mayer, B., De Momi, E., **Mattos**, L., Maier-Hein, L., "Uncertainty-aware organ classification for surgical data science applications in laparoscopy," *IEEE Transactions on Biomedical Engineering*, https://doi.org/10.1109/TBME.2018.2813015, March **2018**
8. Deshpande, N., Peretti, G., Mora, F., Guastini, L., Lee, J., Barresi, G., Caldwell, D., **Mattos**, L., "Design and Study of a Next-Generation Computer-Assisted System for Transoral Laser Microsurgery," *OTO-Open*, vol. 2, no. 2, https://doi.org/10.1177/2473974X18773327, May 10, **2018**
9. Moccia, S., De Momi, E., El Hadji, S., **Mattos**, L., "Blood vessel segmentation algorithms – Review of methods, datasets and evaluation metrics,"*Computer Methods and Programs in Biomedicine*, vol. 158, pp. 71-91, https://doi.org/10.1016/j.cmpb.2018.02.001, May **2018**
10. Acemoglu, A., Deshpande, N., **Mattos**, L., "Towards a Magnetically Actuated Laser Scanner for Endoscopic Microsurgeries," *Journal of Medical Robotics Research*, Vol. 3, No. 2, http://dx.doi.org/10.1142/S2424905X18400044, February **2018**
11. Penza, V., Stoyanov, D., Du, X., Forgione, A., **Mattos**, L., De Momi, E., "Long Term Safety Area Tracking (LT-SAT) with Online Failure Detection and Recovery for Robotic Minimally Invasive Surgery," *Medical Image Analysis*, https://doi.org/10.1016/j.media.2017.12.010, December **2017**
12. Cheng, Z., Davies, B., Caldwell, D., Barresi, G., Xu, Q., **Mattos**, L., "A hand-held robotic device for peripheral intravenous catheterization," *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine*, Vol. 231, Issue 12, pp. 1165–1177, http://dx.doi.org/10.1177/0954411917737328, September **2017**
13. Moccia, S., Guarnaschelli, M., Savazzi, M., Laborai, A., Guastini, L., Peretti, G., De Momi, E., **Mattos**, L., "Confident texture-based laryngeal tissue classification for early-stage diagnosis support," *Journal of Medical Imaging*, http://dx.doi.org/10.1117/1.JMI.4.3.034502, September **2017**
14. Cheng, Z., Davies, B., Caldwell, D., **Mattos**, L., "A hand-held robot for pediatric PIVC: Device design and pre-clinical trial," *Journal of Medical Robotics Research*, Vol. 3, Issue 2, http://dx.doi.org/10.1142/S2424905X18400032, September **2017**
15. Geraldes, A., Geretti, L., Bresolin, D., Muradore, R., Fiorini, P., **Mattos**, L., Villa, T., "Formal Verification of Medical CPS: a Laser Incision Case Study," (in press) *ACM Transactions on Cyber-Physical Systems*, September **2017**
16. Acemoglu, A., Fichera, L., Kepiro, I., Caldwell, D., **Mattos**, L., "Laser Incision Depth Control in Robot-Assisted Soft Tissue Microsurgery," *Journal of Medical Robotics Research*, http://dx.doi.org/10.1142/S2424905X17400062, Vol. 02, No. 03, September **2017**
17. Penza, V., De Momi, E., Enayati, N., Chupin, T., Ortiz, J., **Mattos**, L., "EnViSoRS: Enhanced Vision System to improve Safety during Robotic Surgery," *Frontiers in Robotics and AI*, http://dx.doi.org/10.3389/frobt.2017.00015, 24 May **2017**
18. **Mattos**, L., Caldwell, D., Peretti, G., Mora, F., Guastini, L., Cingolani, R., "Microsurgery robots: addressing the needs of high-precision surgical interventions," *Swiss Medical Weekly,* http://dx.doi.org/10.4414/smw.2016.14375, October **2016** (IF 2.086)

19. Penza, V., Ortiz, J., **Mattos**, L., Forgione, A., De Momi, E., "Dense Soft Tissue 3D Reconstruction Refined with Super-pixel Segmentation for Robotic Abdominal Surgery," *International Journal of Computer Assisted Radiology and Surgery*, Vol. 11, No. 2, pp. 197-206, http://dx.doi.org/10.1007/s11548-015-1276-0, February **2016** (IF 1.827)
20. Barbalata, C., **Mattos**, L., "Laryngeal Tumor Detection and Classification in Endoscopic Video," *IEEE Journal of Biomedical and Health Informatics* (JBHI), vol. 20, No. 1, pp. 322-332, http://doi.org/10.1109/JBHI.2014.2374975, January **2016** (IF 2.093)
21. Fichera, L., Pardo, D., Illiano, P., Ortiz, J., Caldwell, D., **Mattos**, L., "Online Estimation of Laser Incision Depth for Transoral Microsurgery: Approach and Preliminary Evaluation," *The International Journal of Medical Robotics and Computer Assisted Surgery*, http://dx.doi.org/10.1002/rcs.1656, March **2015** (IF 1.613)
22. Dagnino, G., **Mattos**, L., Caldwell, D., "A Vision-Based System for Fast and Accurate Laser Scanning in Robot-Assisted Phonomicrosurgery," *International Journal of Computer Assisted Radiology and Surgery*, http://dx.doi.org/10.1007/s11548-014-1078-9, vol.10(2), pp. 217-229, February **2015** (IF 1.827)
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