

Curriculum Vitae

Personal information

First name(s) / Surname(s)	Elena De Momi
Address(es)	Politecnico di Milano, Department of Electronics, Information and Bioengineering
Telephone(s)	
E-mail	elena.demomi@polimi.it

Occupational field

Work experience

Date	From January 2022
Occupation or position held	Affiliate researcher
Name and address of employer	Istituto Europeo di Oncologia, Milan, Italy www.ieo.it
Type of business or sector	Hospital - Research
Date	From December 2018
Occupation or position held	Associate Professor
Name and address of employer	Politecnico di Milano, Dept of Electronics, Information and Bioengineering www.polimi.it
Type of business or sector	University - Research
Dates	December 2010 – December 2018
Occupation or position held	Assistant Professor
Name and address of employer	Politecnico di Milano, Dept of Bioengineering and Dept of Electronics, Information and Bioengineering www.polimi.it
Type of business or sector	University - Research
Dates	From January 2022
Occupation or position held	Affiliate researcher
Name and address of employer	ITIA National Research Center, Milan, Italy
Type of business or sector	Hospital – Research

Education and Training

2003 - 2006	PhD in in Bioengineering, Politecnico di Milano, Italy
1997 - 2002	MsC in Biomedical Engineering, Politecnico di Milano, Italy

National Scientific Qualification

Full Professor in 09/G2 achieved on 16th 10 2018

Personal skills and competences

Mother tongue(s)

Italian

Other language(s)

Self-assessment

European level ()*

Language

Understanding		Speaking		Writing	
Listening	Reading	Spoken interaction	Spoken production		
C1	C1	C1	C1	C1	

(*) [Common European Framework of Reference for Languages](#)

Awards

1. Best demo at “Hamlyn Symposium on Medical Robotics 2021” within the EU project SMARTsurg
2. 2015 Best paper “Adaptive Hands-On Control for Reaching and Targeting tasks in Surgery” Int. J. Advanced Robotics IJARS's Women in Robotics award
3. 2015 (Second Place Best Paper Award) Best paper Joint Workshop in Computer/ Robotic Ass. Surg. During CRAS, Brussels, Belgium
4. 2014 (Second Place Best Paper Award) ASME Student Mechanism and Robot Design Competition

Editorial activity and Commission of Trust

Conference and Scientific Societies responsibility

2025 – Program co-chair of the 2025 IEEE International Conference on Intelligent Robots and Systems (IROS) to be held in Hangzhou, China

2023 – Organizing Committee of the 2023 IEEE Int. Conf. of Rob. and Aut. (ICRA) to be held in London, UK (Publication chair)

2022 - Invitation for SNSF Starting Grants STEM Panel (Switzerland)

2022 – Program Chair 2022 Int. Symposium on Medical Robotics (ISMR) Atlanta (Georgia, USA)

2020 – PC member of the Hamlyn Symposium of Medical robotics, London, UK (2020/ 2021/ 2022)

2021 - 30th International Joint Conference on Artificial Intelligence (IJCAI) Program committee

2019 – Publicity chair of the 2019 Int. Symposium on Medical Robotics (ISMR) Atlanta (Georgia, USA)

2019 – Publication co-chair of the 2019 IEEE ICRA held in Montreal (Canada)7 <http://www.icra2019.org>

2018 - Publication co-chair of the 2018 International Symposium on Medical Robotics (ISMR) held in Atlanta (Georgia, USA) <http://ismr2018.gatech.edu> 7

2015 – today Computer Assisted Orthopedic Surgery (CAOS) Conference Committee Member

2014 – today Member of the Technical Committee in Biorobotics (IEEE EMB Society) (elected)

Indexed Journal editorial board

2021 - Frontiers in Robotics and AI 2021 Outstanding Associate Editor Award.

2021 – Nominated in the editorial board of IEEE Transaction on Robotics

2020 – Nominated in the editorial board of Robotica

2019 – Nominated in the editorial board of IEEE Robotics and Automation Magazine (Editor from 2022)

2018 – Associated Editor of Medical and Biological Engineering and Computing journal

2018 – Editor of the Journal of Medical Robotics Research (JMRR)

2016 – today Associate Editor of the 2016, 2017 and 2018 IEEE ICRA and IEEE/RSJ IROS and 2018 IEEE BioRob

2016 – today Editorial Board, Frontiers in Robotics and AI and of the J. Medical Robotics

	<p>Research</p> <p>2014 – today Editorial Board, Int. Journal of Advanced Robotic Systems</p> <p>Expert reviewer and evaluator</p> <p>2013 - today Expert Evaluator for Research for the benefit of SMEs for the EU, Expert for FET H2020, MSCA Horizon EU, Expert for ICT Robotics H2020, PATHFINDER Horizon EU</p> <p>2010 – today Expert, Reviewer of FP6 and FP7 (VPH – ICT for HEALTH – ICT Robotics) for the EU</p>
Invited presentations	<p><u>Selected Invited Lectures</u></p> <p>I was invited to several ICRA/ MICCAI workshops during the last 10 years.</p> <p>I was invited and received travel funding at:</p> <ol style="list-style-type: none"> 1. June 29th 2022, invited keynote lecture “Shared control and autonomous control, the surgeon in the loop in robotic surgery”, within the workshop “Towards Versatile and Seamless Surgical Technologies” at 2022 Hamlyn Symposium on Medical Robotics, London, UK 2. 1. Nov. 2018 Italian-Korea scientific symposium on Surgical Robotics organized by the Italian Embassy in South Korea 3. 2. Intuitive Surgical, Sunnyvale (CA, USA) Education and Training Research Grant Symposium Jan 18th and 19th, 2018 “Machine learning-based adaptive robot-assisted training for surgical robotics” 4. 3. SMIT 29TH Conf. of the Int. Society for Medical Innovation and Technology - ‘Turin 9-10 2017 lecture on: “Computer vision and robotics for augmenting the surgeon’s capabilities during the intervention” 5. 4. Comp. Sciences for Medicine Residential Workshop, Dec 12-14 2016 in Luxembourg by Prof. Stephan Bordas 6. I was invited for 7. - plenary talk “Embedding AI in robotic surgery” at MESROB 2021 (Virtual conference) 07.-09. June 2021 8. -semi-plenary talk at 2018 Int. Symposium on Medical Robotics (ISMR) Atlanta (GA, USA) “Smart Technologies for neurosurgical diagnosis and procedure planning”.
Organisation of Scientific meetings	<p>2022 Organizer of the workshop “Autonomy and shared autonomy in endoluminal approaches for soft surgical robots” within the 2022 Hamlyn Symposium on Medical Robotics</p> <p>2020 Co-organizer of the workshop “Integrating Sensor Fusion and Perception for Human-robot Interaction” THE 29TH IEEE INT. CONF. ON ROBOT AND HUMAN INTERACTIVE COMMUNICATION Sept. 1, 2020, Naples, Italy</p> <p>2019 Scientific organization committee of the National Bioeng. PhD School “Technologies in surgery” Sept. 2019, Bressanone, Italy</p> <p>2018 Coordinator of the local organizing committee of the “Italian Bioengineering Group” National Congress, Milan 25-27 June 2018</p> <p>2017 – 2018 Co-organizer of workshops on Surgical Robotics at the European Robotic Forum (ERF)</p> <p>2016 Co-organizer of the workshop “Towards Clinical Impact in Robotic Assisted Neuro and Skull- Base Surgery” at Hamlyn Symposium on Robotic Surgery, London, UK</p> <p>2012 and 2010 Co-organizer of the workshop “Modular Surgical Robotics: how can we make it possible?” at 2012 IEEE ICRA, St Paul, Minnesota, USA and of the workshop “EU Surgical Robotics Projects” at 2010 IEEE ICRA, Anchorage, Alaska, USA</p>
Competitive Grants	<p>NATIONAL AND INTERNATIONAL FUNDING</p> <p>Piano Operativo Salute, Italian Ministry of Healthcare</p> <p>• PI for local Operating Unit POLIMI within the POS T3 “ Fa.Per.M.E._T3” coordinated by Università della Calabria (approx. 150000€) 2022 - 2024</p>

Annex 2

H2020 grants as PI

- Autonomous Robotics for Transcatheter dELiveRy sYstems (ARTERY) ICT-47-2020 101017140 (CO-PI for partner POLIMI 239583€) 2021 - 2023
- ATLAS (AuTonomous intraLuminAI Surgery) H2020 <https://atlas-itn.eu/> Marie Curie ITN- 813782 (523000€) 2019 - 2023
- ALPHA-STEM (Advanced Laboratory Phantoms for Soft Tissues in Engineering and Medicine) Marie Curie IF- 798244 (Project coordinator 200000 €) 2018 - 2021
- EDEN2020 (Enhanced Delivery Ecosystem for Neurosurgery in 2020) <http://www.eden2020.eu/> ICT-24-2015 688279 (700000€) 2016 – 2021

FP7 grants as PI

- EuRoSurge (European Robotic Surgery) ICT-2011-7-288233 (143000€) 2011 – 2013

Participation to H2020 and Fp7 grants

- SMARTsurg (SMart weArable Robotic Teleoperated Surgery) <http://www.smartsurg-project.eu/> ICT-26-2016 732515 2017-2021
- ACTIVE (Active Constraints Technologies for Ill-defined or Volatile Environments) FP7-ICT-2009-6-270460 2011-2015 (Project Manager)
- ROBOCAST (ROBOt and sensors integration for Computer Assisted Surgery and Therapy) FP7-ICT-2007-215190 2008-2010

PhD scholarships from companies and from the Italian Institute of Technology

- Machine learning in computer vision - Industrial project CosmoPharma 1 PhD scholarship (68 k€)
- ART 3.5D - Medtronic 1 PhD scholarship (Co-PI) (68 k€)
- Human robot interaction (surgery, assistive and rehabilitation robotics): supervisor of 15 PhD candidates (about 1M€) 2013-2024

Intuitive Technology award

- Machine Learning-based Adaptive Robot-assisted Training for Surgical Robotics (46 k€) 2017-2018

Patents

WO2008129414 (A2) — 2008-10-30 Istituto Ortopedico Galeazzi; Ferrigno G.; Cerveri P.; De Momi E.; Pascale

Institutional responsibilities

2022 - 2012 Member of the PhD Committee at Universidad Polit cnica de Catalu a, Barcelona, Spain; IIT, Genova, Italy; King's College of London, London, UK; Imperial College of London, London, UK; ISIR - Sorbonne University - CNRS – INSERM, Paris, France, Scuola Superiore Sant'Anna, Pisa, Italy.

INTERNAL (IN POLIMI)

2018 – today responsible of the MSc in Biomedical Engineering students Study Plan assessment and approval

2017 – today Member of the PhD Bioengineering Committee

2014 – today serving as and Member of the Commission of Research Quality Assessment at Department of Electronics, Information and Bioengineering

Supervision of Graduate Students and Postdoctoral Fellows

2006 – today Supervision of approx. 70 Master Students (MSc in Biomedical Engineering/ Automation/ Electronics Engineering at POLIMI).

Supervision of 8 Erasmus MSc Students from University of Minho, Delft University of Technology, Telecom Physique Strasbourg.

13 graduated PhD students + 2 Erasmus PhD student

Currently supervising 17 PhD candidates (11 of them I am main supervisor), working on robotic interfaces, skill assessment and motor control, computer vision and 5 PhD students funded by the Chinese Science Council

Currently supervising 1 Postdoc who graduated in POLIMI

Annex 2

Teaching activities	<p>MSc Biomedical Engineering at POLIMI</p> <p>2021 – now Teaching position – SMART HOSPITAL, 3CFU offered to all MSc students, POLIMI, Italy</p> <p>2017 – now Teaching position – Clinical Technology Assessment, 5CFU at MSc in Biomedical Engineering, POLIMI, Italy</p> <p>2016 – now Teaching position – Lab course: Medical Robotics and Technologies for Computer Aided Surgery, 5CFU at MSc in Biom. Eng, POLIMI, Italy</p> <p>BSc Biomedical Engineering at POLIMI</p> <p>2013 – 2016 Teaching position – Project mgm. on Instrumentation and Functional Evaluation, 5CFU at BSc in Biom. Eng, POLIMI, Italy</p> <p>Course responsibilities at PhD Bioengineering at POLIMI</p> <p>2020 – ATLAS - ITN 1 week course “From pre- to intra-operative image analysis: 3D tissue segmentation, modeling and deformation”</p> <p>2017 – 2018 “Human-robot collaboration for professionals and daily life”</p> <p>2014 – 2015 “Human friendly robotics”</p> <p>2012 – 2013 “Modular surgical robotics”</p> <p>2011 – 2012 “Advancements in surgical robotics”</p> <p>Course responsibilities at PhD Mathematics and Information at Università della Calabria</p> <p>2020 and 2021 – 2 week course: “Embodiment of AI”</p>
Track Record	<p>Researcher unique identifier(s):</p> <p>SCOPUS Author ID: 26022531200, ORCID ID: orcid.org/0000-0002-8819-2734 Researcher ID: D-7375-2016</p> <p>139 Papers, 6 Book Chapters, 88 Conference Papers</p> <p>H index 32 (Scopus); Citations 3453 (Scopus) (18/07/2022)</p>
Selected Publications (5/139)	<ol style="list-style-type: none"> 1. Segato, A., Calimeri, F., Testa, I., Corbetta, V., Riva, M., & De Momi, E. (2022). A hybrid inductive learning-based and deductive reasoning-based 3-D path planning method in complex environments. <i>Autonomous Robots</i>, 46(5), 645-666. doi:10.1007/s10514-022-10042-z 2. Segato, A., Marzo, M. D., Zucchelli, S., Galvan, S., Secoli, R., & De Momi, E. (2022). Inverse reinforcement learning intra-operative path planning for steerable needle. <i>IEEE Transactions on Biomedical Engineering</i>, 69(6), 1995-2005. doi:10.1109/TBME.2021.3133075 3. Vidotto, M., Bernardini, A., Trovatielli, M., De Momi, E., & Dini, D. (2021). On the microstructural origin of brain white matter hydraulic permeability. <i>Proceedings of the National Academy of Sciences of the United States of America</i>, 118(36) doi:10.1073/pnas.2105328118 4. Caccianiga, G., Mariani, A., De Paratesi, C. G., Menciasci, A., & De Momi, E. (2021). Multi-sensory guidance and feedback for simulation-based training in robot assisted surgery: A preliminary comparison of visual, haptic, and visuo-haptic. <i>IEEE Robotics and Automation Letters</i>, 6(2), 3801-3808. doi:10.1109/LRA.2021.3063967 5. Favaro, A., Segato, A., Muretti, F., & Momi, E. D. (2021). An evolutionary-optimized surgical path planner for a programmable bevel-tip needle. <i>IEEE Transactions on Robotics</i>, 37(4), 1039-1050. doi:10.1109/TRO.2020.3043692

Pursuant to Article 13, Act 675/96 (Privacy Law), I hereby agree to the handling of my personal data.

“Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del D.P.R. 445/2000”.

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV.