

CURRICULUM VITAE

Carme Torras Genís
Institut de Robòtica i Informàtica Industrial (CSIC-UPC)
<http://www.iri.upc.edu/people/torras>
<http://www.iri.upc.edu/research/perception>
ORCID Identifier: 0000-0002-2933-398X
Researcher ID: M-1794-2014

1 Academic degrees

1978: *M.Sc. in Mathematics*, Universitat de Barcelona.

1981: *M.Sc. in Computer Science*, University of Massachusetts, Amherst.

1984: *Ph.D. in Computer Science*, Universitat Politècnica de Catalunya (UPC).

2 Professional and academic positions

1978-1979: *Systems Analyst* at Texas Instruments, Spain.

1979-1981: *Fulbright Scholar* in the Department of Computer Science at the University of Massachusetts.

1981-1986: *Research Assistant* at the Institut de Cibernètica (CSIC-UPC).

1986-1987: *Associate Professor* in the area of Systems Engineering and Automatics at UPC.

1987-1991: *Scientific Researcher* at the Spanish Council of Scientific Research (CSIC).

1991-pres.: *Research Professor* at the Spanish Council of Scientific Research (CSIC).

3 Biographical sketch

Carme Torras graduated in applied mathematics and, thanks to a Fulbright scholarship, studied Computer Science at the University of Massachusetts (Amherst). Her doctoral thesis (published in *Lecture Notes in Biomathematics*, Springer-Verlag - see [b.1]) on temporal signal processing in motor neurons opened an innovative line of research that has been subsequently explored by the international scientific community.

Later she adapted the mechanisms of motor neurocontrol to the learning and planning of robot motion. This is a research line that Prof. Torras has pursued at the Institute of Robotics

and Industrial Informatics (IRII), where she leads a research team that has been recognized as Consolidated Robotics Group by the Government of Catalonia continuously from 1997 to the present.

The pioneering work of Prof. Torras in the application of neural models to robotics is reflected in the large number of European projects on this subject that she has promoted and led, from the four ESPRIT projects in the period 1992-1995 (SUBSYM, PROMotion, B-LEARN and CONNY), to five projects led in the last decade: PACO-PLUS, GARNICS, IntellAct, I-DRESS and IMAGINE.

Some of these projects have resulted in technology transfer. In the CONNY project, the IRII group developed two software packages, one for visual positioning of robots for Thomson CSF, which was patented, and another for automatic recalibration of a space robot, which was installed on the mock-up of the International Space Station at Daimler-Benz Aerospace in Bremen. Recently, under the GARNICS project, the patent “Robotized cutting tool and sample extraction” (ES2395931A1, WO2013011180A1) has been published.

The integration in the group of researchers with complementary profiles (industrial, mechanics and telecommunications engineers, experts in artificial intelligence and software engineering, and mathematicians) has helped to address difficult and wide-ranging problems. The wide variety of prestigious journals that have published the results give a good account of it. For example, articles on parallel manipulators are the product of a fruitful collaboration with algebraic geometers, and have appeared in both mathematics and robotics journals with high impact, given the importance of the results obtained for the control of these manipulators.

Prof. Torras has supervised 16 doctoral theses and some of her doctoral students are now highly recognized researchers holding academic positions as Defitech Foundation Chair in Brain-Machine Interface at EPFL (José del R. Millán), CSIC Research Professor (Federico Thomas), Professor at the University Canberra (Elisa Martinez), or Professor at UFPR (Eduardo Todt).

She maintains a high dedication to editorial tasks, having been Associate Editor of 9 journals, Associate Vice-President for Publications of the IEEE Robotics and Automation Society (RAS), and currently Editor of the IEEE Transactions on Robotics.

Prof. Torras has obtained several awards and honors: Narcís Monturiol Medal of the Government of Catalonia (2000), Fellow of the European Coordinating Committee for Artificial Intelligence (2007), member of the Academia Europaea (2010) and member of the Royal Academy of Sciences and Arts of Barcelona (2013). She was recently elected member of the Administration Committee (AdCom) of the IEEE Robotics and Automation Society (RAS) to serve in the period 2016-18.

4 Leadership and participation in research projects

1982-84: “*Perception systems in robotics*” (Spanish CAICYT). Participant.

1984-88: “*Implementing sensor-based assembly robot systems with visual instruction*” (USA-Spain Joint Committee), in collaboration with Rensselaer Polytechnic Institute, Troy, New York. Participant.

1985-87: “*Sensor-based robotic systems for assembly under visual instruction*” (Spanish CAICYT). Participant.

- 1987-90:** “*Specialist systems for planning and executing assembly tasks with robots*” (Ramón Areces Foundation). Participant.
- 1988-91:** “*Automatic spatial reasoning based on constraints*” (Spanish CICYT, TIC-88-0197). **Principal investigator.**
- 1989-91:** “*Acquisition of Behavioral Knowledge for Autonomous Systems Operating in Real Environments*” (**B-LEARN**) (**ESPRIT II BRA 3352, Consortium 3275**). Partners: Universidade Nova de Lisboa, Universidad de Udine, Universidad de Torino, Universität Karlsruhe, Fraunhofer-Institut für Information Technology, and Universidad de Genoa. **Co-principal investigator** for UPC.
- 1989-91:** “*Algorithms and Complexity*” (**ALCOM**) (ESPRIT II BRA No. 3075). Partners: Paris Ehess, Aarhus Universitet, University of Warwick, Università Degli Studi di Roma La Sapienza, Universiteit van Utrecht, Frei Universität Berlin, Universität des Saarlandes, INRIA Rocquencourt, INRIA Sophia Antipolis, Trinity College Dublin, and Computer Technology Institute Patras. Participant.
- 1989-92:** “*Perception system with multisensory integration for robotics and automation*” (Spanish CICYT ROB-89-0287). Participant.
- 1989-93:** “*Self-organization and Analogic Modeling using Subsymbolic Computing*” (**SUBSYM**) (**ESPRIT II BRA No. 3234**). Partners: Vrije Universiteit Brussel, Lappeenranta University Technology, Rolf Nevanlinna Institute, Universität Hamburg y Université Libre de Bruxelles. Advisor in the first stages of the project and **principal investigator** for CSIC afterwards.
- 1991-92:** “*Connectionist Approaches to Robot Path Finding*” (Commission of the European Communities Contract No. 4356-91-05 TS ISP E), in collaboration with the Joint Research Centre of the CEC in Ispra, Italia. **Principal investigator** for CSIC.
- 1991-94:** “*Self-organized and recurrent neural networks for system identification, control and optimization*” (Spanish CICYT TIC-91-0423). **Principal investigator.**
- 1992-95:** “*Robot Control based on Neural Network Systems*” (**CONNYY**) (**ESPRIT III Type-A No. 6715**). Partners: MBB-ERNO, Thompson, CRAM, Mimetics, University College of London, and FRAMATOME. **Principal investigator** for UPC.
- 1992-95:** “*Planning RObot Motion*” (**PROMotion**) (**ESPRIT III BRA No. 6546**). Partners: LAAS-CNRS, Université de Paris VI, Utrecht University, Università di Roma y INRIA de Sophia-Antipolis. **Principal investigator** for UPC.
- 1992-95:** “*Behavioural Learning: Combining Sensing and Action*” (**B-LEARN II**) (**ESPRIT III BRA No. 7274**). Partners: Universität Karlsruhe, Universidade Nova de Lisboa, Università di Torino, Universität Dortmund, Katholieke Universiteit Leuven, and Università di Genoa. **Co-principal investigator** for UPC.
- 1992-93:** “*Behavioural Learning II*” (Commission of the European Communities Contract No. 5032-92-11 TG ISP E), subcontract to the Joint Research Centre of the CEC in Ispra, Italia. **Principal investigator** for UPC.

- 1993-96:** *“Hazardous Environment ROboticS (HEROS)”* (Scientific Network, Human Capital and Mobility Program, CEC). Nodes: IMAG/ INRIA de Grenoble, LAAS/CNRS de Toulouse, Università di Genoa, Scuola Superiore S. Anna de Pisa, University of Oxford, University of Leuven, and Universität Karlsruhe. Participant.
- 1993-96:** *“Nonlinear Mathematical Modeling: Theoretical and Numerical Aspects”* (Commission of the European Communities Contract ERB CII*-CT92-0046). Partners: Universidad de Chile, CNRS de Luminy, Bayreuth Universität, Universidad Complutense de Madrid, and Université Clermont. **Principal investigator** for UPC.
- 1993-96:** *“Neural and Computational Learning (NeuroCOLT)”* (Esprit III Working Group). Partners: London University, Centre for Mathematics and Computer Science of SMC at Amsterdam, Ecole Normale Supérieure de Lyon, Università di Milano, Technische Universität Graz, University of Helsinki, RWTH Aachen, and Université de Mons. Participant.
- 1993-96:** *“Subsymbolic techniques for constraint satisfaction, vision, and robotics”* (Spanish CICYT TAP93-0451). Participant.
- 1996-99:** *“Analysis of spatial constraints and its application to mechanical design and simulation of robotic tasks”* (Spanish CICYT TIC96-0721-C02-01). Participant.
- 1996-99:** *“Parallel Computing Modelling for Industrial Problems (PARALIN)”* (INCO-DC Project No. 950845). Partners: MATRA Cap Systèmes SA, Union Iberoamericana de Tecnología SA, Empresa Eléctrica Pehuenche SA, Centro de Investigación Minera y Metalúrgica de Chile, Administración de Usinas y Transmisiones Eléctricas de Uruguay, Ecole Normale Supérieure de Lyon, Universidad de Chile, INRIA-Rocquencourt, and Universidad de la República de Uruguay. Participant.
- 1997-98:** *Consolidated research group on “Robotics and Control”* (1997SGR 00464, Generalitat de Catalunya). **Group leader.**
- 1997-98:** *“Neuronal Learning in Robotics. Applications to Mining”* (Joint project CSIC-Universidad de Santiago de Chile). Participant.
- 1997-2000:** *“Vision-based navigation of autonomous robots in unstructured environments”* (Spanish CICYT TAP97-1209). Participant.
- 1999-2000:** *Consolidated research group on “Robotics and Control”* (1999SGR 00200, Generalitat de Catalunya). **Group leader.**
- 1999-2002:** *“Constraint-based computation in robotics and resource management”* (Spanish CICYT TAP99-1086-C03). Joint project with IIIA (CSIC) and the LSI Department (UPC). **Project coordinator and principal investigator** of subproject 1.
- 2000-02:** *“European Robotics Research Network” (EURON)* (Network of Excellence, Commission of the European Communities Contract IST-2000-26048). **Principal investigator** for CSIC.
- 2000-03:** *“Solving systems of kinematic equations for mechanism simulation, interactive object positioning, and molecular conformation”* (Spanish CICYT TIC2000-0696). Participant.
- 2000-03:** *“Autonomous navigation of robots guided by visual targets”* (Spanish DPI2000-1352-C02-01). Participant.

- 2001-04:** *Consolidated research group on “Robotics and Control”* (2001SGR 00360, Generalitat de Catalunya). **Group leader.**
- 2003-04:** *“Design and implementation of efficient parallel algorithms for Distance Geometry, with applications in Kinematics and Computational Proteomics”* (Spanish TIC2003-03396). Participant.
- 2003-05:** *“European Robotics Research Network” (EURON-II)* (Network of Excellence, Commission of the European Communities Contract IST-507728). **Principal investigator** for CSIC.
- 2003-06:** *“Reconfigurable system for vision-based navigation of legged and wheeled robots in natural environments (SIRVENT)”* (Spanish DPI2003-05193-C02-01). Participant.
- 2005-07:** *“Trajectory planner for robotic systems of arbitrary architecture”* (Spanish DPI2004-07358). Participant.
- 2005-09:** *Consolidated research group on “Robotics”* (2005SGR 00038, Generalitat de Catalunya). **Group leader.**
- 2006-07:** *“Study of tensegrity structures for the development of sensors, manipulators, and mobile robots”* (Spanish DPI2006-14001). Participant.
- 2006-07:** *“Artificial Vision System for the Robstar Application”*. Contract of UPC with ROBOSOFT S.A., Bidart, France. **Co-principal investigator** for UPC.
- 2006-10:** *“Perception, Action & Cognition through Learning of Object-Action Complexes” (PACO-PLUS) (CogSys Integrated Project IST-FP6-IP-027657)*. Partners: Universitat Karlsruhe, Kungliga Tekniska Hogskolan, Universitat Gottingen, Aalborg University, Jozef Stefan Institute, Leiden University, University of Edinburgh, and ATR Computational Neuroscience Laboratories. **Co-principal investigator** for CSIC.
- 2008-10:** *Complementary grant to the european project PACO-PLUS* (Spanish DPI2008-01777-E). **Principal investigator.**
- 2008-11:** *“Perception and action under uncertainty” (PAU)* (Spanish DPI2008-06022). Participant.
- 2010-13:** *“Gardening with a Cognitive System” (GARNICS) (CogSys STREP Project FP7-ICT-247947)*. Partners: Forschungszentrum Julich GmbH, Universitat Gottingen, and Linkopings Universitet. **Principal investigator** for CSIC.
- 2011-12:** *“Programmable surfaces”* (Spanish DPI2011-13208-E). Participant.
- 2011-14:** *“Perception and Action in Robotics Problems with Large State Spaces (PAU+)”* (DPI2011-27510). Participant.
- 2011-14:** *“Intelligent observation and execution of actions and manipulations” (IntellAct) (CogSys STREP Project FP7-ICT-269959)*. Partners: Syddansk Universitet, Universitat Gottingen, Universitaet Innsbruck, Aachen Technische Universitat, and Jozef Stefan Institute. **Principal investigator** for CSIC.
- 2015-17:** *“Instructing robots using natural communication skills (RobInstruct)”* (TIN2014-58178-R). Participant.

- 2015-18:** “*Assistive interactive robotic system for support in dressing*” (**I-DRESS**) (**European CHIST-ERA 2014 Call**). Partners: University of West of England and IDIAP Research Institute. **Project coordinator**.
- 2016-17:** “*Safe multi-modal interaction with robot manipulators*” (**SAMMIR**) (**i-Link project**). Partners: Umea Universitet, Ben-Gurion University, Bristol Robotics Lab, and Pal Robotics. **Project coordinator**.
- 2017-21:** “*Social Cognitive Robotics in The European Society*” (**SOCRATES**) (**H2020-MSCA-ITN-2016-721619**). Partners: Umea Universitet, Ben-Gurion University, University of West England, Orebro University, Fraunhofer Angewandten Forschung, and Hamburg Universitt. Participant.
- 2017-21:** “*Robots understanding their actions by imagining their effects*” (**IMAGINE**) (**H2020-ICT-2016-731761**). Partners: Universitaet Innsbruck, Universitat Gottingen, Karlsruhe Institute of Technology, INSA Rennes, and ELECTROCYCLING GMBH. **Principal investigator** for CSIC.

5 Technology transfer, licensed software and patents

- 1995:** *Software package for the visual positioning of robots*, developed jointly with Thomson CSF, which patented it (see [ij.17]). Outcome of the project CONNY.
- 1995:** *Software package for the automatic recalibration of a space robot*, which was installed on the mock-up of the International Space Station at Daimler-Benz Aerospace in Bremen (see [ij.18]). Outcome of the project CONNY.
- 2000-03:** *Development of an automatic and flexible transport system between workbenches of the Centre of Computer Integrated Manufacturing of UPC (STAFF)* (CeRTAP - Centre de Referència en Tecnologies Avançades de la Producció, Generalitat de Catalunya). **Principal investigator** for IRI.
- 2002-05:** *Vehicle positioning system based on laser and vision* (CeRTAP - Centre de Referència en Tecnologies Avançades de la Producció, Generalitat de Catalunya). **Principal investigator** for IRI.
- 2006:** *Vision-based driving aid for the NICOLAS-VTCU vehicle*. Contract of UPC with ROBOSOFT S.A., Bidart, France. **Co-principal investigator** for UPC.
- 2006-07:** *Artificial Vision System for the Robstar Application*. Contract of UPC with ROBOSOFT S.A., Bidart, France. **Co-principal investigator** for UPC.
- 2013:** Alenyà G., Grosch P., Torras C. and Palacn M.: *Robotized cutting tool and sample extraction*, **Spanish patent ES2395931A1**, **World patent WO2013011180A1**. Outcome of project GARNICS.

6 Publications

Carme Torras has co-authored 3 books (and co-edited 2 proceedings), 103 journal papers (43 in the last ten years), and more than 185 conference papers and book chapters (81 in the last ten years).

6.1 Books

- [b.1] Torras C.: “*Temporal-Pattern Learning in Neural Models*”. Lecture Notes in Biomathematics, núm. 63. Berlin Heidelberg New York: Springer-Verlag, 1985.
- [b.2] Ferraté G., Amat J., Ayza J., Basañez L., Ferrer F., Huber R. and Torras C.: “*Robótica Industrial*”. Barcelona: MARCOMBO, 1986.
- [b.3] Torras C. (ed.): “*Computer Vision: Theory and Industrial Applications*”. Springer-Verlag: Berlin Heidelberg New-York, 1992.
- [b.4] Gini M., Shen W-M., Torras C. and Yuasa H. (eds.): “*Intelligent Autonomous Systems 7*”. IOS press: Amsterdam, 2002.
- [b.5] Alsinet T., Puyol-Gruart J. and Torras C. (eds.): “*Artificial Intelligence Research and Development*”. Proc. 11th Intl. Conf. of the Catalan Assoc. for AI. IOS press: Amsterdam, 2008.

6.2 Chapters in books

- [bc.1] Torras C.: “Concepto y perspectivas de la visión por computador”. Chapter 5 in “*Inteligencia Artificial: Introducción y situación en España*”, edited by R. Valle, J. Barberá and F. Ros, Report Series FUNDESCO, pp. 85-103, Nov. 1984.
- [bc.2] Basañez L. and Torras C.: “Planificación, control y supervisión de la ejecución en los robots industriales”. Chapter 27 in “*Sistemas de CAD/CAM/CAE*”, edited by J. Mompín, MARCOMBO, 1986.
- [bc.3] Torras C.: “Planificación para la resolución de problemas”. Chapter 4 in “*Inteligencia Artificial: Conceptos, Técnicas y Aplicaciones*”, edited by J. Mompín, MARCOMBO, 1987.
- [bc.4] Torras C. and Sanfeliu A.: “Sistemas expertos para la industria”. Chapter 10 in “*Inteligencia Artificial: Conceptos, Técnicas y Aplicaciones*”, edited by J. Mompín, MARCOMBO, 1987.
- [bc.5] Torras C.: “Exploring three possibilities in network design: Spontaneous node activity, node plasticity and temporal coding”. In “*Neural Computers*”, edited by R. Eckmiller and C. von der Malsburg, pp. 301-310, Springer-Verlag, 1988.
- [bc.6] Torras C.: “Sensorimotor integration in robots”. In “*Visuomotor Coordination: Experiments, Comparisons, Models and Robots*”, edited by P. Ewert and M.A. Arbib, pp. 673-689, Plenum Press, 1989.

- [bc.7] Torras C.: “Planning for problem solving: A survey”. In *“AI and Expert Systems in Scientific Computing”*, IMACS Transactions Series, edited by R.M. Huber, C. Kulikowski, J.M. David and J.P. Krivine, IMACS Transactions Series, Baltzer Scientific Publishing Co., 1989.
- [bc.8] Torras C.: “Neuronal Oscillators: Experiments and Models”. In *“Statistical Mechanics and Neural Networks” (Proc. of the XI Sitges Conference)*, edited by L. Garrido, Lecture Notes in Physics, pp. 65-79, Springer-Verlag, 1990.
- [bc.9] Torras C.: “Neural Learning Algorithms and their Applications in Robotics”. In *“Self-organization, Emergent Properties, and Learning”*, edited by A. Babloyantz, pp. 161-176, Plenum Press, 1991.
- [bc.10] Torras C.: “Robot Motion Planning: A Survey”. In *“Teleoperation: Numerical Simulation and Experimental Validation”*, edited by M.C. Becquet, Eurocourses: Computer and Information Science, Vol. 4, pp. 27-39, Kluwer Academic Publishers: Dordrecht Boston London, 1992.
- [bc.11] Millán J. del R., Torras C., and Becquet M.C.: “Autonomous Mobile Robots and Teleoperation”. In *“Teleoperation: Numerical Simulation and Experimental Validation”*, edited by M.C. Becquet, Eurocourses: Computer and Information Science, Vol. 4, pp. 41-53, Kluwer Academic Publishers: Dordrecht Boston London, 1992.
- [bc.12] Torras C.: “Segmentation”. In *“Computer Vision: Theory and Industrial Applications”*, edited by C. Torras, Springer-Verlag: Berlin Heidelberg New-York, pp. 59-95, 1992.
- [bc.13] Torras C.: “Symbolic Planning versus Neural Control in Robots”. In *“Neuroscience: From Neural Networks to Artificial Intelligence”*, edited by P. Rudomín, M.A. Arbib, F. Cervantes-Pérez and R. Romo, Research Notes in Neural Computing, Vol. 4, pp. 509-523, Springer-Verlag: Berlin Heidelberg New-York, 1993.
- [bc.14] Celaya E. and Torras C.: “On Finding the Set of Inverse Kinematic Solutions for Redundant Manipulators”. In *“Computational Kinematics”*, edited by J. Angeles, G. Hommel and P. Kovács, Kluwer Academic Publishers, pp. 85-94, 1993.
- [bc.15] Thomas F. and Torras C.: “Positional inverse kinematic problems in $T^n \times \mathfrak{R}^m$ solved in $T^{2(n+m)}$ ”. In *“Advances in Robot Kinematics”*, edited by J. Lenarcic and B. Ravani, pp. 291-300, Kluwer Academic Publishers, 1994.
- [bc.16] Torras C.: “Robot Adaptivity”. In *“The Biology and Technology of Intelligent Autonomous Agents”*, edited by L. Steels, NATO ASI Series F, Vol. 144, pp. 53-71, Springer-Verlag: Berlin Heidelberg New York, 1995.
- [bc.17] Torras C.: “Robot Control”. In *“Handbook of Brain Theory and Neural Networks”*, edited by M.A. Arbib, MIT Press: Cambridge, Massachusetts, pp. 820-823, 1995.
- [bc.18] Torras C.: “Aplicaciones de las redes neuronales en robótica”. In *“Computación Neuronal”*, edited by S. Barro and J. Mira, pp. 479-498, Publicaciones de la Universidade de Santiago de Compostela, 1995.

- [bc.19] Jiménez P. and Torras C.: “Collision detection: a geometric approach”. In *“Modelling and Planning for Sensor-Based Intelligent Robot Systems”*, edited by H. Bunke, T. Kanade and H. Noltemeier, pp. 68-85, World Scientific, 1995.
- [bc.20] Millán J. del R. and Torras C.: “Efficient reinforcement learning of navigation strategies in an autonomous robot”. In *“Intelligent Robots and Systems”*, edited by V. Graefe, pp. 185-200, Elsevier, 1995.
- [bc.21] Jiménez P., Thomas F. and Torras C.: “Collision detection algorithms for motion planning”. In *“Robot Motion Planning and Control”*, edited by J-P. Laumond, Lecture Notes in Control and Information Sciences, vol. 229, pp. 305-343, Springer-Verlag, 1998.
- [bc.22] Ruiz de Angulo V. and Torras C.: “Learning of Nonstationary Processes”. In *“Neural Network Systems, Techniques and Applications”*, Vol. 2: “Optimization Techniques”, edited by C.T. Leondes, pp. 175-207, Series in “Advances in Control and Dynamic Systems”, Academic Press, 1998.
- [bc.23] Torras C., Wells G. and Cembrano G.: “Redes Neuronales”. In *“Reconocimiento de Formas y Análisis de Imágenes”* (electronic edition in CDROM), edited by J. Vitrià and A. Sanfeliu, AERFAI, ISBN 84-922529-4-4, 1998.
- [bc.24] Millán J. del R. and Torras C.: “Learning sensor-based navigation”. In *“Making Robots Smarter: Combining Sensing and Action through Robot Learning”*, edited by K. Morik, M. Kaiser and V. Klingspor, pp. 85-108, Kluwer Academic Publisher: Boston, MA, ISBN 0-7923-8562-4, 1999.
- [bc.25] Torras C.: “Robot arm control”. In *“Handbook of Brain Theory and Neural Networks” - 2nd edition*, edited by M.A. Arbib, pp. 979-983, MIT Press: Cambridge, Massachusetts, 2003.
- [bc.26] Alenyà G. and Torras C.: “Robot egomotion from the deformation of active contours”. In *“Mobile Robots, Perception and Navigation”*, edited by S. Kolski, pp. 1-18, pro Literatur Verlag, 2007.
- [bc.27] Celaya E., Albarral J.L., Jiménez P. and Torras C.: “Visually-guided robot navigation: From artificial to natural landmarks”. In *“Field and Service Robotics”*, edited by C. Laugier and R. Siegwart, *STAR Series* No. 42, pp. 287-296, Springer-Verlag, 2008.
- [bc.28] Torras C.: “Comentario al aforismo 74”. In *“El arte de aprender. Soluciones desde la prudencia”*, pp. 74-75. Fundación EOI, Spanish Ministry of Industry, Energy and Tourism, 2011.
- [bc.29] Ballesté F. and Torras C.: “Effects of Human-Machine Integration on the Construction of Identity”. In *“Handbook of Research on Technoself: Identity in a Technological Society”*, edited by R. Luppici, pp. 574-591. Hershey: Idea Group Publishing, 2013.
- [bc.30] Colomé A. and Torras C.: “Positioning two Redundant Arms for Cooperative Manipulation of Objects”. In *“Computational Kinematics”*, edited by F. Thomas and A. Pérez, *Mechanisms and Machine Science* No. 15, pp. 121-129, Springer, 2014.
- [bc.31] Alenyà G., Foix S. and Torras C.: “ToF cameras for eye-in-hand robotics”. In *“Optical Imaging Devices: New Technologies and Applications”*, edited by K. Yallup and K. Iniewski, pp. 117-147. CRC Press - Francis Taylor Group, 2015.

[bc.32] Torras C.: “Robot pain: A speculative review of its functions”. In *“Pain and the Conscious Brain”*, edited by L. García-Larrea and Ph. L. Jackson, pp. 235-246. Wolters Kluwer, 2016.

6.3 International Journals

[ij.1] Torras C.: “Pacemaker neuron model with plastic firing rate: Entrainment and learning ranges”. **Biological Cybernetics**, vol. 52, num. 2, pp. 79-91, 1985.

[ij.2] Torras C.: “Entrainment in pacemakers characterized by a V-shaped PRC”. **Journal of Mathematical Biology**, vol. 24, pp. 291-312, 1986.

[ij.3] Torras C.: “Neural network model with rhythm assimilation capacity”. **IEEE Transactions on Systems, Man and Cybernetics**, vol. 16, num. 5, pp. 680-693, Sept/Oct. 1986.

[ij.4] Torras C.: “On the relationship between two models of neural entrainment”. **Biological Cybernetics**, vol. 57, num. 4-5, pp. 313-319, 1987.

[ij.5] Thomas F. and Torras C.: “A group theoretic approach to the computation of symbolic part relations”. **IEEE Journal on Robotics and Automation**, vol. 4, num 6, pp. 622-634, Dec. 1988.

[ij.6] Torras C.: “Relaxation and neural learning: Points of convergence and divergence”. **Journal of Parallel and Distributed Computing**, vol. 6, pp. 217-244, 1989.

[ij.7] Basañez L., Torras C., Ilari J. and Sanfeliu A.: “Operation specialists for automatic programming and monitoring of robotic assembly cells”. **Journal of Robotics and Computer-Integrated Manufacturing**, vol. 6, num. 4, pp. 269-276, 1989.

[ij.8] Ilari J. and Torras C.: “2D path planning: A configuration space heuristic approach”. **The International Journal of Robotics Research**, vol. 9, num. 1, pp. 75-91, Feb. 1990.

[ij.9] Bofill P., Millán J. del R. and Torras C.: “Short-term and long-term optimization in neural networks: Two applications”. *Revista de Matemáticas Aplicadas*, vol. 12, pp. 63-72, Universidad de Chile, 1991.

[ij.10] Thomas F. and Torras C.: “Inferring feasible assemblies from spatial constraints”. **IEEE Trans. on Robotics and Automation**, vol. 8, num. 2, pp. 228-239, April 1992.

[ij.11] Millán J. del R. and Torras C.: “A reinforcement learning connectionist approach to robot path finding in non-maze-like environments”. **Machine Learning**, vol. 8, num. 3/4, pp. 363-395, May 1992.

[ij.12] Torras C.: “From geometric motion planning to neural motor control in robotics”. **AI Communications**, vol. 6, num. 1, pp. 3-17, March 1993.

[ij.13] Celaya E. and Torras C.: “Solving multi-loop linkages with limited-range joints”. **Mechanism and Machine Theory**, vol. 29, num. 3, pp. 373-391, April 1994.

- [ij.14] Ruiz de Angulo V. and Torras C.: “On-line learning with minimal degradation in feed-forward networks”. **IEEE Trans. on Neural Networks**, vol. 6, num. 3, pp. 657-668, May 1995.
- [ij.15] Torras C.: “Robot adaptivity”. **Journal of Robotics and Autonomous Systems**, vol. 15, pp. 11-23, 1995.
- [ij.16] Bofill P., Fontdecaba E. and Torras C.: “Optimization networks for the generation of Block Designs”. *Journal of Artificial Neural Networks*, vol. 2, num. 4, pp. 303-312, 1995.
- [ij.17] Wells G., Venaille C. and Torras C.: “Vision-based robot positioning using neural networks”. **Image and Vision Computing**, vol. 14, pp. 715-732, Dec. 1996.
- [ij.18] Ruiz de Angulo V. and Torras C.: “Self-calibration of a space robot”. **IEEE Trans. on Neural Networks**, Special Issue on “Everyday Applications of Neural Networks”, vol. 8, num. 4, pp. 951-963, July 1997.
- [ij.19] Torras C.: “On adaptive robots” (guest editorial). **Connection Science**, vol. 11, num. 3/4, pp. 221-224, Dec. 1999.
- [ij.20] Griñó R., Cembrano G. and Torras C.: “Nonlinear system identification using additive dynamic neural networks. Two on-line approaches”. **IEEE Trans. on Circuits and Systems I: Fundamental Theory and Applications**, vol. 47, num. 2, pp. 150-165, Feb. 2000.
- [ij.21] Jiménez P. and Torras C.: “An efficient algorithm for searching implicit AND/OR graphs with cycles”. **Artificial Intelligence**, vol. 124, num. 1, pp. 1-30, Nov. 2000.
- [ij.22] Ruiz de Angulo V. and Torras C.: “A framework to deal with interference in connectionist systems”. **AI Communications**, vol. 13, num. 4, pp. 259-274, 2000.
- [ij.23] Todt E. and Torras C.: “Visual attention for the detection of natural outdoor landmarks”. **Intl. Journal of Psychology**, vol. 35, num 3/4, pp. 236, 2000.
- [ij.24] Wells G. and Torras C.: “Assessing image features for vision-based robot positioning”. **Journal of Intelligent and Robotic Systems**, vol. 30, num. 1, pp. 95-118, Jan. 2001.
- [ij.25] Bofill P. and Torras C.: “Neural cost functions and search strategies for the generation of block designs: An experimental evaluation”. **Intl. Journal of Neural Systems**, vol. 11, num. 2, pp. 187-202, April 2001.
- [ij.26] Jiménez P., Thomas F. and Torras C.: “3D collision detection: a survey”. **Computers and Graphics**, vol. 25, num. 2, pp. 269-285, April 2001.
- [ij.27] Ruiz de Angulo V. and Torras C.: “Architecture-independent approximation of functions”. **Neural Computation**, vol. 13, num. 5, pp. 1119-1135, May 2001.
- [ij.28] Meseguer P. and Torras C.: “Exploiting symmetries in constraint satisfaction search”. **Artificial Intelligence**, Special Issue on “Heuristic Search”, vol. 129, num. 1/2, pp. 133-163, June 2001.
- [ij.29] Jiménez P. and Torras C.: “An orientation-based pruning tool to speed up contact determination between translating polyhedral models”. **The Intl. Journal of Robotics Research**, vol. 20, num. 6, pp. 466-483, June 2001.

- [ij.30] Martínez E. and Torras C.: “Qualitative vision for the guidance of legged robots in unstructured environments”. **Pattern Recognition**, Special issue on “Data and information fusion in image processing and computer vision”, vol. 34, num. 8, pp. 1585-1599, Aug. 2001.
- [ij.31] Torras C.: “Artificial Intelligence and Neural Networks: Guest Editor’s Introduction”. *Intl. Journal of Computational Intelligence and Applications*, vol. 1, num. 4, pp. iii-v, Dec. 2001.
- [ij.32] Ruiz de Angulo V. and Torras C.: “A deterministic algorithm that emulates learning with random weights”. **Neurocomputing**, vol. 48, num. 1-4, pp. 975-1002, Oct. 2002.
- [ij.33] Thomas F. and Torras C.: “A projectively invariant intersection test for polyhedra”. **The Visual Computer**, vol. 18, num. 7, pp. 405-414, Nov. 2002.
- [ij.34] Torras C.: “Neural computing increases robot adaptivity”. **Natural Computing**, vol. 1, num. 4, pp. 391-425, Dec. 2002.
- [ij.35] Jiménez P. and Torras C.: “Reducing feasible contacts between polyhedral models to red-blue intersections on the sphere”. **Computer-Aided Design**, vol. 35, num. 7, pp. 693-705, June 2003.
- [ij.36] Gini M., Shen W-M. and Torras C.: “Intelligent Autonomous Systems 7: Guest Editor’s Introduction”. **Robotics and Autonomous Systems**, vol. 44, num. 3/4, pp. 165-167, Sept. 2003.
- [ij.37] Martínez E. and Torras C.: “Contour-based 3D motion recovery while zooming”. **Robotics and Autonomous Systems**, vol. 44, num. 3/4, pp. 219-227, Sept. 2003.
- [ij.38] Guimerà R., Bofill P. and Torras C.: “Comparison of Simulated Annealing and Mean Field Annealing as applied to the generation of Block Designs”. **Neural Networks**, vol. 16, num. 10, pp. 1421-1428, Dec. 2003.
- [ij.39] Alenyà G., Martínez E. and Torras C.: “Fusing visual and inertial sensing to recover robot egomotion”. **Journal of Robotic Systems**, vol. 21, num. 1, pp. 23-32, Jan. 2004.
- [ij.40] Ruiz de Angulo V. and Torras C.: “Neural learning methods yielding functional invariance”. **Theoretical Computer Science**, vol. 320, num. 1, pp. 111-121, June 2004.
- [ij.41] Bofill P. and Torras C.: “MBMUDs: A combinatorial extension of BIBDs showing good optimality behaviour”. **Journal of Statistical Planning and Inference**, vol. 124, num. 1, pp. 185-204, Aug. 2004.
- [ij.42] Todt E. and Torras C.: “Detecting salient cues through illumination-invariant color ratios”. **Robotics and Autonomous Systems**, vol. 48, num. 2-3, pp. 111-130, Sept. 2004.
- [ij.43] Porta J.M., Thomas F., Ros Ll. and Torras C.: “A branch-and-prune solver for distance constraints”. **IEEE Trans. on Robotics**, vol. 21, num. 2, pp. 176-187, April 2005.
- [ij.44] Ruiz de Angulo V. and Torras C.: “Speeding up the learning of robot kinematics through function decomposition”. **IEEE Trans. on Neural Networks**, vol. 16, num. 6, pp. 1504-1512, Nov. 2005.

- [ij.45] Torras C., Thomas F. and Alberich-Carramiñana M.: “Stratifying the singularity loci of a class of parallel manipulators”. **IEEE Trans. on Robotics**, vol. 22, num. 1, pp. 23-32, Feb. 2006.
- [ij.46] Jiménez P. and Torras C.: “A distance bound for nonconvex polyhedral models in close proximity”. **Journal of Robotic Systems**, vol. 22, num. S1, pp. 35-50, Sept. 2006.
- [ij.47] Alberich-Carramiñana M., Thomas F. and Torras C.: “Flagged parallel manipulators”. **IEEE Trans. on Robotics**, vol. 23, num. 5, pp. 1013-1023, Oct. 2007.
- [ij.48] Alberich-Carramiñana M., Alenyà G., Andrade-Cetto J., Martínez E. and Torras C.: “Recovering epipolar direction from two affine views of a planar object”. **Computer Vision and Image Understanding**, vol. 112, pp. 195-209, 2008.
- [ij.49] Ruiz de Angulo V. and Torras C.: “Learning Inverse Kinematics: Reduced Sampling through Decomposition into Virtual Robots”. **IEEE Trans. on Systems, Man and Cybernetics - Part B**, vol. 38, pp. 1571-1577, 2008.
- [ij.50] Ruiz de Angulo V. and Torras C.: “Exploiting single-cycle symmetries in continuous constraint problems”. **J. of Artificial Intelligence Research**, vol. 34, pp. 499-520, March 2009.
- [ij.51] Alberich-Carramiñana M., González V., Thomas F. and Torras C.: “Stratifications of the Euclidean motion group with applications to robotics”. **Geometriae Dedicata**, vol. 141, num. 1, pp. 19-32, Aug. 2009.
- [ij.52] Alberich-Carramiñana M., Garolera M., Thomas F. and Torras C.: “Partially-flagged parallel manipulators: singularity charting and avoidance”. **IEEE Trans. on Robotics**, vol. 25, num. 4, pp. 771-784, Aug. 2009.
- [ij.53] Borràs J., Thomas F. and Torras C.: “On Δ -transforms”. **IEEE Trans. on Robotics**, vol. 25, num. 6, pp. 1225-1236, Dec. 2009.
- [ij.54] Alenyà G. and Torras C.: “Camera motion estimation by tracking contour deformation: Precision analysis”. **Image and Vision Computing**, vol. 28, pp. 474-490, March 2010.
- [ij.55] Torras C.: “Robbie, the pioneer robot nanny: Science fiction helps develop ethical social opinion”. **J. of Interaction Studies**, vol. 11, num. 2, pp. 269-273, July 2010.
- [ij.56] Foix S., Alenyà G. and Torras C.: “Lock-in Time-of-Flight (ToF) Cameras: A Survey”. **IEEE Sensors**, vol. 11, num. 9, pp. 1917-1926, 2011.
- [ij.57] Borràs J., Thomas F. and Torras C.: “Architectural Singularities of a Class of Pentapods”. **Mechanism and Machine Theory**, vol. 46, num. 8, pp. 1107-1120, 2011.
- [ij.58] Borràs J., Thomas F. and Torras C.: “Singularity-invariant Families of 5-SPU Platforms”. **IEEE Trans. on Robotics**, vol. 27, num. 5, pp. 837-848, 2011.
- [ij.59] Ulbrich S., Ruiz de Angulo V., Asfour T., Torras C. and Dillmann R.: “General Robot Kinematics Decomposition without Intermediate Markers”. **IEEE Trans. on Neural Networks and Learning Systems**, vol. 23, num. 4, pp. 620-630, 2012.

- [ij.60] Ulbrich S., Ruiz de Angulo V., Asfour T., Torras C. and Dillmann R.: “Kinematic Bézier Maps”. **IEEE Trans. on Systems, Man and Cybernetics - Part B**, vol. 42, num. 4, pp. 1215-1230, 2012.
- [ij.61] Díaz J. and Torras C.: “A personal account of Turings imprint on the development of Computer Science”. **Computer Science Review**, vol. 6, num. 5, pp. 225-234, 2012.
- [ij.62] Rozo L., Jiménez P. and Torras C.: “A robot learning from demonstration framework to perform force-based manipulation tasks”. **Intelligent Service Robotics**, vol. 6, num. 1, pp. 33-51, 2013.
- [ij.63] Todt E. and Torras C.: “Outdoor view recognition based on landmark grouping and logistic regression”. **Intl. J. of Pattern Recognition and Artificial Intelligence**, vol. 27, num. 3, pp. 1-21, 2013.
- [ij.64] Dellen B. and Torras C.: “Local stimulus disambiguation with global motion filters predicts adaptive surround modulation”. **Neural Networks**, vol. 46, pp. 32-39, 2013.
- [ij.65] Alenyà G., Dellen B., Foix S. and Torras C.: “Robotized Plant Probing: Leaf segmentation utilizing time-of-flight data”. **IEEE Robotics and Automation Magazine**, vol. 20, num. 3, pp. 50-59, 2013.
- [ij.66] Borràs J., Thomas F. and Torras C.: “New Geometric Approaches to the Analysis and Design of Stewart-Gough Platforms”. **IEEE/ASME Trans. on Mechatronics**, vol. 19, num. 2, pp. 445-455, 2014.
- [ij.67] Alenyà G., Foix S. and Torras C.: “Using ToF and RGBD cameras for 3D robot perception and manipulation in human environments”. **Intelligent Service Robotics**, vol. 7, num. 4, pp. 211-220, 2014.
- [ij.68] Ramisa A., Alenyà G., Moreno-Noguer F. and Torras C.: “Learning RGB-D descriptors of garment parts for informed robot grasping”. **Engineering Applications of Artificial Intelligence**, vol. 35, pp. 246-258, 2014.
- [ij.69] Alenyà G., Foix S. and Torras C.: “ToF cameras for active vision in robotics”. **Sensors and Actuators A: Physical**, vol. 218, pp. 10-22, 2014.
- [ij.70] Agostini A., Torras C. and Woergoetter F.: “Learning weakly correlated cause-effects for gardening with a cognitive system”, **Engineering Applications of Artificial Intelligence**, vol. 36, pp. 178-194, 2014.
- [ij.71] Husain F., Dellen B. and Torras C.: “Robust surface tracking in range image sequences”. **Digital Signal Processing**, vol. 35, pp. 37-44, 2014.
- [ij.72] Colomé A. and Torras C.: “Closed-loop inverse kinematics for redundant robots: Comparative assessment and two enhancements”. **IEEE/ASME Transactions on Mechatronics**, vol. 20, num. 2, pp. 944-955, 2015.
- [ij.73] Martínez D., Alenyà G. and Torras C.: “Planning robot manipulation to clean planar surfaces”. **Engineering Applications of Artificial Intelligence**, vol. 39, pp. 23-32, 2015.

- [ij.74] Husain F., Dellen B. and Torras C.: “Consistent depth video segmentation using adaptive surface models”. **IEEE Transactions on Cybernetics**, vol. 45, num. 2, pp. 266-278, 2015.
- [ij.75] Goldsztejn A., Jermann C., Ruiz de Angulo V. and Torras C.: “Variable symmetry breaking in numerical constraint problems”. **Artificial Intelligence**, vol. 229, pp. 105-125, 2015.
- [ij.76] Simó-Serra E., Torras C. and Moreno-Noguer F.: “DaLI: Deformation and Light Invariant Descriptor”. **Intl. Journal of Computer Vision**, vol. 115, num. 2, pp. 136-154, 2015.
- [ij.77] Dellen B., Scharr H. and Torras C.: “Growth signatures of rosette plants from time-lapse video”. **IEEE/ACM Transactions on Computational Biology and Bioinformatics**, vol. 12, num. 6, pp. 1470-1478, 2015.
- [ij.78] Hoyos J.G., Prieto F., Alenyà G. and Torras C.: “Incremental learning of skills in a task-parameterized Gaussian mixture model”. **Journal of Intelligent and Robotic Systems**, vol. 82, num. 1, pp. 81-99, 2016.
- [ij.79] