Bogdan Mihai Maris

Personal Information

Surname: Maris

Name: Bogdan Mihai

Nationality: Romanian

Education

2011 - 2014 **University of Verona, Italy:** PhD in Computer Science,

Thesis title: 'Registration of medical images for applications in minimally invasive procedures'

Advisor: Paolo Fiorini, University of Verona, Italy

Reviewers: Leo Joskowicz, The Hebrew University of Jerusalem, Israel, Ferrigno Giancarlo, Politecnico di Milano, Italy.

2005 - 2008 **University of Verona, Italy:** BS in Computer Science, final grade 110/110 cum laudae

Thesis title: 'Constraints Implementation on the Minimum Penetration Trajectory in a Deformable Environment'
Advisor: prof. Paolo Fiorini

2003 - 2004 **University of Padua, Italy**: recognition of the academic title obtained in Romania as Italian degree in mathematics (MSc)

1993 - 1997 **University 'Babes Bolyai', Cluj Napoca, Romania:** MSc in Mathematics, final grade 9.5/10

Thesis title: 'Optimal Approximation of Linear Functionals'

Advisor: prof. Gheorghe Micula

Professional Experience

2024 – present **Temporary Assistant Professor** at the Department of Engineering for Innovation Medicine.

2023 – 2024 **Research Fellow** Department of Engineering for Innovation Medicine, University of Verona.

2018 – 2023 **Temporary Assistant Professor** at Computer Science Department, Verona. His main research interest are Medical Image Processing and Robotics for Surgical Applications.

2017 – 2018 **Math teacher** at 'Exedra' high school, Verona, Italy

2016 - 2018 **Research Scholarship Holder** at Computer Science Department, Verona- MURAB. His main task is to develop algorithms for the registration of MRI (magnetic resonance) pre-operative data with US (ultrasound) intra-operative data. The registration algorithms are based on image intensities or features extracted from the images. The transformation can be parametric (e.g. spline function) or derived from elastic deformation. An initial rigid alignment is performed using landmarks visible in all the images to be registered (MRI, US or video). The innovative approach proposed in this project for the registration of the images make use of classic image registration techniques and deformable models. The deformable models employ a generic dynamic linear elastic deformation model discretized by the finite element method (FEM).

2010 - 2013 **Research Fellow** at Computer Science Department, Verona- SAFROS. His main task during this project was to develop and implement algorithms for the real-time registration between pre-operative and intra-operative data to increase safety during a robot-assisted surgery. The methods were based on the real-time segmentation of US images and surface based registration algorithms.

2008 - 2009 **Research Scholarship Holder** at Computer Science Department, Verona – ACCUROBAS project grant. His main task during this project was to develop and implement algorithms for planning through adaptive models, soft tissue modelling and online motion prediction during a robot-assisted surgery. The planning was based on the minimization of the potential collision between the surgery tool and the anatomy along a discretize path. During the optimization, we obtained an ideal trajectory curve described by a spline function.

2001 - 2008 **Flight Attendant** at Verona and Venice airports for various Italian Airlines (Volare Airlines, Air Italy, Club Air).

1999 - 2000 **Generic Worker** at 'Colle dell'Acero', Via Fontana Parata 8, Lanuvio (Roma), Italy.

1997 - 1999 **Math Teacher** at 'Liceul teoretic Pavel Dan', Campia Turzii (Cluj), Romania.

Involvement in Research Projects

2024 – present PROFTH funded by the European Research Council, the PROFTH project aims to advance robotics and AI technologies for focal therapies in prostate cancer. The idea is to improve the positioning of devices in the prostate cancer area that facilitate percutaneous cancer ablation. A digital twin of the pelvic area and algorithms for device positioning will help minimise tissue removal while ensuring safety margins.

He works on the digital twin development thorough MRI images segmentation and physical properties simulation.

Website: https://cordis.europa.eu/project/id/101138301

2023 – present ROBIOPSY funded by the European Innovation Council (EIC) and SMEs Executive Agency.

PI for research and implementation of AI techniques for MRI and US image processing to be applied in a robotic biopsy system.

Website: https://robiopsy-project.eu/

2023 – 2024 PROCT (Prostate Diagnosis using Optical Coherence Tomography) AI methods for the classification of cancerous tissue of the prostate through robotic OCT. He is responsible for the setup acquisition, ethical protocol design, AI algorithms development and implementation.

Websites:

https://cordis.europa.eu/project/id/101069279

https://metropolis.scienze.univr.it/project/proct-project/

2021 – 2023 Project founded by TECRES SpA. Implementation and test of algorithms for the registration of intra-operative 2D X-Ray images acquired with a C-arm and pre-operative 3D CT scans. Design of a graphical user interface to allow a doctor the visualization of intra-operative and pre-operative images and planning of a robotic percutaneous vertebroplaty procedure. The plan of the intervention is subsequently sent to the robot that will position the tools accordingly.

He is the principal beneficiary of the project.

2019 – 2021 **PROST** (Autonomous Prostate Biopsy Surgery) Grant agreement ID: 875523

https://cordis.europa.eu/project/id/875523

https://metropolis.scienze.univr.it/project/prost/

Technical manager of the PROST project and a specialist in medical image processing and fusion. He leaded the development of the enhanced fusion algorithms to identify the biopsy targets in the echography images and the development of the PROST user interface. The algorithms are based on machine learning techniques and analyze the pre-operative data as well as intra-operative images. He was in charge with the development and achievement of the clinical trials.

2018 – present **ARS** (Autonomous Robotic Surgery) an European Research Council – ERC grant, Horizon 2020.

https://cordis.europa.eu/project/id/742671

https://metropolis.scienze.univr.it/project/ars/

The goal of the ARS project is the derivation of a unified framework for the autonomous execution of robotic tasks in surgery, a challenging environment where accurate performance and safety are of paramount importance.

He was in charge of WP1: Data Processing and Model Building. In WP1 he developed methods for the extraction of anatomical models from medical images using automatic AI techniques. In robotic surgery the anatomical models allows the simulation of the procedure and the plan of the trajectories to be followed.

2016 - 2018 **MURAB** (MRI and Ultrasound Robotic Assisted Biopsy) Horizon 2020 ICT-24-2015 - Robotics project grant.

https://cordis.europa.eu/project/id/688188

https://www.murabproject.eu/

The MURAB project has the ambition to drastically improve precision and effectiveness of the biopsy gathering for cancer diagnostic operations. By reducing the

usage of expensive Magnetic Resonance Imaging (MRI) to a minimum in the workflow and at the same time yield the same precision during samples targeting, a new workflow will be offered to the practice. Guided by a novel MRI-Ultrasound (US) registration, a robotically steered US transducer equipped with an acoustically transparent force sensing will autonomously scan the target area and optimally acquire volumetric and elastographic data. An innovative technique, called Tissue Active Slam (TAS), will be developed in the project to optimally register the intraoperational acquired volume to the preoperational MR image.

Personal contribution to the project: project proposal writing, participation to all the project meetings, project review presentation to the European Commission, technical contributions, integration work with the other partners, demo preparation, project deliverables writing, dissemination activities.

He was the principal investigator of the WP3 Imaging and WP2 Dissemination.

2010 - 2013 **SAFROS** (Patient Safety in Robotics Surgery) project grant FP7-ICT-2009.5.2.

https://cordis.europa.eu/project/id/248960

SAFROS goal was to address the development of technologies for patient safety in robotic surgery. Its aims were to define patient safety metrics for surgical procedures; to develop methods that abide by safety requirements; and to demonstrate that a properly controlled robotic suergery carried out in accordance to our safety criteria can improve the level of patient safety currently achievable by traditional surgery.

Personal contribution to the project: project proposal writing, participation to the project meetings, technical contributions, integration work with the other partners, project deliverables writing, demo preparation and demonstration to the reviewers during the final project review meeting, dissemination activities.

He was the principal investigator of the WP2 Organ Modeling and Calibration, Task 2.5 Real time segmentation and registration.

2008 - 2009 **ACCUROBAS** (accurate robot assistant) FP6-2005-IST-6.

https://cordis.europa.eu/project/id/045201

The main objective of the project was to develop an innovative and universal robotic assistant system to support a human in dextrous manipulation. For this reason, it addressed methods to increase accuracy for lightweight compliant robotic systems during surgical procedures with human interaction. The approach focused on adaptive control by exhibiting rich sensory-motor skills and multi-sensory measurement to distinctly increase the system accuracy.

Personal contribution to the project: participation to the project meetings, technical contributions, integration work with the other partners, project deliverables writing, dissemination activities.

Editorial and Organization Activities

2016 - 2022 **Journal Reviewer**, Journal of Medical Robotic Research (JMMR) – World Scientific

2017- **Journal Reviewer**, Computational and Mathematical Methods in Medicine – Hindawi

2018 - 2023 **Journal Reviewer**, IEEE Robotics and Automation Letters (RA-L)

2016 **Organization Committee**, Dept. Of Computer Science, Altair Laboratory, Summer School on Control of Surgical Robots (COSUR 2016), 5-9 September 2016

2014 - 2022 **Conference Reviewer**, CRAS (Computer/Robot Assisted Surgery)

2011 - 2022 **Conference Reviewer**, ICAR (International Conference on Advanced Robotics)

2021 **Conference Chair**, 7th International Conference on Control, Instrumentation and Automation (ICCIA), 22-24 February 2021 at the University of Tabriz, Tabriz-Iran.

2023- **Editor** for 'Medical Robotics' Journal
Special issue editor: 'Artificial Intelligence (AI) for Minimally Invasive Robotics'
Link: https://www.hksmp.com/journals/mr/announcement/view/43

2023 **Associated Editor** for contributed papers ICAR 20232023 International Conference on Advanced Robotics 5-8 December 2023 | Abu Dhabi, UAE

2024- **Guest Associate** Editor for 'Frontiers in Artificial Intelligence AI in Business'

Reviewer for other conferences: IEEE International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Robotics and Automation (ICRA).

Academic Teaching

2008 - 2009 **Systems and Signals** - laboratory assistant, prof. Paolo Fiorini,
2013 - 2014 **Systems and Signals** - tutor, University of Verona, Italy, prof. Paolo Fiorini.
2011 - 2012 **Linear Algebra**- tutor, University of Verona, Italy, prof. Enrico Gregorio.
2013 - 2014 **Linear Algebra**- tutor, University of Verona, Italy, prof. Enrico Gregorio.
2014 - 2015 **Information Technology**, adjunct Professor from 3/12/2014 to 2/28/2015 Department Foreign Languages and Literatures, University of Verona, Italy.
2015 - 2016 **Information Technology**, adjunct Professor from 9/24/2014 to 2/28/2016 Department Biotechnology, University of Verona, Italy.
2017 – 2018 **Matlab-Simulink programming**, Bachelor and Master's degrees in Computer Science, University of Verona, Italy.
2018 – 2019 **System theory**, Bachelor's degree in Computer Science, University of Verona, Italy.
2018 – 2019 **Robotics**, Master's degree in Computer Science, Verona, Italy.
2018 – 2019 **Matlab-Simulink programming**, Bachelor and Master's degrees in Computer Science, University of Verona, Italy.
2019 – 2020 **System theory**, Bachelor's degree in Computer Science, University of Verona, Italy.
2019 – 2020 **Matlab-Simulink programming**, Bachelor and Master's degrees in Computer Science, University of Verona, Italy.

2020 – 2021 **System theory**, Bachelor's degree in Computer Science, University of Verona, Italy.
2020 – 2021 **Matlab-Simulink programming**, Bachelor and Master's degrees in Computer Science, University of Verona, Italy.
2021 – 2022 **System theory**, Bachelor's degree in Computer Science, University of Verona, Italy.
2021 – 2022 **Matlab-Simulink programming**, Bachelor and Master's degrees in Computer Science, University of Verona, Italy.
2022 – 2023 **Mathematical Analysis,** Human Centered Medical Systems Engineering degree, University of Verona, Italy.
2022 November-December Erasmus+ visiting professor at Eotvos Lorand University (ELTE), Computer Science Department, Budapest, Hungary. Course title: **'Minimally invasive surgery: toward autonomous robots using AI'**.

Personal Participation to Conferences and Workshops as Speaker

2010	IEEE International Conference on Intelligent Robots and Systems (IROS), Taipei, Taiwan
2011	Signal Processing, Pattern Recognition, and Applications / 722: Computer Graphics and Imaging (SPPRA,CGIM 2011), Innsbruck, Austria
2012	IEEE International Conference on Intelligent Robots and Systems (IROS), Villamoura, Portugal
2012	CARS (Computer Assisted Radiology) 26th International Congress and Exhibition, Pisa, Italy
2013	Third Joint Workshop on New Technologies for Computer/Robot Assisted Surgery, Verona, Italy.
2014	Hamlyn Symposium workshop on Surgical Imaging, London, UK, 2014.
2014	4rd Joint Workshop on New Technologies for Computer/Robot Assisted Surgery, Genova, Italy.
2016	2th IASTED International Conference on Biomedical Engineering BioMed, Innsbruck, Austria.
2016	CARS (Computer Assisted Radiology) 30th International Congress and Exhibition, Heidelberg, Germany.
2016	6th Joint Workshop on New Technologies for Computer/Robot Assisted Surgery, Pisa, Italy
2017	3rd IASTED International Conference on Biomedical Engineering BioMed, Innsbruck, Austria.
2017	7th Joint Workshop on New Technologies for Computer/Robot Assisted Surgery, Montpellier, France
2017	29th International Congress of the Society for Medical Innovation and Technology (iSMIT) 2017, Turin, Italy
2019	CRAS (Conference on New Technologies for Computer and Robot Assisted Surgery), March 21-22, Genoa, Italy
2019	CARS (Computer Assisted Radiology and Surgery), June 17-21, 2019, Rennes, France
2020	CARS (Computer Assisted Radiology and Surgery), June 23-27, Virtual Conference
2021	CARS (Computer Assisted Radiology and Surgery), June, Virtual Conference
2021	TechMed Enschede, Netherlands, November 3-4, Invited Speaker

2023 CRAS (Conference on New Technologies for Computer and Robot Assisted Surgery) September 11- 13, Sorbonne University, Paris, France.

Journal Publications

- "**Advancing robotic prostate biopsy through artificial intelligence**." Maris, Bogdan, Medical Robotics 2 (2024).
- "**Artificial intelligence (AI) for minimally invasive robotics**." Maris, Bogdan, Medical Robotics 1 (2023).
- **Can the Abdominal Aortic Atherosclerotic Plaque Index Predict Functional Outcomes after Robot-Assisted Partial Nephrectomy?.** Veccia, A., Serafin, E., Tafuri, A., Malandra, S., Maris, B., Tomelleri, G., Spezia, A., Checcucci, E., Piazza, P., Rodler, S. and Baekelandt, L., 2023. Diagnostics, 13(21), p.3327.
- **Acute pancreatitis after pancreatoduodenectomy: A prospective study of diffusion-weighted magnetic resonance imaging, serum biomarkers, and clinical features** Bannone, E., G. Marchegiani, L. Costa, G. Zamboni, B. M. Maris, G. Procida, P. G. Vacca, R. Salvia, and C. Bassi, in Surgery 2023 1-10.
- **Force control of lightweight series elastic systems using enhanced disturbance observers** Calanca, A., Sartori, E. and Maris, B., Robotics and Autonomous Systems, 2023, p.104407.
- **Autonomous robotic system for breast biopsy with deformation compensation,** S. Ferrari, E. Tagliabue, B. M. Maris and P. Fiorini, in IEEE Robotics and Automation Letters, 2023 doi: 10.1109/LRA.2023.3237499.
- **Abdominal-aortic atherosclerotic plaque index and perioperative outcomes in partial nephrectomy,** Alessandro Tafuri, Bogdan Maris, Katia Odorizzi, Emanuele Serafin, Alessandra Gozzo, Giacomo Di Filippo, Alberto Bianchi, Martina Borzi, Giulia Zamboni, Giancarlo Mansueto, Antonio Benito Porcaro, Matteo Brunelli, Maria Angela Cerruto, Gianluigi Zaza, Vincenzo Pagliarulo, Paolo Fiorini, Alessandro Antonelli in Minerva Urology and Nephrology, 2023
- **Pre-clinical Validation of a Semi-Autonomous Robot for Prostate Biopsy** B. Maris et. Al. Transactions of Medical Robotics and Bionics, Special Issue From Bench to Bedside, 2022
- **PROST-Net: A deep learning approach to support real-time fusion in prostate biopsy** L. Palladino, B. Maris, A. Antonelli, P. Fiorini. Transactions of Medical Robotics and Bionics, Special Issue From Bench to Bedside, 2022
- **Toward autonomous robotic prostate biopsy: a pilot study**
  B. Maris, C. Tenga, R. Vicario, L. Palladino, N. Murr, M. De Piccoli, A. Calanca, A. Tafuri, S. Puliatti, S. Micali, P. Fiorini, IJCARS 2021
- **A virtual reality study on postretrieval extinction of smoking memory reconsolidation in smokers** T Zandonai, G Benvegnù, F Tommasi, E Ferrandi, E Libener, S Ferraro, Journal of Substance Abuse Treatment, 2021
- **'Needle and Biopsy Robots: A Review'** Françoise J. Siepel, Bogdan Maris, Marcel Welleweerd, Vincent Groenhuis, Paolo Fiorini, Stefano Stramigioli in Current Robotic Reports 2021
- **'Quantitative Evaluation of an Automated Cone-based Breast Ultrasound Scanner for MRI – 3D US Image Fusion'** Anton V. Nikolaev, Leon de Jong, Gert Weijers, Vincent Groenhuis, Ritse M. Mann, Françoise J. Siepel, Bogdan M. Maris, Stefano Stramigioli, Hendrik H.G. Hansen, Chris L. de Korte, in IEEE Transactions on Medical Imaging 2021, doi: 10.1109/TMI.2021.3050525

- **Magnetic resonance (MR) for mural nodule detection studying Intraductal papillary mucinous neoplasms (IPMN) of pancreas: IMAGING-PATHOLOGIC correlation'** Mirko D'Onofrio, Giorgia Tedesco, Nicolò Cardobi, Riccardo De Robertis, Alessandro Sarno, Paola Capelli, Paolo Tinazzi Martini, Gabriele Giannotti, Alessandro Beleù, Giovanni Marchegiani, Stefano Gobbo, Giovanni Butturini, Maris Bogdan, Roberto Salvia, Claudio Bassi, in Pancreatology, doi.org/10.1016/j.pan.2020.11.024., Year 2020
- **'Correlation of MR features and histogram-derived parameters with aggressiveness and outcomes after resection in pancreatic ductal adenocarcinoma',** Riccardo De Robertis, Alessandro Beleù, Nicolò Cardobi, Isabella Frigerio, Silvia Ortolani, Stefano Gobbo, Bogdan Maris, Davide Melisi, Stefania Montemezzi, Mirko D'Onofrio, Abdominal Radiology, 2020
- **'Iterative Simulations to Estimate the Elastic Properties from a Series of MRI Images Followed by MRI-US Validation',** Francesco Visentin, Vincent Groenhuis, Bogdan Maris, Diego Dall'Alba, Françoise Siepel, Stefano Stramigioli, Paolo Fiorini, Medical & Biological Engineering & Computing, 2018.
- **'Can histogram analysis of MR images predict aggressiveness in pancreatic neuroendocrine tumors?',** Riccardo De Robertis, Bogdan Maris, Nicolò Cardobi, Paolo Tinazzi Martini, Stefano Gobbo, Paola Capelli, Silvia Ortolani, Sara Cingarlini, Salvatore Paiella, Luca Landoni, Giovanni Butturini, Paolo Regi, Aldo Scarpa, Giampaolo Tortora, Mirko D'Onofrio, European Radiology, pp 1-10, 2018
- **'Analytical derivation of elasticity in breast phantoms for deformation tracking',** Vincent Groenhuis, Francesco Visentin, Françoise J Siepel, Bogdan M Maris, Diego Dall'alba, Paolo Fiorini, Stefano Stramigioli, International journal of computer assisted radiology and surgery (IJCARS), 2018
- **'Virtual Reality for Neuroarchitecture: Cue Reactivity in Built Spaces',** Chiamulera, Cristiano, Elisa Ferrandi, Giulia Benvegnù, Stefano Ferraro, Francesco Tommasi, Bogdan Maris, Thomas Zandonai, and Sandra Bosi. *Frontiers in psychology* 8 (2017).
- **'Generalized Shapes and Point Sets Correspondence and Registration'**, B.M. Maris, P. Fiorini, Journal of Mathematical Imaging and Vision, 2015.

International Conference Publications

- **Trajectory planning with task constraints in densely filled environments**, Maris, B., Botturi, D. and Fiorini, P., 2010, October. In 2010 IEEE/RSJ International Conference on Intelligent Robots and Systems (pp. 2333-2338). IEEE.
- **'A compact navigation system for free hand needle placement in percutaneos procedures'**, Dall'Alba, D.; Maris, B.; Fiorini, P. Intelligent Robots and Systems (IROS), 2012 IEEE/RSJ International Conference on, Vilamoura, Portugal.
- **'A phantom study for the validation of a surgical navigation system based on real-time segmentation and registration methods'** Bogdan Maris, Diego Dall'Alba, Paolo Fiorini, CARS 2013(Computer Assisted Radiology) 27th International Congress and Exhibition, Heidelberg, Germany.
- **'Needle Mounted Navigation System for Free Hand Percutaneous Procedures'** Dall'Alba, D.; Maris, B.; Fiorini, P. Third Joint Workshop on New Technologies for Computer/Robot Assisted Surgery2013, Verona, Italy.
- **'Surgical Navigation System Based on Real-Time Segmentation and Registration Methods'**, B.M. Maris, the Hamlyn Symposium workshop on Surgical Imaging, London, UK, 2014.

- **'Medical image registration in the operating room: phantom study'**, B.M. Maris, P. Fiorini, 4rd Joint Workshop on New Technologies for Computer/Robot Assisted Surgery 2014, Genova, Italy.
- **'Retrospective study on phantom for the application of medical image registration in the operating room scenario'**, Maris, B. and Fiorini, P., Biomed 2016, 15-16th February, Innsbruck.
- **'2D to 3D registration of manually segmented MRI prostate data',** Maris, B. and Fiorini, P., CARS 2016, Heidelberg, Germany.
- **'Segmentation of pancreatic solid tumors and texture analysis to discriminate pancreatic ductal adenocarcinomas from neuroendocrine neoplasms',** B.M. Maris, P. Fiorini, R. De Robertis Lombardi, CRAS 2016, Pisa, Italy.
- **'Deformable surface registration for breast tumors tracking: A phantom study.'** Maris, Bogdan Mihai, and Paolo Fiorini. Biomedical Engineering (BioMed), 2017 13th IASTED International Conference on. 2017.
- **'Quantitative CT texture and shape analysis: which features can differentiate benign and malignant pulmonary nodules?**' R. Casale, B. Maris, G. Addonisio, P. Orlando, P. Fiorini, CARS (Computer Assisted Radiology and Surgery), June 20-24, 2017 Barcelona (Spain)
- **'Quantitative MRI texture analysis: can it predict metastases in Patients with soft-tissue sarcomas of the extremities?'** R. Casale, B. M. Maris, C. Casale, G. Addonisio, P. Orlando, P. Fiorini; Portogruaro, Verona, ESSR Annual Scientific Meeting (European Society of Muscoloskeletal Radiology), June 15-17, 2017 Bari (Italy)
- **'Patient specific FE modeling for deformable breast registration',** E. Tagliabue, B. Maris, P. Fiorini**,** 8th Joint Workshop on New Technologies for Computer/Robot Assisted Surgery, London (Great Britain), 2018.
- **'Multi-planar pose prediction in medical imaging',** B. Maris, E. Ghignoni, P. Fiorini, CARS 2019
- **'Convolutional network for multi-planar pose prediction in medical imaging',** Bogdan Maris, Eros Ghignoni and Paolo Fiorini, CRAS 2019, Genova, Italy.
- **'Ultrasound-guided breast biopsy of ultrasound occult lesions using multimodality image co-registration',** Anton Nikolaev, Hendrik H.G. Hansen, Leon de Jong, Eleonora Tagliabue, Bogdan Maris, Vincent Groenhuis, Françoise Siepel, Marco Caballo, Ioannis Sechopoulos and Chris L. de Korte, Proceedings of SPIE 2019.
- **'Ultrasound-guided breast biopsy of ultrasound occult lesions using multimodality image co-registration and tissue displacement tracking',** Nikolaev, Anton; Hansen, Hendrik H. G.; de Jong, Leon; Tagliague, Eleonora; Maris, Bogdan; Groenhuis, Vincent; de Korte, Chris L., 2019 International Congress on Ultrasonics (ICU), Bruges, Belgium, 3-8 Sept. 2019.
- **'Ultrasound-guided breast biopsy based on multimodality image fusion and lesion tracking'** , Anton Nikolaev and Gert Weijers and Hendrik Hansen and Leon de Jong and Eleonora Tagliabue and Bogdan Maris and Vincent Groenhuis and Francoise Siepel and Chris de Korte, 2019 IEEE International Ultrasonics Symposium (IUS), October 6-9, 2019, Glasgow, Scotland
- **'A virtual reality study on post-retrieval extinction of smoking memory reconsolidation in smokers',** Thomas Zandonai, Giulia Benvegnù, Francesco Tommasi, Elisa Ferrandi, Elettra Libener, Stefano Ferraro, Maris Bogdan, Cristiano Chiamulera in 'Addictive Behaviors' 2019 (under review)
- '**Challenges of Autonomous Robotic Surgery**', Fiorini Paolo, Dall'Alba Diego, Ginesi Michele, Maris Bogdan Mihai, Meli Daniele, Nakawala Hirenkumar, Roberti Andrea, Hamlyn Symposium 2019, London, UK
- **'Logistic regression to predict malignancy of breast tumors using IVIM parameters'** M. Statache, B. M. Maris, R. Menghini, A. Cybulski, M. Barillari, G. Zamboni, Paolo Fiorini, CARS 2020, Muenchen, Germany

