Giovanni Faoro

Bionics Engineer (M.Sc.)

About me

Ph.D student in BioRobotics with a keen interest in medical and probabilistic robotics, image processing and image-guided robotics and microrobotics.

Without commitment you'll never start, but more importantly, without consistency you'll never finish.

IT skills

Programming	Java, C++, Python, MATLAB
CAD	Ansys, FreeCAD
Typesetting	LaTeX

Languages

Native language

B2/C1

Interests

Education

Now — **Ph.D in BioRobotics**
Scuola Superiore Sant'Anna: Surgical Robotics and Allied Technologies Area, The BioRobotics Institute (Pontedera, Italy)
Supervisor: prof. Arianna Menciassi
External courses:
- Hamlyn Winter School on Surgical Imaging and Vision (2022)
- Summer School on Surgical Robotics (LIRMM) (2023)

2021 — **M.Sc. in Bionics Engineering (2 yrs)**
Scuola Superiore Sant'Anna and University of Pisa
Thesis: 2D Ultrasound-based Visual Servoing Control of Magnetic Microrobots
Supervisor: prof. Arianna Menciassi
110/110 with honors

2019 — **B.Sc. in Biomedical Engineering (3 yrs)**
Università degli Studi di Padova
Thesis: Automatic Segmentation of Dendritic Cells in Corneal Images
Supervisor: prof. Maria Pia Saccomani
110/110 with honors

Research Experience

Now — **R&D Engineer**
R&D Engineer on Ultrasound data analysis with analytical and AI methods @Soundsafe Care SRL

2024 — **Visiting PhD Student (6 mths)**
Visiting period at the Computer Vision for Robotic Surgery group, Hamlyn Centre for Robotic Surgery, Imperial College London

2024 — **R&D Engineer Intern (3 mths)**
R&D Engineer on computer vision and robotic control on the medical robot by Soundsafe Care SRL

2024 — **Researcher in Horizon 2020 EU Project (3 yrs)**
Sensorization and Sensor Fusion strategies for catheter tracking (ARTERY)

Tutoring

2024 — **Bachelor and Master students' tutor (2 yrs)**
Tutor for thesis development and assistant to prof. Menciassi for image-guided robotic lectures during master courses

2019 — **Linear Algebra tutor (4 mths)**
Mentor for course 'Algebra Lineare e Geometria' held by prof. Giulio Peruginelli at Università degli Studi di Padova

Certificates & Awards

2024 — **Best Experimental Paper Award by SCRN**

2024 — **LinguaSkill C1 CEFR Level**

2022 — **Runner-up Best Project Award Hamlyn Winter School**
Runner-up for the Best Project Award during The Hamlyn Winter School on Surgical Imaging and Vision

2021 — **Advanced Kalman Filtering and Sensor Fusion**
Udemy online course by Technitute

2020 — **Modern Robotics**
Robot Motion Planning and Control and *Robot Manipulation* online courses by prof. Kevin M. Lynch, Northwestern University

2018 2017 — **Mille e Una Lode**
Merit Scholarship awarded by Università degli Studi di Padova

List of Publications

Giovanni Faoro
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Engineering

Peer-reviewed Journal Papers

2D Ultrasound Thermometry based on Echo Nonlinearities and Deep Learning Denoising, **G. Faoro**, A. Weld, S. Giannarou, A. Menciassi, IEEE Transactions on Biomedical Engineering, SUBMITTED

A Multi-sensorization Approach to Improve Safety in Transesophageal Echocardiography, **G. Faoro**, I. Tamadon, S. Tognarelli, A. Menciassi, IEEE Transactions on Medical Robotics & Bionics, 2024. (link)

Optical Flow and Acoustic Phase Analysis comparison in Ultrasound-based microrobot tracking, **G. Faoro**, V. Iacovacci, A. Menciassi, IEEE Robotics and Automation Letters, 2024. (link)

An Artificial Intelligence-aided Robotic Platform for Ultrasound-guided Transcarotid Revascularization, **G. Faoro**, S. Maglio, S. Pane, V. Iacovacci, A. Menciassi, IEEE Robotics and Automation Letters, 2023. (link)

Ultrasound acoustic phase analysis enables robotic visual-servoing of magnetic microrobots, S. Pane, **G. Faoro**, E. Sinibaldi, V. Iacovacci, A. Menciassi, IEEE Transactions on Robotics, 2022. (link)

Peer-reviewed Conference Papers/Abstracts

A Miniaturized Cooling System for Trans-Esophageal Echocardiographic Probes may Improve Patients Safety in Minimally Invasive Cardiac Surgery or Trans-Catheter Percutaneous Interventions, F. Parrotta, **G. Faoro**, S. Tognarelli, A. Menciassi, A. Giannoni, EuroEcho-Imaging 2024

Design and Implementation of a Miniaturized Cooling System for Trans-Esophageal Echocardiographic probes in Minimally Invasive Cardiac Surgery, F. Parrotta, **G. Faoro**, S. Tognarelli, A. Menciassi, 13th Conference on New Technologies for Computer and Robot Assisted Surgery (CRAS), 2024

Design of a Miniaturized Cooling System for Minimally Invasive Cardiac Surgery, F. Parrotta, **G. Faoro**, S. Tognarelli, A. Menciassi, COMSOL Conference, 2024

Robot-assisted Motion Compensation based on Optical Flow in Ultrasound images, **G. Faoro**, N. Pasini, A. Mariani, L. Morchi, S. Tognarelli, A. Menciassi, IEEE International Ultrasonics Symposium (IUS), 2023. (link)

Fiber Bragg Grating sensors for temperature estimation and their integration in robotic transesophageal echocardiography: a preliminary study, L. Barozzi, **G. Faoro**, M. Chirumamilla, S. Tognarelli, D. D'Auria, A. Menciassi, 12th Conference on New Technologies for Computer and Robot Assisted Surgery (CRAS), 2023. (link)

Automated US imaging and 3D reconstruction using deep learning for planning robot-assisted US-guided focused US surgery, G. Cei, **G. Faoro**, A. Mariani, L. Morchi, S. Tognarelli, A. Menciassi, 22nd Annual International Symposium on Therapeutic Ultrasound, 2023. (link)

List of Publications

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Engineering

Automatic Vessel Recognition and Segmentation a novel Deep Learning Architecture with Transfer Learning Approach, **G. Faoro**, S. Pane, V. Iacovacci, S. Moccia, A. Menciassi, The Hamlyn Symposium on Medical Robotics, 2022. (link)

Design of a Customized Waterproof Magnetic Connector (WaMaCo) for Semi-disposable Endoluminal Instruments, **G. Faoro**, Y. Huan, A. Firrincieli, G. Ciuti, 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), 2021. (link)

Book Chapters

Clinical Imaging of miniature robots in relevant biological scenarios, **G. Faoro** and V. Iacovacci in *Recent Progress in Medical Miniature Robots,* Elsevier, 2024

Paleontology

Peer-reviewed Conference Papers/Abstracts

Numerical taxonomy applied to Upper Triassic Megalodontidae: first attempts on the genera Neomegalodon and Triadomegalodon, **G. Faoro**, C. Chesi, M. De Matteis, S. Reguzzi, Società Geologica Italiana, BeGEO Conference, 2021. (link)