

Curriculum Vitae

Antonio Bicchi
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I.D. Born on June, 1, 1959, in Toscana. Italian citizen.

Education

- Laurea degree in Mechanical Engineering, December 1984. Awarded *cum laude* by the University of Pisa;
- Ph.D., Dept. of Mechanical Eng., University of Bologna, September 1989;
- Postdoctoral Visiting Scientist, Artificial Intelligence Laboratory, Massachusetts Institute of Technology, 1989–1990.

Position

2001– Full Professor of Automatic Control and Robotics, University of Pisa;
2004– Director, Interdepartmental Research Center “E. Piaggio”.
2009– Senior Scientist, Istituto Italiano di Tecnologia, Genova;

Main Scientific Interests

- Robotics;
- Haptics and Multimodal Interfaces;
- Control of Hybrid Continuous/Symbolic Dynamical Systems;

Honours and Awards

- 2009** Fumio Harashima Best Paper Award in Emerging Technologies, IEEE Industrial Electronics Society (IES), 14th IEEE International Conference on Emerging Technologies and Factory Automation, for paper “Designing Real-Time Embedded Controllers using the Anytime Computing Paradigm” by A. Quagli, D. Fontanelli, L. Greco, L. Palopoli, and A. Bicchi;
- 2009** General Chairs’ Recognition Award for Interactive Papers for the paper “On the Security of Linear Distributed Iterations”, by F. Pasqualetti, A. Bicchi, and F. Bullo, IEEE Intl. Conf. on Decision and Control;
- 2009** AAP Award for Excellence in Physical Sciences and Mathematics, for Springer Handbook of Robotics, Springer Science and Business Media, Professional & Scholarly Publishing Division, Association of American Publishers, Inc.;

- 2008** KUKA Service Robotics Best Paper Award, IEEE Int. Conf. Robotics and Automation, ICRA'08, Pasadena, USA;
- 2007** Invited to write the entry for “Controllo, Teoria del” (“Control Theory”) for the Enciclopedia Italiana “Treccani”, the major and most prestigious encyclopaedia in Italy;
- 2005** IEEE Fellow “for contributions to automatic control of mechanisms and robots;”
- 2005** Best Manipulation Paper Award, IEEE Int. Conf. Robotics and Automation, ICRA'05, Barcelona, Es.;
- 1998** Finalist, IEEE ICRA'98 Best Paper Award;
- 1990** Finalist, IEEE ICRA'90 A. Philips International Award;
- 1985** Award “L. C. Rossi” for the best national MoS dissertation on Automation Research.

Plenary, Keynote and Public Speeches

- 2010** Keynote Speech, “Variable Impedance Actuators for Adaptive Robotics”, SCHUNK Intl. Expert Days in Service Robotics, Hausen, Germany, Feb. 24-25, 2010.
- 2010** Invited Public Speech, “Men, Robots, and Other Strange Creatures”, Festival delle Scienze - Tra possibile e Immaginario, Auditorium - Parco della Musica, Rome, January 15, 2010;
- 2009** “Towards a Society of Robots: Robot Behaviors, Misbehaviors, and Agreements”, Celebrating 50 Years of Robotics, University of Pennsylvania, Philadelphia, December 11, 2009;
- 2009** Invited Public Speech, “Robots for Physical Interaction with Men: Performance and safety”, HiTechExpo, Milan, November 2005;
- 2009** Invited Public Speech, “Robots Ever Close to Humans”, Festival della Scienza, Genova, October 25, 2009;
- 2009** Plenary Speech “Variable Impedance Actuators for Safety, Adaptivity, and Efficiency in physical Human-Robot Interaction”, German Workshop on Robotics GWR2009, June 9 and 10, Braunschweig, Germany;
- 2008** Plenary Speech, “Variable Impedance Actuators for Safe and Effective Physical Human-Robot Interaction”, 5th Intl. Conf. on Ubiquitous Robots and Ambient Intelligence (URAI 2008), Seoul, Korea, November 2008;
- 2008** Plenary Speech, “Mechanical and Control Co-Design for Intrinsic Safety in Physical Human-Robot Interaction”, IEEE-IARP Int. Workshop on Technical Challenges for Dependable Robots in Human Environments, Pasadena, May 2008;
- 2008** Plenary Speech, “Physical Human-Robot Interaction: Dependability, Safety, and Performance”, Tenth Intl. Workshop on Advanced Motion Control, Trento, March 2008;
- 2005** Invited Public Speech, “Decentralized Cooperative Conflict Resolution Among Multiple Autonomous Mobile Agents”, Scientific Week Inauguration at ITAM (Instituto Tecnológico Autónimo de México), México City.
- 2005** Invited Distinguished Lecture, “Safe and Fast Robot Design for Physical Human Robot Interaction”, Jornadas Nacionales de Robotica, Santander, Spain;
- 2005** Invited Speech, “Physical Human-Robot Interactions: Dealing with the Safety–Performance Trade–Off in the Mechanical/Control Co-Design”, Mechatronic Seminar Series, ETH Zurich;
- 2005** Distinguished Lecture, “Safe and Fast Robot Design for Physical Human Robot Interaction”, Jornadas Nacionales de Robotica, Santander, Spain;
- 2001** Keynote Speech, “Tactile Flow”, Eurohaptics 2001, Birmingham, UK;
- 1997** Plenary Panel “Grand Challenges in Robotics”, IEEE Int. Conf. on Robotics and Automation, Albuquerque, NM, USA;

- 1996** Distinguished Lecture “A Telelaboratory for Nonholonomic Motion Planning” HEROS (Hazardous Environment Robots and Systems) Workshop, Barcelona, SP;
- 1993** B.E.S.C. Lecture, “On the closure properties of robotic grasping”, Univ. California at Berkeley, 1993.
- 1992** Plenary Speech, “Robotic Manipulation and Grasping”, Int. Fed. Theory of Machines and Mechanisms (IFToMM) Symposium, Nagoya, JP;
- Miscellanea Invited Lectures** “Robotics Research at the University of Pisa”, Beihang University, November 2008; “Tactile Flow and the Mechanics of Touch”, Mexican Chapter Workshop, Cuernavaca, México; “Symbolic Control Encoding for Steering Complex Systems”, Univ. Cambridge, 2005; “Discrete Nonholonomy”, Dept. Optimization and Systems, KTH, Stockholm, 2003; “Future Directions in Nonlinear Control of Mechanical Systems, Coordinated Science Laboratory - U.I.U.C., 2002; DARPA-ONRIFO Workshop on Electroactive Polymers and Biosystems, 2001; International Seminar on Robotics and Mechatronics, Takamatsu, 2000; IFAC Workshop on Lagrangian and Hamiltonian Methods for Nonlinear Control, Princeton, March 2000; Amer. Math. Soc., Summer Research Institute, Boulder 1997; Imperial College, London, Int. School on “Modelling and Control of Mechanical Systems”, June 1997. RIC’98 (Robustness in Identification and Control – RIC’98), Siena, August 1998; IEEE CSS/RAS Workshop “Control Problems in Robotics and Automation: Future Directions”, Conf. on Decision and Control, CDC’97, San Diego 1997; CICESE/CINVESTAV Workshop on “Nonlinear Control and Robotics”, Ensenada, Mexico, December 1997; NSF/ONR Workshop “Human and Machine Haptics”, Asilomar, CA, December 1997; VII Int. Symp. on Robotics Research, Int. Federation of Robotics Research, Monaco, 1995;

Scientific Societies and Service

- 2009-2010** Co-Chair, IEEE RAS Fellow Evaluation Committee;
- 2009–** Member of the Advisory Committee, IEEE RAS;
- 2008–** Elected member of the Steering Board, SIDRA (Italian Society of Automatic Control Faculties);
- 2007–** Steering Committee, Technical Committee on Haptics;
- 2006–** Steering Committee, Eurohaptics Society;
- 2006–2007** Vice President for Membership, IEEE Robotics and Automation Society (RAS) (term 2006-2007);
- 2004–** Distinguished Lecturer of the IEEE Robotics and Automation Society (RAS);
- 2001–2004** Chairman, IEEE Control Systems Society (CSS) Technical Committee on Manufacturing, Automation, and Robotics Control;
- 2001–2003** Member of the Advisory Committee, IEEE RAS;

Editorial Boards

- 2008–** Editor in Chief, IEEE RAS *Conference Editorial Board*, in charge of the annual review process for IEEE RAS Int. Conferences on Robotics and Automation (ICRA);
- 2008–** Member of the Editorial Board, *Int. Journal of Intelligent Computing and Cybernetics*;
- 2001–** Member of the Editorial Board, *Int. Journal of Robotics Research*;
- 2007** Member of the Committee for Selection of the Founding Editor in Chief of the *IEEE Transactions on Haptics*;
- 2004–** Member of the Advisory Board of IEEE Trans. on Automation Science and Engineering;

- 2001–2005** Member of the Editorial Board, “IEEE Robotics and Automation Magazine”;
1996–2000 Associate Editor, *IEEE Transactions on Robotics and Automation*;
1997–2001 Member of the Editorial Board, *Applied Mathematics and Computer Science*;

Conference Organization

- 2007** Conference Chair, HSCC’07 — Tenth Int. Conference on Hybrid Systems: Computation and Control, Pisa, April 2007 (with A. Bemporad and G. Buttazzo);
- 2005** Founder and Co-Chair, IEEE WorldHaptics (WHC’05) — First Joint Haptics Symposium and EuroHaptics Conference, Pisa, March 2005 (with M. Bergamasco);
- 2000** Conference Chair, First International Workshop on “Mathematical Control Theory and Robotics”, SISSA/ISAS, Trieste, Italy (with A. Agrachev, B. Piccoli);
- 2010** Organizer and Co-Chair of the IEEE–RAS ICRA Workshop on New variable impedance actuators for the next generation of robots, Anchorage, Alaska;
- 2008** Organizer and Co-Chair, Robotics Science and Systems Workshop on “Design and Control of Variable Impedance Actuators for Physical Interaction of Robots with Humans and their Environment”, Zurich;
- 2009** Chair, Best Service Robotics Paper Award Committee, IEEE Int. Conf. Robotics and Automation (ICRA);
- 2010** Chair, Best Manipulation Paper Award Committee, IEEE Int. Conf. Robotics and Automation (ICRA);
- 2008** Area Chair, Robotics Science and Systems, Zurich, 2008;
- 2008** Program Vice-Chair (Europe), IEEE/RSJ Int. Conf. Intelligent Robot Systems, IROS’08 Nice, 2008;
- 2007** Program Vice-Chair, IEEE Int. Conf. Automation Science and Systems, CASE’07, Scottsdale, September 2007;
- 2006** Area Chair, Robotics Science and Systems, Philadelphia, August 2006;
- 2005** Program Vice-Chair, IEEE Robotics and Automation Conference, ICRA’05, Barcelona, May 2005;
- 2003** Chair, Conference Awards Committee, IEEE Int. Conf. Robotics and Automation, ICRA’03 - Taipei, Taiwan ;
- 2002** Program Chair, IEEE joint CSS/RAS Int. Work. on Control Problems in Robotics, Las Vegas, December 2002;
- 2002** Vice Program Chair, IEEE Int. Conf. Robotics and Automation, ICRA’02, Washington, D.C.;
- 2002** Chair, Conference Awards Committee, IEEE Int. Conf. Robotics and Automation, ICRA’03 - Taipei, Taiwan and ICRA’02 - Washington, DC, USA;
- 2000** Organizer and Co-Chair (with Vijay Kumar, Univ. Pennsylvania) of the *IEEE Robotics and Automation Society Mini-Symposium on “Grasping and Contact”*, San Francisco, USA.
- 1998** Organizer and Co-Chair of the IEEE–RAS Workshop on Grasping, Fixturing, and Manipulation (with T. Yoshikawa, J. Burdick), Leuven, BE;
- 1996** Organizer and Co-Chair of the IEEE–RAS Workshop on Minimalism in Robot Manipulation (with K. Goldberg);

1995– Member of the International Program Committee for IEEE Int. Conf. on Robotics and Automation (ICRA) since '97, IEEE/RSJ Int. Symp. on Robotic Systems (IROS) since '95, Int. Symp. Robotics Research (2007), other conferences and workshops.

Former Ph.D. Students

Domenico Prattichizzo Ph.D. student, 1991–1994. Academic career in Robotics. Currently Associate Professor at Università di Siena and Director of Siena Robotics and Systems Lab;

Andrea Balluchi Ph.D. student, 1992–1996. Professional career in automotive research for industry. Currently Co-founder and President, Pure Power Control s.r.l.;

Alessia Marigo Ph.D. student, 1995–1999. Research career in Applied mathematics and Automatic Control. Currently Researcher at the Istituto per le Applicazioni del Calcolo M. Picone, C.N.R., Italy, and Visiting Professor at Rutgers-Camden.

Enzo Pasquale Scilingo Ph.D. student, 1996–1999 (co-supervised). Academic career in bio-engineering and robotics. Currently Assistant Professor at Università di Pisa;

Lucia Pallottino Ph.D. student, 1999–2002. Academic career in applied mathematics and robotics. Currently Assistant Professor at Università di Pisa;

Luigi Palopoli , Ph.D. student at Scuola Superiore S. Anna, Pisa (co-supervised), 1999–2002. Academic career in Computer Engineering and Robotics. Currently Assistant Professor at Università di Trento;

Pierpaolo Murrieri , Ph.D. student, 2000–2003. Professional career in software industry. Currently Project Manager at Eltag Datamat, Rome, Italy;

Stefania Pancanti , Ph.D. student, 2001–2004. Career in High-School Education.

Giovanni Tonietti , Ph.D. student, 2002–2005. Professional career in research for automotive industry. Currently Senior Control Specialist and Project Manager at Magneti Marelli, Torino;

Nicola Sgambelluri , Ph.D. student, 2002–2005. Professional career in industrial research. Currently at Pentair Water Italy, and co-founder of Adatech srl, Italy;

Daniele Fontanelli , Ph.D. student, 2003–2006. Academic career in Robotics. Currently Research Associate at Università di Trento;

Vincenzo Scordio , Ph.D. student, 2004–2007. Professional career in research for industry. Currently co-owner of consultancy firm in for industrial automation, Massa, Italy;

Bruno Picasso , Ph.D. student at Scuola Normale Superiore, Pisa, 2003–2005. Academic career in Applied Mathematics and Automatic Control. Currently Research Associate at Politecnico di Milano, Italy;

Antonio Danesi , Ph.D. student, 2004–2007. Professional career in space research. Currently engineer for VEGA Rocket Launcher at European Space Agency;

Emanuele Mazzi Ph.D. student, 2006–2009. Professional career in research for automotive industry. Currently Co-founder and Administrator, Pure Power Control s.r.l.;

Adriano Fagiolini Ph.D. student, 2005–2009. Currently post-doc fellow at Università di Pisa;

Soumen Sen Ph.D. student, 2005–2009. Currently post-doc fellow at Università di Pisa;

Riccardo Schiavi Ph.D. student, 2006–2009. Currently post-doc fellow at Università di Pisa.

Post-Doctoral Associates:

Yacine Chitour (Ph.D. Rutgers Univ.), post-doc in 1995–1996. Currently Professeur à l'Université Paris-Sud 11

Frederic Gouaisbaut (Ph.D. École Centrale de Lille), post-doc in 2001-2002. Currently researcher at Laboratoire d'Architecture et d'Analyse des Systèmes (LAAS-CNRS) and Maître de Conférences at the Université Paul Sabatier, Toulouse;

Antoine Chaillet (Ph.D. Université Paris Sud), post-doc in 2006–2007. Currently Assistant Professor at SUPÉLEC (Ecole supérieure d'électricité), Paris;

Sung Hoi Huh , (Ph.D. Korea University, Seoul) post-doc in 2005-2007. Currently Researcher at Human-friendly Welfare Robot System Engineering Research Center (HWRS-ERC) of Korea Advanced Institute of Science and Technology (KAIST).

Luca Greco (Ph.D. Università di Pisa). Post-doc 2007-2009. Currently Associate Reseracher at European Embedded Control Institute, Gif-sur-Yvette, France;

Francesca Irene Cavallaro (Ph.D. Scuola Normale Superiore, Pisa). Post-doc 2008-2009. Currently Scientific Staff, Department of Neuroengineering, Fatronik-Tecnalia Foundation, San Sebastian, Spain;

Roberto Filippini (Ph.D. Univ. Pisa). Post-doc 2008-2009. Currently Researcher at Paul Scherrer Institute, Villigen, Switzerland;

Huifang Elizabeth Wang (Ph.D. 2008 Beijing University of Technology, China), post-doc since 2009.

Research Evaluations

2009– Member of review panel for the European Research Council (ERC) Advanced Investigator Grants;

2004– Member of evaluation panels for national funding agencies in Austria, Sweden, the Netherlands, Belgium, the U.S.A. and Italy;

2003– Member of evaluation panels for European Commission in FP6 and FP7 calls on “Cognition and Robotics”, “Multimodal Interfaces”, “Biologically Inspired Intelligent Information Systems”, “Future and Emerging Technologies - Open Scheme”;

2005– Project Reviewer for two European Commission grants.

Miscellanea

- **Blurb:** Author of back-cover endorsement for the textbook “Robotics: Modelling, Planning and Control” by Bruno Siciliano, Lorenzo Sciavicco, Luigi Villani and Giuseppe Oriolo, Springer, 2008;
- **Blurb:** Author of back-cover endorsement for the textbook “Planning Algorithms”, by Steve Lavalle, Cambridge University Press, 2006;
- **External Ph.D. Referee:** Served as external member in the Ph.D. evaluation committee of V. Vuskovic (ETH, 2001), P. Ogren (KTH, 2003), A. Speranzon (KTH, 2006), A. Jardon Huete (Madrid, 2006), J. Cordella (Barcelona, 2007), Dmitry Kaynov (Madrid, 2009), Michael Van Damme (Bruxelles, 2009);
- **Competitions** Tutor of the “Lunatics” team of the University of Pisa in the ESA European Lunar Robotic Challenge held on mount Teide on Tenerife Island, October 2008. The team won the second position.
- **Career Letters** I have been asked to evaluate and/or write letters of assessment for candidates to different faculty track positions by several Universities and research institutes, including Georgia Tech, Johns Hopkins Univ., Massachusetts Inst. of Technology, Stanford Univ., Purdue Univ., Tech. Univ. Muenchen, Univ. British Columbia, Univ. Calif. Los Angeles, Univ. Padova, AIT Tsukuba, Case Western Reserve Univ., Korean Inst. of

Technology (KIST), Scuola Superiore S. Anna, Univ. Carlos III Madrid, Royal Institute of Technology (KTH), INRIA Grenoble, Univ. California Berkely, CNRS-LAAS Toulouse, Technion HAIFA, Natl. Science Foundation USA, Intuitive Surgical Inc.

Research projects (as Principal Investigator)

- 2010–2014** EC FP7 IP project “THE Hand Embodied”, Project Coordinator. Budget: 7.15 MEur (overall), 1.6 MEur (local).
- 2009–2012** EC FP7 project “VIATORS - Variable Impedance Actuation Systems Embodying Advanced Interaction Behaviours”. Budget: 3.35 MEur (overall), 0.5 MEur (local).
- 2008–2011** EC FP7 project “CHAT - Control of Heterogeneous Automation Systems: Technologies for scalability, reconfigurability and security”, Project Coordinator. Budget: 2.3 MEur (overall), 0.5 MEur (local).
- 2008-2010** Italian Ministry for Education and Research PRIN grant 2007CCRNFA, “Sicurezza per l’Interazione nel Contatto tra Umani, Robot e Ambiente (SICURA)”; Budget: 0.2 MEur
- 2008** ESA European Space Agency, “ESA Lunar Robotic Challenge”. Budget: 50K Eur;
- 2007–2010** EC FP7 project “ComplexEIT - From nano to large electronic systems”. Pilot projects for cooperation between European Institutes of Technology (EAC/26/7). P.I. on behalf of the European Embedded Control Institute (Overall budget: 1.5MEur).
- 2006–2009** EC FP6 STREP project “PHRIENDS -Physical Human-Robot Interaction: Dependability and Safety”, Project Coordinator. Budget: 2.1 MEur (overall), 0.5 MEur (local).
- 2006–2009** MIUR Interlink project “ICO - International Curriculum Option on Hybrid Systems” (General Coordinator). The project has created a joint curriculum of studies for Ph.D. students in the field of Hybrid Control for Complex, Distributed and Heterogeneous Embedded Systems, among 14 Universities in Europe and the U.S. Recently extended to 17 Universities. Budget: 0.12 MEur
- 2004–2007** FP6 Integrated Project, Contract IST-2004-004536 “RUNES - Reconfigurable Ubiquitous Networked Embedded Systems”. Budget: 0.31 MEur;
- 2006–2010** EC FP6 IP “IMMERSENCE - Immersive Multi-Modal Interactive Presence” IST-FET Proactive project. Budget: 0.4MEur;
- 2005–2006** FP6 EURON PRP “Phridom - Physical Human Robot Interaction in Anthropic Domains” (General Coordinator), Budget: 0.1 MEur.
- 2002–2005** FP5 E.U. IST 2001-38040 PRESENCE project “TOUCH-HAPSYS - Towards a Touching Presence: High-Definition Haptic Systems” (Scientific co-Coordinator). Budget: 0.63 MEur;
- 2002–2005** E.U. IST 2001-37170 project “RECSYS” (Real-Time Embedded Control of Mobile Systems with Distributed Sensing). Budget: 0.35 MEur;
- 2002-2004** MIUR PRIN 095297-002-2002, “Embedded Control of Dynamical Systems with Limited Computational and Communication Resources”;
- 2003-2005** MIUR FIRB RBAU01RY47, “Conflict resolution in decentralized control of air traffic”;
- 2000-2002** CNR Agenzia 2000, “Optimal Control Algorithms for Embedded Systems”, Consortium Coordinator;
- 2000–2003** CNR Progetto Strategico Società della Informazione “Fai-Robot - Towards a Robotic Telelaboratory”;
- 2000–2004** Italian Space Agency (ASI) “TEMA – Team-based Exploration by Mobile Agents”, Consortium Coordinator;
- 2000–2002** MURST/ENEA project “SIRO – High Performance Simulation of Mechanical and Robotic Systems”.

- 1999–2001** E.C. TEMPUS project “Edufrac” (Accreditation and Certification In Industrial Metrology);
- 1996–1998** NATO CRG Grant “Motion Planning for Air Traffic Management Systems (ATMS)” (with S. S. Sastry, U.C. Berkeley);
- 1997–1998** Scientific and technological Cooperation Joint project (Poland Ministry for University) “Statistical Methods for evaluation and design of multivariate sensors” (with Ewaryst Rafajlowicz, Univ. Wroclaw).
- 1994–1997** ESPRIT Project “LEGRO” on “Semi–autonomous legged vehicle for unstructured environments”;
- 1993–1994** NSF - CNR Bilateral Research Program “Nonlinear Control Methods for Kinematically Defective Non–Holonomic Systems” (with S.S. Sastry, U.C. Berkeley);
- 1990–1992** ONR - CNR Bilateral Research Program on “Whole-Arm and Enveloping Manipulation” (with J.K. Salisbury, MIT - AI Lab);

Networks of Excellence (as P.I.)

- 2008–2012** EC FP7 Network of Excellence, “CONET - Cooperating Objects NETWORK of excellence”. Budget: 0.2 MEur;
- 2004–2008** FP6 Network of Excellence, Contract IST-2004-511368 “HYCON - HYbrid CONTROL: Taming Heterogeneity and Complexity of Networked Embedded Systems”. Budget: 0.3 MEur;
- 2004–2008** FP6 Network of Excellence, Contract FP6-2002-507728 “EURON - European Robotics Network”. General Coordinator *ad interim*, Fall 2006;

Consulting

A. Bicchi is or has been consulting for industrial firms such as Gerresheimer GmbH, Ferrari GeS F1, FIAT Auto S.p.A., Galileo Avionica, Intecs HRT, Cozzani Srl, Fioravanti Progetti, etc.. Among the notable outcomes are joint patents with FIAT Auto, and algorithms for active differential control presently implemented in racing F1 cars.

Patents

- “Calibration technique for Intrinsic Tactile Sensors”, A. Bicchi and F. Granata, IT patent no. FI95A000108, (C.N.R.) May 1995;
- “Contact Pointing Device for 3D Graphic Software Interfaces”, A. Bicchi and F. Granata, IT patent no. PI94A000025, September 1994;
- “Technique for measuring tightening torque of bolts and similar devices”, A. Bicchi and M. Nicola, IT patent no. 67106 A-90 (FIAT Auto S.p.A.), February 1990;
- “Universal Cylindrical Loadcell”, A. Bicchi, IT patent no. 1211362, August 1987.
- “Meccanismo motoriduttore a rigidzza variabile e rapidamente controllabile”, A. Bicchi and G. Tonietti, IT patent no. PI2004A000077, October 2004
- “Mechanism of Motor reduction with variable rigidity and rapidly controllable”, A. Bicchi and G. Tonietti, U.S. patent appl. no. 11/250, 725, Oct. 2005

Recent Publications

Antonio Bicchi is editor of three books and author of about 50 articles on journals, 40 chapters in books, and more than 200 conference papers with a thorough peer reviewing process. An updated list of publications is maintained at

<http://www.centropiaggio.unipi.it/robpublications/Author/BICCHI-A.html>

Few recent publications are listed below:

1. L. Greco, D. Fontanelli A. Bicchi. Design and Stability Analysis for Anytime Control via Stochastic Scheduling. *IEEE Trans. Automatic Control*, cond. accepted, 2010.
2. P. Salaris, D. Fontanelli, L. Pallottino, and A. Bicchi. Shortest Paths for a Robot with Nonholonomic and Field-of-View Constraints. *IEEE Trans. on Robotics*, 2010. To appear, April 2010.
3. E .P. Scilingo, M. Bianchi, G. Grioli, and A. Bicchi. Rendering Softness: Integration of kinaesthetic and cutaneous information in a haptic device. *Transactions on Haptics*, 2010. To appear.
4. N. Dubbini, B. Piccoli, and A. Bicchi. Left invertibility of discrete systems with finite inputs and quantized output. *International Journal Of Control*, 2009. To Appear.
5. A. Bicchi, S. Martini, and M. Egerstedt. Controllability analysis of multi-agent systems using relaxed equitable partitions. *Int. J. Systems, Control and Communications*, 2:100-121, 2010.
6. D. Fontanelli, A. Danesi, F. A. W. Belo, P. Salaris, and A. Bicchi. Visual Servoing in the Large. *International Journal of Robotics Research*, 28(6):802 - 814, June 2009.
7. A. Bicchi, A. Danesi, G. Dini, S. La Porta, L. Pallottino, I. M. Savino, and R. Schiavi. Heterogeneous Wireless Multirobot System. *Robotics and Automation Magazine, IEEE*, 15(1):62-70, 2008.
8. A. Bicchi, E. P. Scilingo, E. Ricciardi, and P. Pietrini. Tactile flow explains haptic counterparts of common visual illusions. *Brain Res Bull.*, 75(6):737-741, April 15 2008.
9. R. Filippini, S. Sen, and A. Bicchi. Toward Soft Robots You Can Depend On - A study of antagonistic actuation. *IEEE Robotics and Automation Magazine*, 15(3):31 - 41, 2008.
10. A. Bicchi, M. Buss, Marc O. Ernst, and A. Peer, eds. *The Sense of Touch and its Rendering: Progresses in Haptics Research, Springer Tracts in Advanced Robotics (STAR)*. Springer, Berlin, Heidelberg, 2008.
11. C. Belta, A. Bicchi, M. Egerstedt, E. Frazzoli, E. Klavins, and G. J. Pappas. Symbolic Planning and Control of Robot Motion: State of the Art and Grand Challenges. *Robotics and Automation Magazine*, 14(1):61-70, 2007.
12. A. Bicchi, A. Danesi, G. Dini, S. La Porta, I. M. Savino L. Pallottino, and R. Schiavi. A safe and secure component-based platform for heterogeneous multi-robot systems. *IEEE Robotics and Automation Magazine*, 2008.
13. A. Bicchi, E. P. Scilingo, E. Ricciardi, and P. Pietrini. Tactile flow explains haptic counterparts of common visual illusions. *Brain Res Bull.*, 2007.
14. L. Pallottino, V. G. Scordio, E. Frazzoli, and A. Bicchi. Decentralized cooperative policy for conflict resolution in multi-vehicle systems. *IEEE Trans. on Robotics*, 23(6):1170-1183, 2007.
15. B. Picasso and A. Bicchi. On the Stabilization of Linear Systems Under Assigned I/O Quantization. *IEEE Transactions on Automatic Control*, 52(10):1994-2000, 2007.
16. A. Bicchi, A. Marigo, and B. Piccoli. Feedback Encoding for Efficient Symbolic Control of Dynamical Systems. *IEEE Trans. on Automatic Control*, 51(6):1-16, 2006.