- **'ADAGSS: Automatic Dataset Generation for Semantic Segmentation'**, L. Palladino, B. Maris, P. Fiorini, CARS 2020, Muenchen, Germany
- **'Deformation Compensation in Robotically-Assisted Breast Biopsy',** Vincent Groenhuis, Eleonora Tagliabue, Marcel K. Welleweerd, Françoise J. Siepel, Juan D. Munoz Osorio, Bogdan M. Maris, Diego Dall'Alba, Uwe Zimmermann, Paolo Fiorini, Stefano Stramigioli, 11th International Conference on Information Processing in Computer-Assisted Interventions, IPCAI 2020 - Konferenzzentrum München, Munich, Germany
- **'Increasing the precision of the biopsy with robots: two case studies'** Bogdan Maris, Paolo Fiorini, Andrea Calanca, Chiara Tenga, Francoise Siepel, Vincent Groenhuis and Stefano Stramigioli, I-RIM 3D 2020
- **Impact of abdominal aortic atherosclerotic burden in patients submitted to partial nephrectomy: A pilot study on 142 cases**, A Tafuri, E Serafin, K Odorizzi, A Gozzo, G Di Filippo, A Bianchi, M Borzi, G Zamboni, G Mansueto, AB Porcaro, M Brunelli, MA Cerruto, G Zaza, P Fiorini, B Maris, A Antonelli in EUROPEAN UROLOGY 2021
- **Toward autonomous robotic prostate biopsy: a pilot study**
  B. Maris, C. Tenga, R. Vicario, L. Palladino, N. Murr, M. De Piccoli, A. Calanca, A. Tafuri, S. Puliatti, S. Micali, P. Fiorini, June 2021, CARS
- **Transperineal robotic prostate biopsy with PROST: a pilot study** Iseppi, A., Puliatti, S., Ferrari, R., Piro, A., Amato, M., Sighinolfi, M.C., Rizzo, M., Maris, B., Tenga, C., Vicario, R. and Calanca, A., 2021. European Urology Open Science, 32, p.S108.
- **Association between abdominal aortic atherosclerotic burden and predictors of functional and oncological outcomes in patients undergoing partial nephrectomy**, A. Tafuri, E. Serafin, K. Odorizzi, A. Gozzo, G. Di Filippo, A. Bianchi, M. Borzi, G. Zamboni, G. Mansueto, A.B. Porcaro, M. Brunelli, M.A. Cerruto, G. Zaza, P. Fiorini, B. Maris, A. Antonelli in European Urology Open Science. 2021 Oct 1;32:S35.
- **Autonomy in robotic prostate biopsy through AI-assisted fusion** L. Palladino, B. Maris, A. Antonelli, P. Fiorini. ICAR 2021, Ljubljana, Slovenia, December 2021
- **Validation of a robot for minimally invasive vertebroplasty,** B. Maris et al., CRAS 2023, Sorbonne, Paris, France
- **Automated image analysis for the optical beta adrenergic sweat test**
  Dumitru Scutelnic, Anxhela Kazazi, Anca Manuela, Karina Kleinfelder, Claudia Daffara, Paola Melotti, Bogdan Maris European Cystic Fibrosis Society Diagnostic Network Working Group 21st Annual Meeting, Hannover, Germany 8-10 February 2024

International Conference Posters

- **'Multimodal Data Fusion and Registration for Needle Guidance in Percutaneous Procedures'**, B. Maris, D. Dall'Alba, P. Fiorini, CARS 2012 (Computer Assisted Radiology) 26th International Congress and Exhibition, Pisa, Italy.
- **'Marker based accuracy analysis of RGB-D sensor for image guided applications'** D. Dall'Alba, B. Maris, C. Reghelin, P. Fiorini, CARS 2012(Computer Assisted Radiology) 26th International Congress and Exhibition, Pisa, Italy.

- **'Breast Tissue Parameter Estimation Using Finite Element Analysis'** F. Visentin, B.M. Maris, P. Fiorini, 7th Joint Workshop on New Technologies for Computer/Robot Assisted Surgery, September 14-15, Montpellier, France, 2017
- **'MURAB: A new robotic system for high precision biopsy',** Bogdan M. Maris, Françoise J. Siepel, Diego Dall'Alba, Vincent Groenhuis, Paolo Fiorini, Stefano Stramigioli, IEEE/RSJ International Conference on Intelligent Robots and Systems, Vancouver, BC, Canada, September 24–28, 2017
- **'Quantitative MRI texture and shape analysis: which features can predict metastases in Patients with soft-tissue sarcomas of the extremities?',** R. Casale, C. Messina, B Maris, G. Addonisio, P. Orlando, L. Sconfienza, RSNA 103rd Annual Meeting 2017, 26th Nov - 1st Dec, 2017, Chicago, IL, USA.
- **'MURAB: MRI and ultrasound robotic assisted biopsy',** Bogdan M. Maris, Françoise J. Siepel, Diego Dall'Alba, Vincent Groenhuis, Paolo Fiorini, Stefano Stramigioli, 29th International Congress of the Society for Medical Innovation and Technology (iSMIT) 2017, Turin, Italy.
- **'CNN for Automatic Prostate Segmentation', E.Ghignoni,** B. Maris, P. Fiorini, 30th Conference of the Society for Medical Innovation and Technology - International Biomedical Engineering Conference 2018, Seoul, Korea.
- **'3D Slicer module for semantic segmentation of ultrasound images in prostate biopsy using deep learning techniques'** , L. Palladino, B. Maris, P. Fiorini, CARS 2020, Muenchen, Germany

European Projects Deliverables

- **'SAFROS - Deliverable 2.3 – Report on real time computation/registration of deformable models',** Dr. Juri Gavšin, Bogdan Maris, October 2012.
- **'MURAB – Deliverable 3.1 - Review on local feature extraction in 3D medical images',** A.S.S. Meel-van den Abeelen, Bogdan Maris, Diego Dall'Alba. September 2017.
- **'MURAB – Deliverable 3.2 - Review on non-rigid local deformation models in 3D medical images',** Bogdan Maris, Francesco Visentin, Vincent Groenhuis, Françoise Siepel, Leon de Jong, June 2017.
- **'MURAB – Deliverable 3.3 - US/MR image registration'**, Eleonora Tagliabue, Bogdan Maris, Francesco Visentin, Vincent Groenhuis, Françoise Siepel, Diego dall'Alba, Anton Nikolaev, Rik Hansen, December 2017.

Responsibility in studies and scientific research for public and private companies

- Principal investigator (PI) of the **project 'Development of a graphical user interface and a registration system for robotic image guided percutaneous vertebroplasty'** from October 2021 to October 2023.
  Financing institution: Tecres SpA, Sommacampagna (VR) 50000 euros.
- PI of the project **'Development of segmentation and registration algorithms for MRI and ultrasound images in prostate applications'** from March 2021 to October 2023
  Financing institution: Esaote Spa
- PI and creator of the project PROST-Net **'A network for the implementation of convolutional neural network algorithms for the diagnosis and segmentation of prostate images in robotic applications'** with the Urology Department of AOUI Verona and other hospitals (AOUI Padova, IOV

Padova, Clinica Pederzoli Peschiera del Garda, AO Bassano del Garda, AOU Orbassanto, AOU Firenze Careggi).

Patent and Startup

- **'System and method for guiding the manual insertion of a needle into the body of a patient during a percutaneous surgical procedure'**, Diego Dall'Alba, Bogdan Maris, Paolo Fiorini, EP2716252 (A1) — 2014-04-09.
- '**Needleye Robotics SRL'** founder and component of the administrative board.
  AI leader.
  Website: needleye.it

International PhD Schools Participation

2011: **2nd PLUS Advanced School on Computer Vision**, Pattern Recognition, and Image Processing organized by Italian Institute of Technology (IIT)– Genova, Italy March 21-24, 2011.

2011: **Summer School on Surgical Robotics** organized by LIRMM, CNRS-Université Montpellier 2– Montpellier, France September 2011.

2012: **Summer School on Registration in Image Analysis and Computer Graphics** organized by Danmarsk Tekniske Universitet (DTU)–Falsterbo, Sweden, June 5-8, 2012.

2013: **Second Biomedical Image Analysis Summer School: Modalities, Methodologies & Clinical Research**, organized by Institut Henri Poincaré–Paris, July 8-12, 2013.

2014: **Hamlyn Winter School on Surgical Imaging and Vision**, Imperial College London, December 8-12, 2014.

PhD Summer Schools organization

2016: 1st Biannual Summer School on Control of Surgical Robots (COSUR). Organizer and speaker. Lecture and laboratory title: 'Advanced topics in ultrasound imaging'.

2018: 2nd Biannual Summer School on Control of Surgical Robots (COSUR). Organizer and speaker. Lecture title: 'Robot-Assisted Breast Biopsy MURAB'.

2020: "3D Tissue segmentation, modelling and deformation", Bioingineering PhD School within Atlas project, July 20th to 24th, 2020, Politecnico di Milano. Lecture title: 'Medical image registration for robotic procedures'

BSc theses supervisor

AA 2023/2024 Matteo Marzio 'Uso del Machine Learning per la creazione di segmentazioni di prostate'

AA 2022/2023 Anxhela Kazazi 'Studio e implementazione algoritmi di intelligenza artificiale a supporto della ricerca in fibrosi cistica'

AA 2021/2022 Martina Toffoli 'Bubble test software per pazienti affetti da fibrosi cistica'

AA 2021/2022 Fernando Serrano 'Classificazione di tumori della prostata in immagini di risonanza magnetica utilizzando reti neurali 3D'

AA 2021/2022 Federico Masi ‘Deep Learning for Percutaneous RoboticProcedures’

AA 2020/2021 Giacomo Canella ‘Generazione di dati per l'addestramento di una rete neurale per la segmentazione della prostata’

AA 2020/2021 Jacopo Zagolli 'Towards automatic dataset generation for medical images in Deep Learning applications'

A.A. 2019/2020 Marian Statache ’Logistic regression to predict malignancy of breast tumors using IVIM parameters’

A.A. 2019/2020 Wilma Valentino ’Implementazione della cinematica del robot Franka Emika Panda per il calcolo delle traiettorie ottime per il movimento di una sonda ecografica’

A.A. 2019/2020 Francesco Benedetti ’Realizzazione di un interfaccia grafica per l’analisi di immagini mediche IVIM’

A.A. 2018/2019 Sebastiano Gaiardelli ’Interpolazione spline per la ricostruzione di immagini

mediche’

A.A. 2018/2019 Luigi Palladino ’Semantic segmentation of ultrasound images using deep

learning techniques’

A.A. 2018/2019 Edoardo Grassi ’A GUI for planning biopsy performed by a robot’

A.A. 2017/2018 Eros Ghignoni ’2D to 3D segmentation and registration using machine learning and multi-planar reformatting of medical images’

MSc theses supervisor

A.A. 2021/2022 Sebastiano Fregnan ‘Real-Time MR-US Deformable Fusion in Prostate Biopsy: a deep learning approach’ 110L

A.A. 2021/2022 Sandro Ferrari ‘Automatic robotics scanning for tumour identification in ultrasound images through deformation compensation’ 110L

A.A. 2022/2023 Nicola Marchiotto ‘Development of software for planning a mini-invasive robot assisted vertebroplasty.’ 110L

A.A. 2022/2023 Luigi Palladino ‘Increasing trustworthiness of deep learning models in high-risk domains with explainable AI’ 110L

AA 2023/2024 Michel Valentini ‘Learning techniques for tumor Segmentation in Multiparametric MRI Images’ 108

Dissemination and other didactic activities

2017 'Kid's University', Verona:

http://kidsuniversityverona.it/wp-content/uploads/2021/04/KIDS_scuole_2017_DEFINITIVO-bassa.pdf

2018 'Kid's University', Verona:

http://kidsuniversityverona.it/wp-content/uploads/2021/04/Programma-Kids-scuole-2018.pdf

2019 'Kid's University', Verona:

http://kidsuniversityverona.it/wp-content/uploads/2015/06/Kids-University_Brochure_2019-1.pdf

2020 Professional Video on the achievements of MURAB project:

https://youtu.be/W4072INLKtA

2015 – 2022 Videos of the Altair laboratory:

https://www.youtube.com/watch?v=kyCtx-TI4nc&ab_channel=ALTAIRLab

https://www.youtube.com/watch?v=ew-MZqEVBjg&ab_channel=ALTAIRLab

https://www.youtube.com/watch?v=TNWWCouvRwo&ab_channel=ALTAIRLab

2022 Erasmus+ teching at Eotvos Lorand University (ELTE) Budapest, Hungary.

Award

2014 Hamlyn Winter School on Surgical Imaging and Vision, December 8-12, 2014, Best Project Award winner.

Languages

Romanian: mother tongue

Italian: excellent

English: excellent

German: intermediate

Software Skills

Languages: C++, Matlab, Python, C, Java, PHP, MySQL

Operating systems: Linux, Windows, Mac OS

Medical image software packages: Mevislab, 3D Slicer, Amira, ITK Snap.

Other

Photography:

- 3rd price award 'Perdersi a Verona' organized by the City Hall of Verona, Italy.
- 2nd price award 'Natura e paesaggio delle colline moreniche', Valeggio sul Mincio, Italy.
- Website: 500px.com/ticeru

Sports: basket, trekking, cycling, fitness

Il sottoscritto dichiara che quanto riportato in questo curriculum corrisponde a verità e che le dichiarazioni in esso contenute vengono rese ai sensi degli art. 46 e 47 del D.P.R. 445/2000.