

**Pietro Valdastri**

Director of the STORM Lab

Vanderbilt University

2301 Vanderbilt Place PMB 351592

Nashville, TN 37235-1592

Mobile - 615-426-6907

Phone - 615-322-2413

Fax - 615-343-6687

Email: [p.valdastri@vanderbilt.edu](mailto:p.valdastri@vanderbilt.edu)WWW: <http://research.vuse.vanderbilt.edu/storm/>**PERSONAL DATA**

Date of Birth : 26 April 1977  
Citizenship : Italian  
Languages Spoken : Italian, English

**PRESENT POSITION**

Since August 2011, **Assistant Professor** of Mechanical Engineering at Vanderbilt University, Nashville, TN, and **Director** of the STORM Lab (<http://research.vuse.vanderbilt.edu/storm/>) at Vanderbilt University.

Since March 2009, **Scientific Director** of W.I.N. s.r.l., a spin-off company of Scuola Superiore Sant'Anna.

**PAST POSITIONS**

From May 2008 until July 2011, **Assistant Professor** of Industrial Bioengineering at Scuola Superiore Sant'Anna, Pisa, Italy.

From September 2006 until March 2011, in charge of a **Research Contract** with MicroTech s.r.l. for the development of implantable wireless unit for blood glucose level monitoring in diabetic patients, in the framework of the FP6 European Project P-CEZANNE – “Integration of Nano-Biology and ICT to Provide a Continuous Care and Implantable Monitoring System for Diabetic patients” (EU/IST-2006-031867).

**EDUCATIONAL BACKGROUND**

*21 December 2006 Scuola Superiore Sant'Anna, Pisa, Italy*

PhD Degree in **Bioengineering** with a final evaluation of **100/100 with Honors**.

Thesis Title: “Multi-Axial Force Sensing in Minimally Invasive Robotic Surgery”, carried on at CRIM (Center for Research in Microengineering) Lab of Scuola Superiore Sant'Anna, Pisa, Italy under the supervision of Prof. Paolo Dario.

*From November 21st to December 30th 2005*

Exchange Researcher at Fujie's Lab, Waseda University, Tokyo, Japan, in the frame of “Waseda University Researcher Exchange Programme”, with a research topic on “MRI Validation of a Novel Sensorized Tip for Fetal Surgery and Endoluminal Applications”.

*April 2002*

Enabled to the profession of Engineer by passing the Italian State Exam with a final evaluation of 109/120.

*18 February 2002 University of Pisa, Italy*

Master Degree in **Biomedical Electronic Engineering** with a final evaluation of **110/110 with Honors (Magna cum Laude)**. Thesis title: “Design and Development of a Multichannel Telemetry System for a Miniaturized Endoscopic Capsule”, carried on at CRIM (Center for Research in Microengineering) Lab of Scuola Superiore Sant'Anna, Pisa, Italy, under the supervision of Prof. Danilo De Rossi, Prof. Roberto Roncella and Prof. Paolo Dario.

**AWARDS AND ACHIEVEMENTS**

*June 2011* - the paper “A Novel Surgical Robotic Platform Minimizing Access Trauma” by T. Ranzani, C. Di Natali, M. Simi, A. Menciasci, P. Dario, P. Valdastri presented by P. Valdastri at the 4<sup>th</sup> Hamlyn Symposium on Medical Robotics in London, UK, was awarded with the “Best Oral Presentation” Award.

June 2011 - the abstract "Magnetic air capsule robotic system: A novel approach for painless colonoscopy" by P. Valdastri, G. Ciuti, A. Verbeni, A. Menciassi, P. Dario, A. Arezzo, M. Morino presented by P. Valdastri at the 19<sup>th</sup> International Congress of the European Association of Endoscopic Surgery (EAES) in Turin, Italy, was awarded with the "Best Technology Presentation" Award.

September 2010 – The VECTOR project, where Pietro Valdastri is actively involved, won the "Best Exhibit Award" of the European Commission's conference on Information and Communication Technologies ICT 2010. Out of more than 200 exhibitors, VECTOR received the majority of votes from the visitors of the ICT 2010 conference. This year, the traditional "Best Exhibit Award" is sponsored by Intel.

June 2010 – the paper "A magnetic internal mechanism for precise orientation of the camera in wireless endoluminal applications, *Endoscopy*, 2010 Jun" was selected for Faculty of 1000 Medicine ([www.f1000medicine.com](http://www.f1000medicine.com)) and evaluated by Nigel Umar Beejay see <http://www.f1000medicine.com/article/738cltn33qcrryf/id/3527970>.

**"This article represents concrete evidence that precise control of capsule navigation and rotation can be achieved by using a single external magnetic device in an in vivo pig model of the stomach and the colon."**

Following on from the review by Sharma, which discussed the progress that has been made in capsule steerability in feasibility studies {1}, this paper is the first to show that precise control of capsule navigation and rotation can be achieved by using a single external magnetic device in an in vivo pig model of the stomach and the colon. Swain et al. have already demonstrated that a modified capsule with magnets can be manipulated in the esophagus and stomach of a human subject {2} but I believe that Valdastri et al. in this paper more convincingly demonstrate steerability. It is shown that the capsule can rotate 360 degrees in the stomach but only 45 degrees in the colon, but this may be due to the more helical nature of the pig colon compared with the human colon. While this study is helpful in confirming the precision of steerability, more work is needed to ascertain the logistics of performing steerable capsule endoscopy. For example, will the patient need to be an inpatient and would such technology require the complete attention of a virtual endoscopist?

References: {1} Sharma VK, *Gastroenterology* 2009, 137:434-9 [PMID:19545570]. {2} Swain et al. *Gastrointest Endosc* 2010, Apr 22, Epub ahead of print [PMID:20417507]."

February 2009 – founder of the start-up company "W.I.N – Wireless Integrated Network s.r.l." ([www.winmed.it](http://www.winmed.it)) working on physiologic parameters monitoring. This is a Scuola Superiore Sant'Anna spin-off company and it is actually (October 2010) composed by more than 15 employees.

October 2008 – the business plan proposal "W.I.N." presented by Pietro Valdastri, Antonio Mazzeo, Alessio Misuri, Virginia Pensabene, Donato Mazzeo and Sergio Scapellato was ranked absolute first among all proposals for the "Start Cup Toscana 2008".

September 2008 – the paper "A Miniaturized Wireless Control Platform for Robotic Capsular Endoscopy using Pseudokernel Approach" by E. Susilo, P. Valdastri, A. Menciassi, P. Dario, presented by P. Valdastri at the Eurosensors 2008 international conference in Dresden, Germany, won the "Best Paper Award".

January 2008 – the project proposal "W.I.N. - WIRELESS INNOVATION NETWORK" presented by Pietro Valdastri, Antonio Mazzeo, Alessio Misuri and Francesco Randazzo was ranked absolute first among all proposals (around 10.000) for the call "Giovani Idee Cambiano l'Italia", issued by the Italian Ministry of Youth Policies.

September 2007 - PhD Award "Patron", issued by "Gruppo Nazionale di Bioingegneria" (Italian National Group of Bioengineering), for the most original and innovative Italian PhD Thesis in BioEngineering.

November 2007 - PhD Award "Arturo Baroncelli", issued by "SIRI" (Italian Association of Robotic and Automation), for the most original and innovative Italian PhD Thesis in Robotics.

## SCIENTIFIC COLLABORATION IN INTERNATIONAL AND NATIONAL RESEARCH PROJECTS

- From October 2010 to June 2011, collaborating at the FP7 European Project Scath – "Smart Catheterization" (EU/IST-2010-47140), <http://www.scath.net/>.
- Since April 2010, Principal Scientific Investigator of the Regional Project "P.R.I.M.O Check-Up" (1.200.000€ grant) funded by Regione Toscana in the framework of "Bando Unico POR CREO FESR 2007/2013".

- From March 2010 to June 2011, collaborating at the FP7 European Project SensorART – “A remote controlled Sensorized Artificial heart enabling patients empowerment and new therapy approaches” (EU/IST-2010-248763), <http://www.sensorart.eu/>.
- Since January 2010, Principal Investigator of the Regional Project MINOSSE – “Sviluppo di un Sistema di Monitoraggio integrato del paziente in ambito ospedaliero e post-ospedaliero”, providing 3 scholarships for 3 years for a total of 450.000 €.
- From March 2009 to December 2010, collaborating in writing the proposal for the FP7 European Integrated Project SensorART – “A remote controlled Sensorized Artificial heart enabling patients empowerment and new therapy approaches”.
- October 2008, *Visiting Professor* at Vanderbilt University, Department of Mechanical Engineering, Nashville, TN, USA.
- From May 1<sup>st</sup> 2008 to June 2011, collaborating at the FP7 European Project ARAKNES – “Array of Robots Augmenting the KiNematics of Endoluminal Surgery” (EU/IST-2007-224565), <http://www.araknes.org>.
- From August 2007 to October 2007, collaborating in writing the proposal for the FP7 European Integrated Project ARAKNES - Array of Robots Augmenting the KiNematics of Endoluminal Surgery.
- September 2006, *Visiting Scientist* at Chongqing University, Department of Micro-Mechanical Systems, Chongqing, China.
- From September 1<sup>st</sup> 2006 to June 2011, collaborating at the FP6 European Project VECTOR – “Versatile Endoscopic Capsule for gastrointestinal Tumor Recognition and Therapy” (EU/IST-2006-033970), <http://www.vector-project.com/>.
- From July 1<sup>st</sup> 2006 to March 2011, collaborating at the FP6 European Project P-CEZANNE – “Integration of Nano-Biology and ICT to Provide a Continuous Care and Implantable Monitoring System for Diabetic patients” (EU/IST-2006-031867), <http://www.pcezanneportal.co.uk/>.
- From January 2005 to April 2006, collaborating in writing the proposal for the FP6 European Integrated Project VECTOR - Versatile Endoscopic Capsule for gastrointestinal TumOr Recognition and therapy.
- From January 2005 to March 2007, collaborating at  $\mu$ SURF – “Micro-Strumentazione per Chirurgia Fetale” – a national project about fetal surgery funded by Fondazione Cassa di Risparmi di Pisa.
- From January 2004 to February 2006, collaborating at the FP6 European Project I-SWARM - “Intelligent Small World Autonomous Robots for Micro-manipulation” (EU/IST-2003-507006).
- From May 2002 to December 2003, collaborating at the project "Fabrication of a human skin-like tactile microsensor for prosthetic, neuroprosthetic, and robotic applications" in the framework of EMERGE "Enhancing Microtechnological Education of young Researchers through Guest Experiments" (EU/HPRI-CT-1999-00023) at the Institute of Microtechnology of Mainz, IMM <http://www.imm-mainz.de/>
- From April 2002 to April 2003, collaborating at the FP5 European Project IVP - "Intracorporeal Video Probe" (EU/IST-2001-35169).
- From April 2002 to December 2004, collaborating at the FP5 European Project MiCRoN - "Miniaturized Co-operative Robots advancing towards the Nano range" (EU/IST-2001-33567).

## SCIENTIFIC INTERESTS

- Advanced Capsule Endoscopy
- Robotic Surgery
- Smart surgical systems for endoluminal and fetal surgery
- Implantable telemetry systems

## RESEARCH STUDENTS SUPERVISED

### PhD STUDENTS SUPERVISED AT VANDERBILT UNIVERSITY

1. From August 2011, supervisor of Marco Beccani, Graduate Student in Mechanical Engineering at Vanderbilt University.
2. From August 2011, supervisor of Christian Di Natali, Graduate Student in Mechanical Engineering at Vanderbilt University.

### PhD STUDENTS SUPERVISED AT SCUOLA SUPERIORE SANT'ANNA

1. From October 2010, tutor of Michele Silvestri, PhD student in Bioengineering at Scuola Superiore Sant'Anna with a project entitled “Embedded design of control systems for surgery and endoscopy”.
2. From October 2010, tutor of Tommaso Ranzani, PhD student in Bioengineering at Scuola Superiore Sant'Anna with a project entitled “Modular robotic platform for scarless surgery”.

3. From January 2010, tutor of Gianluigi Petroni, PhD student in Bioengineering at Scuola Superiore Sant'Anna with a project entitled "Real-time control for innovative surgical robots".
4. From January 2010, tutor of Massimiliano Simi, PhD student in Bioengineering at Scuola Superiore Sant'Anna with a project entitled "Innovative mechatronic and robotic devices for endoscopy and surgery".
5. From January 2009, tutor of Gastone Ciuti, PhD student in Bioengineering at Scuola Superiore Sant'Anna with a project entitled "Robotic magnetic capsule endoscopy".
6. From January 2009, tutor of Carmela Cavallotti, PhD student in Bioengineering at Scuola Superiore Sant'Anna with a project entitled "Innovative vision systems for endoscopy".
7. From June 2008 to June 2011, co-tutor of Elisa Buselli, PhD Student in Healthcare Technologies at University of Pisa with a project entitled "Development of interface surfaces between biological systems and miniaturized biomedical devices". Other co-tutors are Dr. Lucia Beccai, Prof. Paolo Dario and Prof. Arianna Menciassi.
8. From May 2008 to May 2011, co-tutor of Selene Tognarelli, PhD student in Bioengineering at Scuola Superiore Sant'Anna with a project entitled "Development of novel mini-invasive devices for "in-vivo" biomechanical characterization of soft human tissues". Other co-tutors are Prof. Paolo Dario and Prof. Arianna Menciassi.

#### MASTER STUDENTS SUPERVISED AT SCUOLA SUPERIORE SANT'ANNA

1. From December 2010 to December 2011, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development of a wireless monitoring device to diagnose premature ejaculation" by Matteo Nardi, discussed on December 6th, 2011 and evaluated with "magna cum laude".
2. From December 2010 to July 2011, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development of a magnetic mechanism for a biopsy capsule" by Giada Gerboni, discussed on July 19th, 2011 and evaluated with "magna cum laude".
3. From July 2010 to May 2011, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development of a magnetic air capsule for painless colonoscopy" by Antonella Verbeni, discussed on May 3<sup>rd</sup>, 2011 and evaluated with 110/110.
4. From April 2010 to May 2011, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development of a bioadhesive for gallbladder retraction in colecistectomy" by Lisa Caivano, discussed on May 3<sup>rd</sup>, 2011 and evaluated with 103/110.
5. From March 2010 to December 2010, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Implantable system for arterial blood pressure monitoring" by Costanza Ciaponi, discussed on December 7<sup>th</sup>, 2010 and evaluated with "magna cum laude".
6. From March 2010 to December 2010, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Coordinated control of a couple of anthropomorphic industrial robotic arms for biomedical applications" by Christian Di Natali, discussed on December 7<sup>th</sup>, 2010 and evaluated with "magna cum laude".
7. From February 2010 to December 2010, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Design and development of a robust wearable tonometric system" by Martina Nannizzi, discussed on December 7<sup>th</sup>, 2010 and evaluated with "magna cum laude".
8. From February 2010 to December 2010, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Design and fabrication of a multi-degrees of freedom robotic camera for surgical applications" by Gianluca Sardi, discussed on December 7<sup>th</sup>, 2010 and evaluated with 107/110.
9. From April 2010 to September 2010, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Ultrasound guided robotic control of a nanosheet for cardiovascular applications" by Virginia Castelli, discussed on September 28<sup>th</sup>, 2010 and evaluated with "magna cum laude".
10. From November 2009 to July 2010, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Evaluation of an autostereoscopic vision in minimally invasive surgery" by Michele Silvestri, discussed on June 22<sup>nd</sup>, 2010 and evaluated with "magna cum laude".
11. From September 2009 to April 2010, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Cardio-thoracic bio-impedance spectroscopy for heart failure prediction" by Massimo Filippi, discussed on April 27<sup>th</sup>, 2010 and evaluated with "magna cum laude".
12. From January 2009 to September 2009, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Localization and control of endoscopic capsules by electromagnetic fields" by Gioia Lucarini, discussed on September 29<sup>th</sup>, 2009 and evaluated with "magna cum laude".
13. From January 2009 to September 2009, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development of a haptic interface for bimanual endoluminal robotic surgery" by Gianluigi Petroni, discussed on September 29<sup>th</sup>, 2009 and evaluated with 110/110.

14. From June 2008 to April 2009, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development an hybrid locomotion mechanism for active capsular endoscopy" by Massimiliano Simi, discussed on April 28<sup>th</sup>, 2009 and evaluated with 110/110.
15. From May 2008 to December 2008, tutor of a Master Degree thesis in Electronical Engineering at University of Pisa with the title "Development of a closed loop control system for an active locomotion endoscopic capsule," by Irene Del Chicca, discussed on December 5<sup>th</sup>, 2008 and evaluated with 109/110.
16. From January 2008 to July 2008, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development of robotic control for external magnetic navigation of an endoscopic capsule" by Gastone Ciuti, discussed on July 22<sup>nd</sup>, 2008 and evaluated with "magna cum laude".
17. From May 2007 to April 2008, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development of wireless propulsion system for a submersible endoscopic capsule for the gastric cavity" by Giuseppe Tortora, discussed on April 22<sup>nd</sup>, 2008 and evaluated with 110/110.
18. From September 2007 to April 2008, tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Development of wireless control for a legged endoscopic capsule" by Marco Domenichini, discussed on April 22<sup>nd</sup>, 2008 and evaluated with "magna cum laude".
19. From June 2006 to April 2007 tutor of a Master Degree thesis in Biomedical Engineering at University of Pisa with the title "Experimental Study of the Mechanical Properties of Fetal Cardiac Tissues" by Selene Tognarelli, discussed on April 17<sup>th</sup>, 2007 and evaluated with "magna cum laude".
20. From February 2005 to December 2005, tutor of a Master Degree thesis in Electronical Engineering at University of Pisa with the title "ZigBee Compliant Implantable Bio-Telemetry System," by Stefano Rossi, discussed on December 15<sup>th</sup>, 2005 and evaluated with "magna cum laude".
21. From May 2003 to December 2003, tutor of a Master Degree thesis in Electronical Engineering at University of Pisa with the title "Wireless System for Monitoring Physiological Parameters of Gastro Esophageal Tract," by Chiara Caccamo, discussed on December 3<sup>rd</sup>, 2003 and evaluated with 110/110.

#### BACHELOR STUDENTS SUPERVISED AT SCUOLA SUPERIORE SANT'ANNA

1. From March 2006 to May 2007 tutor of a Bachelor Degree thesis in Electronical Engineering at University of Pisa with the title "Electrical bioimpedence characterization and modeling of fetal heart tissues" by Claudia Gianetti, discussed on May 7<sup>th</sup>, 2007 and evaluated with 101/110.
2. From October 2004 to July 2005, tutor of a Bachelor Degree thesis in Electronical Engineering at University of Pisa with the title "Characterization of a 3D force piezoresistive micro-sensor," by Calogero Maria Oddo, discussed on July 12<sup>th</sup>, 2005 and evaluated with "magna cum laude".

#### TECHING ACTIVITIES

1. Fall 2011, ES140 – Engineering Science – Mechanical Engineering Module – Freshman year, School of Engineering, Vanderbilt University, Academic Year 2011-2012. Total of 67 students.
2. Teaching activity for the module "Microcontrollers for humanoid robots" for the PhD program in Bioengineering of Scuola Superiore Sant'Anna, Academic Year 2009-2010.
3. Teaching activity for the module "Medical Robotics" for the Master Degree in Biomedical Engineering at University of Pisa, Academic Year 2009-2010.
4. Teaching activity for the module "Medical Robotics" for the Master Degree in Biomedical Engineering at University of Pisa, Academic Year 2008-2009.
5. Teaching activity for the module "Medical Robotics" for the Master Degree in Biomedical Engineering at University of Pisa, Academic Year 2007-2008.
6. Teaching activity for the module "Biomechatronics" for the Master Degree in Biomedical Engineering at University of Pisa, Academic Year 2006-2007.
7. Teaching activity of "Sensors and Transducers" (3 CFU) at First International Master in Robotics and Mechatronics of Scuola Superiore Sant'Anna, in collaboration with the Chongqing University.
8. From September 2006 to December 2007, academic board member of the First International Master in Robotics and Mechatronics of Scuola Superiore Sant'Anna, in collaboration with the Chongqing University.

#### INVITED LECTURES AND TALKS

1. May 22<sup>nd</sup>, 2011, Plenary Lecture "A new platform for robotic surgery based on a trans-abdominal magnetic link" at the Elba Seminars of Internal Medicine, Isola d'Elba, Italy.
2. May 11<sup>h</sup>, 2011, Invited talk "Capsule robots for endoscopy and surgery A paradigm for Bio-Mechatronic design towards the next generation of Surgical Robots" at the "Symposium on multidisciplinary research for surgical robotics", University of Tianjin, Tianjin, China.

3. May 9<sup>th</sup>, 2011, Invited talk "*Magnetic Mechanisms for Endoscopic Interventions*" at the "Mechanisms for Surgical Robotics" workshop of the IEEE International Conference on Robotics and Automation (ICRA) 2011, Shanghai, China.
4. March 25<sup>th</sup>, 2011, Seminar "*Capsule robots for endoscopy and surgery A paradigm for Bio-Mechatronic design towards the next generation of Surgical Robots*" at EPFL, Lausanne, Switzerland.
5. March 8<sup>th</sup>, 2011, Seminar "*Capsule robots for endoscopy and surgery A paradigm for Bio-Mechatronic design towards the next generation of Surgical Robots*" at Mechanical Engineering Department, Vanderbilt University, Nashville, Tennessee, USA.
6. January 27<sup>th</sup>, 2011, Invited Talk "*Capsule robots for endoscopy and surgery A paradigm for Bio-Mechatronic design towards the next generation of Surgical Robots*" at Università Campus Biomedico, Rome, Italy.
7. November 26<sup>th</sup>, 2010, Seminar "*Capsule robots for endoscopy and surgery A paradigm for Bio-Mechatronic design towards the next generation of Surgical Robots*" at Mechanical Engineering Department, Imperial College of London, London, UK.
8. June 28<sup>th</sup>, 2010, Invited Talk "*Scar-Less Robotic Surgery*" at the "Enabling Technologies for Image-Guided Robotic Interventional Procedures" workshop of the Robotic Science and Systems (RSS) Conference 2010, Zaragoza, Spain.
9. June 21<sup>st</sup>, 2010, Keynote Lecture "*Frontiers in Endoluminal Surgery: From Endoscopic Capsules to Robotic Surgery*" at the 23<sup>rd</sup> National Congress of SPIGC, Forli, Italy.
10. May 23<sup>rd</sup>, 2010, Plenary Lecture "*Microrobotics in Medicine: A Fantastic Voyage into the Human Body*" at the Elba Seminars of Internal Medicine, Isola d'Elba, Italy.
11. May 18<sup>th</sup>, 2010, Invited Talk "*New Frontiers in Capsule Endoscopy and Robotic Surgery*" at Polymer Institute of the Slovak Academy of Sciences, Bratislava, Slovakia.
12. May 7<sup>th</sup>, 2010, Invited Talk "*Versatile Endoscopic Capsule for gastrointestinal TumOr Recognition and therapy – The VECTOR Project*" at the "Advanced surgical service robotics in the European Union 6th and 7th Framework Programs" workshop of the IEEE International Conference on Robotics and Automation (ICRA) 2010, Anchorage, AK, USA.
13. May 7<sup>th</sup>, 2010, Invited Talk "*Array of Robots Augmenting the KiNematics of Endoluminal Surgery – The ARAKNES Project*" at the "Advanced surgical service robotics in the European Union 6th and 7th Framework Programs" workshop of the IEEE International Conference on Robotics and Automation (ICRA) 2010, Anchorage, AK, USA.
14. February 28<sup>th</sup>, 2010, Invited Talk "*Frontiers in Endoluminal Robotics: A Fantastic Voyage into the Human Body*" at "Telecamere Salute", a TV show on the national television channel RAI 3. <http://www.rai.tv/dl/RaiTV/programmi/media/ContentItem-49b2fa6a-8ffb-41e6-bada-882cb607ff2c.html?p=0>
15. February 19<sup>th</sup>, 2010, Invited Talk "*A novel platform for Scar-Less Robotic Surgery: The ARAKNES Project*" at the European Conference on Wireless Sensor Networks, University of Coimbra, Portugal.
16. June 4<sup>th</sup>, 2009, Seminar Lecture "*Frontiers in Endoluminal Robotics: A Fantastic Voyage into the Human Body*" at Sant'Anna Science Cafè, Scuola Spueriore Sant'Anna, Pisa, Italy.
17. June 2<sup>nd</sup>, 2009, Plenary Lecture "*New Frontiers in Capsule Endoscopy: Active Locomotion and Wireless Therapeutic Intervention*" at "Réunion "Microtechniques pour le médical", GT1 Robotique médicale, GT3 Manipulation multi-échelle", Institut FEMTO-ST, Besancon, France.
18. May 6<sup>th</sup>, 2009, Invited Talk "*The Robots among us*" at "Formato Famiglia", a TV show on the national satellite television channel SAT2000.
19. October 27<sup>th</sup>, 2008, Invited Talk "*New Frontiers in Capsule Endoscopy: Active Locomotion and Wireless Therapeutic Intervention*" at Department of Mechanical Engineering, Vanderbilt University, Nashville, TN, USA.
20. January 31<sup>st</sup>, 2006, Seminar Lecture "*Technological Solutions for Wireless Physiological Parameters Monitoring*" in the frame of the "European Procurement and Transplantation Programs Management" University Second Level Master, Scuola Superiore Sant'Anna, Pisa, Italy.
21. November 7<sup>th</sup>, 2005, Seminar Lecture "*Biomedical Electronics & Sensor Systems*", Scuola Superiore Sant'Anna, Pisa, Italy.
22. September 29<sup>th</sup>, 2005, Keynote Lecture "*A Three Components Force Sensor for Minimal Invasive Surgery and Endoluminal Interventions*", 17<sup>th</sup> International Conference of Society for Medical Innovation and Technology (SMIT), SMIT Task Force-Rob, Napoli, Italy.

## PUBLICATIONS ON REFEREED JOURNALS – SUBMITTED PAPERS

1. T. Horeman, D.D. Kurteva, **P. Valdastri**, F.W.J. Jansen, J.J. van den Dobbelsteen, J. Dankelman, “*Standard laparoscopy vs single access surgery; how much force is applied?*”, *Surgical Endoscopy*, 2011, submitted.
2. **P. Valdastri**, M. Simi, R.J. Webster III, “*Advanced technologies for gastrointestinal endoscopy*”, *Annual Review of Biomedical Engineering*, 2011, submitted.
3. A. Arezzo, A. Menciassi, **P. Valdastri**, G. Ciuti, G. Lucarini, M. Salerno, C. Di Natali, M. Verra, P. Dario, M. Morino, “*Experimental assessment of a novel robotically driven endoscopic capsule for colonoscopy: a comparative study*”, *Endoscopy*, 2011, submitted.
4. G. Ciuti, N. Pateromichelakis, M. Sfakiotakis, **P. Valdastri**, A. Menciassi, D. P. Tsakiris, P. Dario, “*A wireless module for vibratory motor control and inertial sensing in capsule endoscopy*”, *Sensors & Actuators A:Physical*, 2011, accepted with minor revisions.

## PUBLICATIONS ON REFEREED JOURNALS – PUBLISHED (OR IN PRESS) PAPERS

1. **P. Valdastri**, G. Ciuti, A. Verbeni, A. Menciassi, P. Dario, A. Arezzo, M. Morino, “*Magnetic air capsule robotic system: Proof of concept of a novel approach for painless colonoscopy*”, *Surgical Endoscopy*, 2011, in press.
2. G. Ciuti, M. Salerno, G. Lucarini, **P. Valdastri**, A. Arezzo, A. Menciassi, M. Morino, P. Dario, “*A comparative evaluation study of control interfaces for a robotic-aided endoscopic platform*”, *IEEE Transactions on Robotics*, 2011, in press.
3. M. Simi, M. Silvestri, C. Cavallotti, M. Vatteroni, **P. Valdastri**, A. Menciassi, P. Dario, “*Magnetically Activated Stereoscopic Vision System for Laparoendoscopic Single Site Surgery*”, *IEEE/ASME Transactions on Mechatronics*, 2011, in press.
4. M. Salerno, G. Ciuti, G. Lucarini, R. Rizzo, **P. Valdastri**, A. Menciassi, A. Landi, P. Dario, “*A novel method for magnetic sensor localization in capsule endoscopy*”, *Measurement Science and Technology*, 2012, 23 015701 (10pp).
5. C. Cavallotti, P. Merlino, M. Vatteroni, **P. Valdastri**, A. Abramo, A. Menciassi, P. Dario, “*An FPGA-based flexible demo-board for endoscopic capsule design optimization*”, *Sensors and Actuators A: Physical*, 2011, Vol. 172, No. 1, pp. 301-307.
6. M. Silvestri, M. Simi, C. Cavallotti, M. Vatteroni, V. Ferrari, C. Freschi, **P. Valdastri**, A. Menciassi, P. Dario, “*Comparative study on surgical performance between two- and three-dimensional vision systems and interfaces*”, *Surgical Innovation*, 2011, Vol. 18, No. 3, pp. 223-230.
7. **P. Valdastri**, E. Sinibaldi, S. Caccavaro, G. Tortora, A. Menciassi, P. Dario, “*A novel magnetic actuation system for miniature swimming robots*”, *IEEE Transactions on Robotics*, 2011, Vol. 27, No. 4, pp. 769-779.
8. V. Pensabene, **P. Valdastri**, S. Tognarelli, A. Menciassi, A. Arezzo, P. Dario, “*Mucoadhesive film for anchoring assistive surgical instruments in endoscopic surgery: in vivo assessment of deployment and attachment*”, *Surgical Endoscopy*, 2011, Vol. 25, No. 9, pp. 3071-3079.
9. **P. Valdastri**, E. Susilo, T. Förster, C. Strohhofer, A. Menciassi, P. Dario, “*Wireless implantable electronic platform for chronic fluorescent-based biosensors*”, *IEEE Transactions on Biomedical Engineering*, 2011, Vol. 58, No. 6, pp. 1846-1854 – [A picture from this paper appeared on the cover of the volume](#).
10. M. Vatteroni, **P. Valdastri**, A. Sartori, A. Menciassi, P. Dario, “*Linear-logarithmic CMOS pixel with tunable dynamic range*”, *IEEE Transactions on Electron Devices*, 2011, Vol. 58, No. 4, pp. 1108-1115.
11. S. Tognarelli, V. Pensabene, S. Condino, **P. Valdastri**, A. Menciassi, A. Arezzo, P. Dario, “*A pilot study on a new anchoring mechanism for surgical applications based on mucoadhesives*”, *Minimally Invasive Therapy & Allied Technologies*, 2011, Vol. 20, No. 1, pp. 3-13.
12. M. Piccigallo, U. Scarfogliero, C. Quaglia, G. Petroni, **P. Valdastri**, A. Menciassi, P. Dario, “*Design of a novel bimanual robotic system for single-port laparoscopy*”, *IEEE/ASME Transactions on Mechatronics*, 2010, Vol. 15, No. 6, pp. 871-878.
13. M. Vatteroni, D. Covi, C. Cavallotti, **P. Valdastri**, A. Menciassi, P. Dario, A. Sartori, “*Smart optical CMOS sensor for endoluminal applications*”, *Sensors and Actuators A: Physical*, 2010, Vol. 162, No. 2, pp. 297-303.
14. D. Covi, C. Cavallotti, M. Vatteroni, L. Clementel, **P. Valdastri**, A. Menciassi, P. Dario, A. Sartori, “*Miniaturized digital camera system for disposable endoscopic applications*”, *Sensors and Actuators A: Physical*, 2010, Vol. 162, No. 2, pp. 291-296.
15. E. Buselli, V. Pensabene, P. Castrataro, **P. Valdastri**, A. Menciassi, P. Dario, “*Evaluation of friction enhancement through soft polymer micro-patterns in active capsule endoscopy*”, *Measurement Science and Technologies*, 2010, 21 105802 (7pp).
16. **P. Valdastri**, C. Quaglia, E. Buselli, A. Arezzo, N. Di Lorenzo, M. Morino, A. Menciassi, P. Dario, “*A Magnetic Internal Mechanism for Camera Steering in Wireless Endoluminal Applications*”, *Endoscopy*, 2010, Vol. 42, pp. 481-486.

17. J. L. Toennies, G. Tortora, M. Simi, **P. Valdastri**, R. J. Webster III, "Swallowable Medical Devices for Diagnosis and Surgery: The State of the Art", Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, 2010, Vol. 224, No. 7, pp. 1397-1414.
18. M. Simi, G. Ciuti, S. Tognarelli, **P. Valdastri**, A. Menciassi, P. Dario, "Magnetic link design for a robotic laparoscopic camera", Journal of Applied Physics, 2010, Vol.107, No. 9, pp. 09B302 - 09B302-3.
19. M. Simi, **P. Valdastri**, C. Quaglia, A. Menciassi, P. Dario, "Design, Fabrication and Testing of an Endocapsule with Active Hybrid Locomotion for the Exploration of the Gastrointestinal Tract", IEEE Transactions on Mechatronics, 2010, Vol. 15, No.2, pp. 170-180.
20. G. Ciuti, R. Donlin, **P. Valdastri**, A. Arezzo, A. Menciassi, M. Morino, P. Dario, "Preliminary Validation of a Novel Robotic-Controlled Platform for Capsule Endoscopy", Endoscopy, 2010, Vol. 42, pp. 148-152.
21. G. Ciuti, **P. Valdastri**, A. Menciassi, P. Dario, "Robotic magnetic steering and locomotion of capsule endoscope for diagnostic and surgical endoluminal procedures", Robotica, 2010, Vol. 28, No. 2, pp.199-207.
22. R. Carta, B. Lenaerts, J. Thoné, G. Tortora, **P. Valdastri**, A. Menciassi, R. Puers, P. Dario, "Wireless power supply as enabling technology towards active locomotion in capsular endoscopy", Biosensors and Bioelectronics, 2009, Vol. 25, No. 4, pp. 845-851.
23. C. Quaglia, E. Buselli, R. J. Webster III, **P. Valdastri**, A. Menciassi, P. Dario, "An Endoscopic Capsule Robot: A Meso-Scale Engineering Case Study", Journal of Micromechanics and Microengineering, 2009, Vol. 19, No. 10, 105007 (11pp).
24. G. Tortora, **P. Valdastri**, E. Susilo, A. Menciassi, P. Dario, F. Rieber, M. O. Schurr, "Propeller-based wireless device for active capsular endoscopy in the gastric district", Minimally Invasive Therapy & Allied Technologies, Vol. 18, No. 5, pp. 280-290, 2009.
25. E. Susilo, **P. Valdastri**, A. Menciassi, P. Dario, "A Miniaturized Wireless Control Platform for Robotic Capsular Endoscopy Using Advanced Pseudokernel Approach", Sensors and Actuators A: Physical, 2009, Vol. 156, No. 1, pp. 49-58.
26. C. Cavallotti, M. Piccigallo, E. Susilo, **P. Valdastri**, A. Menciassi, P. Dario, "An Integrated Vision System with Autofocus for Wireless Capsular Endoscopy", Sensors and Actuators A: Physical, 2009, Vol. 156, No. 1, pp. 72-78.
27. **P. Valdastri**, R. J. Webster III, C. Quaglia, M. Quirini, A. Menciassi, P. Dario, "A New Mechanism for Meso-Scale Legged Locomotion in Compliant Tubular Environments", IEEE Transactions on Robotics, 2009, Vol. 25, No. 5, pp. 1047-1057.
28. **P. Valdastri**, S. Tognarelli, A. Menciassi, P. Dario, "A scalable platform for biomechanical studies of tissue cutting forces", Measurement Science and Technology, 2009, Vol. 20, 045801 (11pp).
29. E. Buselli, **P. Valdastri**, M. Quirini, A. Menciassi, P. Dario, "Superelastic leg design optimization for an endoscopic capsule with active locomotion", Smart Materials and Structures, 2009, Vol. 18, 015001 (8pp).
30. **P. Valdastri**, C. Quaglia, E. Susilo, A. Menciassi, P. Dario, C.N. Ho, G. Anhoeck, M.O. Schurr, "Wireless Therapeutic Endoscopic Capsule: in-vivo Experiment", Endoscopy, 2008, Vol. 40, pp. 979-982 – A picture from this paper appeared on the cover of the volume.
31. **P. Valdastri**, A. Menciassi, P. Dario, "Transmission Power Requirements for Novel ZigBee Implants in the Gastrointestinal Tract", IEEE Transactions on Biomedical Engineering, 2008, Vol. 55, No. 6, pp. 1705-1710 – A picture from this paper appeared on the cover of the volume.
32. **P. Valdastri**, S. Rossi, A. Menciassi, V. Lionetti, F. Bernini, F. A. Recchia, P. Dario, "An Implantable ZigBee Ready Telemetric Platform For In Vivo Monitoring Of Physiological Parameters", Sensors and Actuators A: Physical, 2008, Vol. 142, No. 1, pp. 369-378.
33. A. Sieber, **P. Valdastri**, K. Houston, C. Eder, O. Tonet, A. Menciassi, P. Dario, "A Novel Haptic Platform for Real Time Bilateral Bimanipulation with a MEMS Sensor for Triaxial Force Feedback", Sensors and Actuators A: Physical, 2008, Vol. 142, No. 1, pp. 19-27.
34. A. Sieber, **P. Valdastri**, K. Houston, A. Menciassi, P. Dario, "Flip Chip Microassembly of a Silicon Triaxial Force Sensor on Flexible Substrates", Sensors and Actuators A: Physical, 2008, Vol. 142, No. 1, pp. 421-428.
35. L. Beccai, S. Roccella, L. Ascari, **P. Valdastri**, A. Sieber, M. C. Carrozza, P. Dario, "Development and Experimental Analysis of a Soft Compliant Tactile Microsensor to be Integrated in an Antropomorphic Artificial Hand", IEEE/ASME Transactions on Mechatronics, 2008, Vol. 13, No. 2, pp. 158-168.
36. C. Oddo, **P. Valdastri**, L. Beccai, S. Roccella, M.C. Carrozza, P. Dario, "Investigation on calibration methods for multi-axis, linear and redundant force sensors", Measurement Science and Technology, 2007, Vol. 18, pp.623-631.
37. **P. Valdastri**, K. Houston, A. Menciassi, P. Dario, A. Sieber, M. Yanagihara, M. Fujie, "Miniaturised Cutting Tool with Triaxial Force Sensing Capabilities for Minimally Invasive Surgery", ASME Journal of Medical Devices, 2007, Vol. 1, N. 3, pp. 206-211.



38. G. Turchetti, B. Labella, **P. Valdastri**, A. Menciassi, P. Dario, "The importance of giving an alternative: the case of fetal surgery", *Int. J. Healthcare Technology and Management*, 2007, Vol. 8, Nos. 3-4, pp.250–267.
39. **P. Valdastri**, K. Harada, A. Menciassi, L. Beccai, C. Stefanini, M. Fujie, and P. Dario, "Integration of a Miniaturised Triaxial Force Sensor in a Minimally Invasive Surgical Tool", *IEEE Transactions on Biomedical Engineering*, 2006, Vol. 53, No. 11, 2397-2400.
40. **P. Valdastri**, P. Corradi, A. Menciassi, T. Schmickl, K. Crailsheim, J. Seyfried, P. Dario, "Micromanipulation, Communication and Swarm Intelligence Issues in a Swarm Microrobotic Platform", *Robotics and Autonomous Systems*, 2006, Vol. 54, No. 10, pp. 789-804.
41. **P. Valdastri**, S. Roccella, L. Beccai, E. Cattin, A. Menciassi, M. C. Carrozza, P. Dario, "Characterization of a novel hybrid silicon three-axial force sensor", *Sensors and Actuators A: Physical*, 2005, Vol. 123-124C, pp. 249-257.
42. L. Beccai, S. Roccella, A. Arena, F. Valvo, **P. Valdastri**, A. Menciassi, M. C. Carrozza, P. Dario, "Design and fabrication of a hybrid silicon three-axial force sensor for biomechanical applications", *Sensors and Actuators A: Physical*, 2005, Vol. 120, No. 2, pp. 370-382.
43. **P. Valdastri**, A. Menciassi, A. Arena, C. Caccamo, and P. Dario, "An Implantable Telemetry Platform System for in vivo Monitoring of Physiological Parameters", *IEEE Transactions on Information Technology in Biomedicine*, 2004, Vol. 8, No. 3, pp. 271-278.

#### PAPERS IN REFEREED CONFERENCES PROCEEDINGS

1. G. Tortora, A. Dimitracopoulos, **P. Valdastri**, A. Menciassi, P. Dario, "Design of miniature modular in vivo robots for dedicated tasks in Minimally Invasive Surgery", *Advanced Intelligent Mechatronics (AIM)*, 2011 IEEE/ASME International Conference on, 2011, pp. 327-332.
2. T. Ranzani, C. Di Natali, M. Simi, A. Menciassi, P. Dario, **P. Valdastri**, "A Novel Surgical Robotic Platform Minimizing Access Trauma", in *Proc. of 4th Hamlyn Symposium on Medical Robotics*, London, UK, June 2011, pp. 15-16.
3. M. Simi, G. Sardi, **P. Valdastri**, A. Menciassi, P. Dario, "Magnetic Levitation Camera Robot for Endoscopic Surgery", in *Proc. of IEEE International Conference on Robotics and Automation (ICRA) 2011*, Shanghai, China, May 2011, pp. 5279-5284.
4. O. Alonso, J. Canals, L. Freixas, J. Samitier, A. Diéguez, M. Vatteroni, E. Susilo, C. Cavallotti, **P. Valdastri**, "Enabling multiple robotic functions in an endoscopic capsule for the entire gastrointestinal tract exploration", in *Proc. ESSCIRC*, 2010, pp. 386-389.
5. J. L. Toennies, G. Ciuti, B. F. Smith, A. Menciassi, **P. Valdastri**, and Robert J. Webster III, "Toward Tetherless Insufflation of the GI Tract", in *Proc. IEEE Engineering in Medicine and Biology Society Conference (EMBC) 2010*, Buenos Aires, Argentina, September 2010, pp. 1946-1949.
6. M. Silvestri, M. Simi, C. Cavallotti, M. Vatteroni, **P. Valdastri**, A. Menciassi, P. Dario, "Design of a Magnetically Activated Stereoscopic System for Single Port Laparoscopy", in *Proc. of the 3<sup>rd</sup> Hamlyn Symposium on Medical Robotics*, 25 May 2010, London, UK, pp. 63-64.
7. U. Scarfogliero, M. Piccigallo, C. Quaglia, G. Petroni, **P. Valdastri**, A. Menciassi, P. Dario, "Bimanual Robot for Single-Port Laparoscopic Surgery with on-board actuation", in *Proc. of the 3<sup>rd</sup> Hamlyn Symposium on Medical Robotics*, 25 May 2010, London, UK, pp. 27-28.
8. G. Tortora, S. Caccavaro, **P. Valdastri**, A. Menciassi, P. Dario, "Design of an autonomous jellyfish miniature robot based on a novel concept of magnetic actuation", in *Proc. of IEEE International Conference on Robotics and Automation (ICRA) 2010*, Anchorage, AK, USA, May 2010, pp. 1592-1597.
9. A. Menciassi, **P. Valdastri**, C. Quaglia, E. Buselli, P. Dario, "Wireless steering mechanism with magnetic actuation for an endoscopic capsule", in *Proc. IEEE Engineering in Medicine and Biology Society Conference (EMBC) 2009*, Minneapolis, Minnesota, USA, September 2009, pp. 1204-1207.
10. L. S. Chiang, P. S. Jay, **P. Valdastri**, A. Menciassi, P. Dario, "Tendon Sheath Analysis for Prediction of Distal End Force and Elongation", in *Proc. IEEE/ASME Conference on Advanced Intelligent Mechatronics 2009*, Singapore, July 2009, pp. 332-337.
11. A. Menciassi, **P. Valdastri**, K. Harada, P. Dario, "Single and multiple robotic capsules for endoluminal diagnosis and surgery," in *Proc. IEEE BioRob 2008*, Scottsdale, Arizona, USA, 2008, pp. 238-243.
12. A. Arbat, J. Samitier, A. Dieguez, **P. Valdastri**, "Architecture of the integrated electronics for a wireless endoscopic capsule with locomotive and sensing and actuating capabilities", in *Proc. IEEE ICECS 2008*, Malta, 2008, pp. 510-513.
13. M. Quirini, S. Scapellato, **P. Valdastri**, A. Menciassi, P. Dario, "An Approach to Capsular Endoscopy with Active Motion", in *Proc. of 29<sup>th</sup> Conference of IEEE Engineering in Medicine and Biology Society Conference (EMBC) 2007*, Aug 2007, Lyon, France, pp. 2827-2830.

14. O. Tonet, M. Marinelli, G. Megali, A. Sieber, **P. Valdastri**, A. Menciassi, P. Dario, "Control of a teleoperated nanomanipulator with time delay under direct vision feedback", in Proc. of IEEE International Conference on Robotics and Automation (ICRA) 2007, Rome, Italy, April 2007, pp. 3514-3519.
15. A. Eisenberg, I. Izzo, A. Menciassi, K. Houston, **P. Valdastri**, P. Dario, R. Gustafsson, U. Simu and S. Johansson, "Design and shape deposition manufacturing (SDM) fabrication of a PZT-actuated tool for micromanipulation", in Proc. of IEEE International Symposium on Computational Intelligence in Robotics and Automation (CIRA) 2005, Espoo, Finland, June 2005, pp. 111-116.
16. A. Eisenberg, I. Izzo, **P. Valdastri**, A. Menciassi, P. Dario, "A teleoperated SDM-based microinstrument for vessel recognition during MIS", in Proc. of MechRob 2004, Aachen, Germany, September 2004, vol. 3, pp. 1067-1071.
17. A. Eisenberg, I. Izzo, **P. Valdastri**, A. Menciassi, P. Dario, "A portable sensorized micro end-effector for operating in biomedical test-benches", in Proc. of IEEE/RSJ International Conference on Intelligent Robots and System (IROS) 2003, Las Vegas, USA, October 27 - 31, 2003, vol. 3, pp. 2589-2593.

## CONFERENCE ABSTRACTS

1. **P. Valdastri**, G. Ciuti, A. Verbeni, A. Menciassi, P. Dario, A. Arezzo, M. Morino, "Magnetic air capsule robotic system: a novel approach for painless colonoscopy", ECTA 2011, Tech Coloproctol, 2011, Vol. 15, p. 234.
2. G. Ciuti, M. Salerno, G. Lucarini, M. Verra, M. E. Allaix, **P. Valdastri**, A. Arezzo, A. Menciassi, M. Morino, P. Dario, "Control user interfaces for a robotic-aid platform for endoscopic applications: which is the best?", ECTA 2011, Tech Coloproctol, 2011, Vol. 15, p. 233.
3. A. Arezzo, A. Menciassi, **P. Valdastri**, G. Ciuti, G. Lucarini, M. Salerno, C. Di Natali, M. Verra, P. Dario, M. Morino, "Experimental assessment of a novel robotically driven endoscopic capsule for colonoscopy: a comparative study", ECTA 2011, Tech Coloproctol, 2011, Vol. 15, p. 233.
4. G. Basili, **P. Valdastri**, D. Pietrasanta, I. Mosca, M. Simi, A. Menciassi, P. Dario, O. Goletti, "A new magnetic camera-robot enabling a multi-instrument procedure in single incision laparoscopic surgery: preliminary experience", SAGES 2011, April 1, 2011,
5. C. Cavallotti, P. Merlino, E. Susilo, M. Vatteroni, **P. Valdastri**, A. Abramo, A. Menciassi, P. Dario, "An FPGA-based flexible demo-board for endoscopic capsule design optimization", Eurosensors 2010, Linz, Austria, in Procedia Engineering, in press.
6. M. Simi, M. Silvestri, C. Cavallotti, M. Vatteroni, **P. Valdastri**, A. Menciassi, P. Dario, "Development of a Magnetic-activated Stereoscopic Camera for Single Port Laparoscopy", in Proc. Of the 22<sup>nd</sup> International Conference of Society for Medical Innovation and Technology (SMIT), Minimally Invasive Therapy & Allied Technologies (MITAT), Vol.19, Supl.1, September 2010, p. 25.
7. M. Simi, **P. Valdastri**, A. Menciassi, P. Dario, "Development of a capsule with hybrid locomotion for gastrointestinal tract exploration", in Proc. of the 2<sup>nd</sup> National Congress of the Italian Group of Bioengineering, 2010, p. 709.
8. G. Ciuti, M. Salerno, G. Lucarini, **P. Valdastri**, A. Arezzo, A. Menciassi, M. Morino, P. Dario, "Preliminary comparative evaluation of control interfaces for a robotic-aided endoscopic platform", in Proc. of the 2<sup>nd</sup> National Congress of the Italian Group of Bioengineering, 2010, p. 625.
9. S. Caccavaro, G. Tortora, **P. Valdastri**, A. Menciassi, P. Dario, "Design of a magnetic actuation system for an autonomous swimming robot", in Proc. of the 2<sup>nd</sup> National Congress of the Italian Group of Bioengineering, 2010, p. 603.
10. A. Menciassi, M. Simi, E. Buselli, C. Quaglia, C. Cavallotti, M. Vatteroni, **P. Valdastri**, A. Arezzo, N. Di Lorenzo, P. Dario, "An innovative device for precise and automated camera steering in laparoscopic surgery", in Proc. of the 21<sup>st</sup> International Conference of Society for Medical Innovation and Technology (SMIT), Sinaia, Romania, October 2009, p. 55.
11. A. Menciassi, G. Ciuti, **P. Valdastri**, A. Arezzo, M. Morino, P. Dario, "A novel robotic-aided platform for magnetic capsule endoscopy", in Proc. of the 21<sup>st</sup> International Conference of Society for Medical Innovation and Technology (SMIT), Sinaia, Romania, October 2009, p. 77.
12. D. Covi, C. Cavallotti, M. Vatteroni, **P. Valdastri**, A. Menciassi, P. Dario, A. Sartori, "Miniaturized digital camera system for endoluminal surgery", Eurosensors 2009, Lausanne, Switzerland, in Procedia Chemistry, Vol. 1, Is. 1, August 2009, pp. 1223-1226.
13. M. Vatteroni, D. Covi, C. Cavallotti, **P. Valdastri**, A. Menciassi, P. Dario, A. Sartori, "Smart optical CMOS sensor for endoluminal applications", Eurosensors 2009, Lausanne, Switzerland, in Procedia Chemistry, Vol. 1, Is. 1, August 2009, pp. 1271-1274.
14. **P. Valdastri**, E. Susilo, A. Menciassi, P. Dario, T. Förster, C. Strohhofer, "Wireless implantable electronic platform for blood glucose level monitoring", Eurosensors 2009, Lausanne, Switzerland, in Procedia Chemistry, Vol. 1, Is. 1, August 2009, pp. 1255-1258.

15. S. Tognarelli, C. Quaglia, **P. Valdastri**, E. Susilo, A. Menciassi, P. Dario, "Innovative Stopping Mechanism for Esophageal Wireless Capsular Endoscopy", Euroensors 2009, Lausanne, Switzerland, in *Procedia Chemistry*, Vol. 1, Is. 1, August 2009, pp. 485-488.
16. E. Buselli, V. Pensabene, P. Castrataro, **P. Valdastri**, A. Menciassi, P. Dario, "Micro Hairs for Friction Enhancement in Active Capsular Endoscopy", in *Proc. ECOTRIB 2009*, Pisa, Italy, June 2009.
17. S. Tognarelli, C. Quaglia, **P. Valdastri**, A. Menciassi, P. Dario, "Design of a Novel Stopping Mechanism for Esophageal Endoscopic Capsular Robot," in *Proc. of the 1<sup>st</sup> National Congress of the Italian Group of Bioengineering*, 2008, p. 747.
18. G. Ciuti, **P. Valdastri**, A. Menciassi, P. Dario, "Robotic Steering and Locomotion for Active Capsular Endoscopy," in *Proc. of the 1<sup>st</sup> National Congress of the Italian Group of Bioengineering*, 2008, p. 711.
19. G. Tortora, E. Susilo, **P. Valdastri**, A. Menciassi, P. Dario, "Propeller-Based Fluid Propulsion for Active Capsular Endoscopy," in *Proc. of the 1<sup>st</sup> National Congress of the Italian Group of Bioengineering*, 2008, p. 725.
20. M. Domenichini, E. Buselli, C. Quaglia, E. Susilo, **P. Valdastri**, A. Menciassi, P. Dario, "A Bimodular Approach to Active Capsular Endoscopy with Legged Locomotion," in *Proc. of the 1<sup>st</sup> National Congress of the Italian Group of Bioengineering*, 2008, p. 807.
21. E. Buselli, **P. Valdastri**, A. Menciassi, and P. Dario, "Leg design optimization for an endoscopic capsule with active locomotion," in *Proc. of the 1<sup>st</sup> National Congress of the Italian Group of Bioengineering*, 2008, p. 743.
22. A. Bravi, **P. Valdastri**, A. Menciassi, V. Lionetti, F. A. Recchia, P. Dario, "A Chronic Biotelemetric ZigBee Ready Device for in vivo Monitoring of Cardiac Pressure and Body Temperature", in *Proc. of 22<sup>nd</sup> Euroensors 2008*, Dresden, Germany, September 2008.
23. C. Cavallotti, M. Piccigallo, F. Focacci, E. Susilo, **P. Valdastri**, A. Menciassi, P. Dario, "An Integrated Vision System with Autofocus for Wireless Capsular Endoscopy", in *Proc. of 22<sup>nd</sup> Euroensors 2008*, Dresden, Germany, September 2008.
24. E. Susilo, **P. Valdastri**, A. Menciassi, P. Dario, "A Miniaturized Wireless Control Platform for Robotic Capsular Endoscopy using Pseudokernel Approach", in *Proc. of 22<sup>nd</sup> Euroensors 2008*, Dresden, Germany, September 2008.
25. R. Carta, B. Lenaerts, J. Thoné, R. Puers, G. Tortora, **P. Valdastri**, A. Menciassi, P. Dario, "Wireless Power Supply as Enabling Technology Towards Active Locomotion in Capsular Endoscopy", in *Proc. of 22<sup>nd</sup> Euroensors 2008*, Dresden, Germany, September 2008.
26. S. Tognarelli, **P. Valdastri**, A. Menciassi, P. Dario, "A Novel and Scalable Platform for Biomechanical Studies of Tissue Cutting Forces", in *Proc. of 22<sup>nd</sup> Euroensors 2008*, Dresden, Germany, September 2008.
27. A. Sieber, K. Houston, B. Murzi, **P. Valdastri**, A. Menciassi, P. Dario, "Novel Fetoscopic Procedure in the Case of Pulmonary Atresia", in *Proc. of 5<sup>th</sup> Croatian Congress of Pediatric Surgery*, Dubrovnik, Croatia, April 2007.
28. A. Sieber, B. Murzi, K. Houston, **P. Valdastri**, A. Menciassi, P. Dario, "Smart Micro Catheter for Fetal Surgery", in *Proc. of 36<sup>th</sup> International Symposium of Pediatric Surgery 2007 - Obergurgl, Tyrol, Austria*, April 2007, *European Surgery*, Vol. 39, no. 214, p. 6.
29. S. Rossi, **P. Valdastri**, A. Menciassi, F. Bernini, V. Lionetti, F. A. Recchia, P. Dario, "An Implantable ZigBee Ready Telemetric Platform For In Vivo Monitoring Of Physiological Parameters", in *Proc. of 20<sup>th</sup> Euroensors 2006*, Gothenburg, Sweden, September 17-20, 2006.
30. A. Sieber, **P. Valdastri**, K. Houston, C. Eder, O. Tonet, A. Menciassi, P. Dario, "Triaxial Force Sensing MEMS Device for Tactile Haptic Force Feedback Applications in the Nanoscale", in *Proc. of 20<sup>th</sup> Euroensors 2006*, Gothenburg, Sweden, September 2006.
31. A. Sieber, **P. Valdastri**, K. Houston, A. Menciassi, P. Dario, "Flip Chip Microassembly of a MEMS Based Silicon Sensor on Flexible Substrates", in *Proc. of 20<sup>th</sup> Euroensors 2006*, Gothenburg, Sweden, September 2006.
32. L. Beccai, S. Roccella, L. Ascari, **P. Valdastri**, A. Sieber, M. C. Carrozza, P. Dario, "Experimental Analysis of a Soft Compliant Tactile Microsensor to be Integrated in an Antropomorphic Artificial Hand", in *Proceedings of the 8th Biennial ASME Conference on Engineering Systems Design and Analysis*, Torino, Italy, July 2006.
33. **P. Valdastri**, A. Sieber, K. Houston, A. Menciassi, M. Yanagihara, M. Fujie, P. Dario, "Miniaturised Cutting Tool with Triaxial Force Sensing Capabilities for Minimally Invasive Surgery", in *Proceedings of the 8th Biennial ASME Conference on Engineering Systems Design and Analysis*, Torino, Italy, July 2006.
34. **P. Valdastri**, P. Corradi, A. Menciassi, J. Seyfried, P. Dario, "Micromanipulation and Communication Issues in a Swarm Microrobotic Platform", in *Proc. of "Network Robot Systems: Toward intelligent robotic systems integrated with environments"*, a IEEE International Conference on Robotics and Automation (ICRA) 2005 Workshop, Barcelona, Spain, April 2005.
35. **P. Valdastri**, S. Roccella, L. Beccai, F. Valvo, A. Menciassi, M.C. Carrozza, P. Dario, "Characterization of a Hybrid Silicon Three-Axial Force Sensor", in *Proc. of 18<sup>th</sup> Euroensors 2004*, Rome, Italy, September 2004, pp. 462-463.

36. F. Valvo, **P. Valdastri**, S. Roccella, L. Beccai, A. Menciacsi, M.C. Carrozza, P. Dario, "Development and characterization of a silicon-based three axial force sensor", AISEM 2004, Ferrara, Italy, February 2004.
37. D. Accoto, V. Mattoli, **P. Valdastri**, A. Menciacsi, P. Dario, "A Miniaturized Drug-Delivery System for Intra-Corporeal Use", AISEM 2003, Trento, Italy, February 2003.

## BOOK CHAPTERS

1. A. Menciacsi, **P. Valdastri**, K. Harada, P. Dario, "Single and Multiple Robotic Capsules for Endoluminal Diagnosis and Surgery", Chapter 14, pp. 313-354, in "Surgical Robotics - System Applications and Visions", edited by J. Rosen, B. Hannaford, R. Satava, published by Springer, 1st Edition., 2011, XXII, 819 p. 365 illus., Hardcover, ISBN: 978-1-4419-1125-4.

## PATENTS

1. C. Quaglia, E. Sinibaldi, V. Pensabene, **P. Valdastri**, A. Menciacsi, P. Dario, "Applicazione cerotto endoluminale", Italian Patent FI2011A000162, filed on 03/08/2011.
2. M. Simi, **P. Valdastri**, A. Menciacsi, P. Dario, "Capsula per biopsia", Italian Patent, filed on 15/07/2011.
3. **P. Valdastri**, T. Ranzani, C. Di Natali, M. Simi, A. Menciacsi, P. Dario, "Piattaforma chirurgia robotica", Italian Patent FI2011A000114, filed on 31/05/2011.
4. G. Ciuti, **P. Valdastri**, A. Menciacsi, P. Dario, "MAC (Magnetic Air Capsule)", Italian Patent FI2010A000241, filed on 13/12/2010.
5. M. Simi, **P. Valdastri**, A. Menciacsi, P. Dario, "MIM Levitation Endoscope", International Patent Application PCT/EP2011/066149, priority date 16/09/2010.
6. **P. Valdastri**, G. Ciuti, A. Menciacsi, P. Dario, B. Smith, J. Toennis, R. J. Webster III, "Insufflation capsule", Italian Patent FI2010A000182, filed on 30/08/2010.
7. U. Scarfogliero, M. Piccigallo, C. Quaglia, S. Tognarelli, **P. Valdastri**, A. Menciacsi, P. Dario, "ARAKNES 3-Pulegge", Italian Patent FI2010A000077, filed on 26/04/2010.
8. U. Scarfogliero, M. Piccigallo, C. Quaglia, S. Tognarelli, **P. Valdastri**, A. Menciacsi, P. Dario, "ARAKNES 2-Introdotto", Italian Patent FI2010A000076, filed on 26/04/2010.
9. U. Scarfogliero, M. Piccigallo, C. Quaglia, S. Tognarelli, **P. Valdastri**, A. Menciacsi, P. Dario, "ARAKNES 1-Ibrido", Italian Patent FI2010A000075, filed on 26/04/2010.
10. **P. Valdastri**, S. Caccavaro, G. Tortora, A. Menciacsi, P. Dario, "A miniaturized microrobotic device for locomotion in a liquid environment", International Patent Application PCT/IB2010/055104, priority date 16/11/2009.
11. P. Dario, A. Menciacsi, **P. Valdastri**, C. Stefanini, C. Quaglia, E. Buselli, "Capsula MIM", Italian Patent FI2009A000150, filed on 08/08/2009.
12. P. Dario, A. Cuschieri, A. Menciacsi, **P. Valdastri**, K. Harada, "Endoluminal Robotic System", International Patent WO2010046823, priority date 20/10/2008.
13. A. Menciacsi, P. Dario, **P. Valdastri**, C. Quaglia, E. Buselli, M. Simi, "Hybrid active locomotion teleoperated endoscopic capsule", International Patent WO2010044053, priority date 13/10/2008.
14. **P. Valdastri**, C. Quaglia, A. Menciacsi, P. Dario, C. N. Ho, G. Anhoeck, S. Schostek, F. Rieber, M. O. Scurr, "Surgical clip delivering wireless capsule", European patent application EP2163206, priority date 16/09/2008.
15. A. Menciacsi, **P. Valdastri**, G. Tortora, E. Susilo, P. Dario, "Dispositivo endoscopico wireless a propulsione autonoma per esplorazione gastrica", Italian Patent FI2008A171, filed on 05/09/2008.
16. **P. Valdastri**, V. Pensabene, S. Scapellato, A. Mazzeo, A. Misuri, M. Vatteroni, "Support device for sensors and/or actuators that can be part of a wireless network of sensors/actuators", International Patent WO2009127954, priority date 18/04/2008.
17. A. Sieber, A. Menciacsi, P. Dario, K. Houston, **P. Valdastri**, "Apparecchiatura endoscopica per il riconoscimento di tessuti biologici", Italian Patent ITFI20070080, filed on 30/03/2007.

## ADDITIONAL COURSES

- "European School on Nanosciences & Nanotechnologies, ESONN 2004", Grenoble, France, 22 August 2004 – 10 September 2004.
- Corso ad alto impatto "Diventare Imprenditori nell'alta tecnologia", Progetto IUnet, Scuola Superiore Sant'Anna, June-July 2004.
- "Micro Electronics and Micro Engineering", Vision OnLine, Euspen, January 2004.
- "Microsensor Packaging", FSRM (Swiss Foundation for Research in Microtechnology) Course, Pisa, May 2002.
- "Design and Prototyping of Micromechatronic Systems", Prof. Mark Cutkosky - Stanford University, Scuola Superiore Sant'Anna, Pisa, April-June 2002.

- “Bioengineering of the Respiratory System”, XX Italian Annual School of Bioengineering, Brixen, September 17-19, 2001.

### OTHER SCIENTIFIC ACTIVITIES

- Reviewed NSF Medium proposals – ad hoc;
- Since June 2011, Member of the European Association of Endoscopic Surgeons;
- Since February 2011, Contributing Associate Editors-in-Chief of World Journal of Gastroenterology, Baishideng Publishing Group Co., Limited;
- Since May 2008, Member of the Italian National Bioengineering Group (Gruppo Nazionale di Bioingegneria - GNB);
- Since January 2005, IEEE Member, IEEE RAS Member and IEEE EMBS Member;
- Reviewed manuscripts for IEEE *Transactions on Biomedical Engineering* – ad hoc;
- Reviewed manuscripts for IEEE/ASME *Transactions on Mechatronics* – ad hoc;
- Reviewed manuscripts for IEEE *Transactions on Robotics* – ad hoc;
- Reviewed manuscripts for Thieme *Endoscopy* – ad hoc;
- Reviewed manuscripts for Springer *International Journal of Computer Assisted Radiology and Surgery* – ad hoc;
- Reviewed manuscripts for MDPI *Sensors* – ad hoc;
- Reviewed manuscripts for IoP *Journal of Micromechanics and Microengineering* – ad hoc;
- Reviewed manuscripts for IoP *Measurement Science and Technology* – ad hoc;
- Reviewed manuscripts for IoP *Nanotechnology* – ad hoc;
- Reviewed manuscripts for Elsevier *Sensors & Actuators A: Physical* – ad hoc;
- Reviewed manuscripts for Elsevier *Physiological Measurements* – ad hoc;
- Reviewed Inflammatory Bowel Disease Grants for Broad Medical Research Program, The Eli and Edythe L. Broad Foundation.

### MANAGEMENT, ADMINISTRATIVE AND OTHER RELEVANT ACTIVITIES

- July 2010, supporting the Scuola Superiore Sant’Anna Financial Office in undergoing an international audit for the FP6 European Project VECTOR requested by the European Commission.
- July 2010, serving as member of the selection committee for the enrollment of 30 new PhD students in Bioengineering at Scuola Superiore Sant’Anna.
- June 28<sup>th</sup> 2010, serving as member of the selection committee for granting a research assignment in the field of *wearable systems for physiological parameters monitoring* at Scuola Superiore Sant’Anna.
- May 21<sup>st</sup> 2010, serving as member of the selection committee for granting a research assignment in the field of *system integration of a capsule endoscope* at Scuola Superiore Sant’Anna.
- May 12<sup>th</sup> 2010, serving as member of the selection committee for granting a research assignment in the field of *system integration for biomedical instrumentation* at Scuola Superiore Sant’Anna.
- April 27<sup>th</sup> 2010, serving as member of the evaluation committee for the PhD Defense of Mr. G. Fu, PhD student in Bioengineering at Scuola Superiore Sant’Anna.
- Since April 2010, management of the financial resources associated to the Regional Project P.R.I.M.O Check-Up, in collaboration with the W.I.N. s.r.l. Financial Office.
- Since March 2010, co-management of the financial resources associated to the FP7 European Project SensorART, in collaboration with Prof. Paolo Dario, and the Scuola Superiore Sant’Anna Financial Office.
- Since March 2010, member of the board of directors of W.I.N. s.r.l.
- Since January 2010, management of the financial resources associated to the Regional Project MINOSSE, in collaboration with the Scuola Superiore Sant’Anna Financial Office.
- December 15<sup>th</sup> 2009, serving as member of the selection committee for granting a research assignment in the field of *teleoperation of surgical robots* at Scuola Superiore Sant’Anna.
- November 13<sup>th</sup> 2009, serving as member of the selection committee for granting a research assignment in the field of *system integration for surgical robots* at Scuola Superiore Sant’Anna.
- April 24<sup>th</sup> 2009, serving as member of the selection committee for granting a research contract in the field of *smart actuators for miniature robots* at Scuola Superiore Sant’Anna.
- February 2<sup>nd</sup> 2009, serving as member of the selection committee for granting a research contract in the field of *smart sensing systems for miniature robots* at Scuola Superiore Sant’Anna.
- December 12<sup>th</sup> 2008, serving as member of the selection committee for granting a research assignment in the field of *endoluminal surgical robots* at Scuola Superiore Sant’Anna.

- October 14<sup>th</sup> 2008, serving as member of the selection committee for granting a research assignment in the field of *control systems for endoluminal robots* at Scuola Superiore Sant'Anna.
- September 22<sup>nd</sup> 2008, serving as member of the selection committee for granting a research contract in the field of *magnetic control for capsule endoscopes* at Scuola Superiore Sant'Anna.
- Since May 1<sup>st</sup> 2008, co-management of the financial resources associated to the FP7 European Project ARAKNES, in collaboration with Prof. Paolo Dario, Prof. Arianna Menciassi and the Scuola Superiore Sant'Anna Financial Office.
- September 2006, serving as member of the selection committee for the First International Master in Robotics and Mechatronics of Scuola Superiore Sant'Anna.
- From September 2006 to December 2007, co-management of the financial resources associated to the First International Master in Robotics and Mechatronics of Scuola Superiore Sant'Anna, in collaboration with Prof. Paolo Dario and the Scuola Superiore Sant'Anna Financial Office.
- Since September 1<sup>st</sup> 2006, co-management of the financial resources associated to the FP6 European Project VECTOR, in collaboration with Prof. Paolo Dario, Prof. Arianna Menciassi and the Scuola Superiore Sant'Anna Financial Office.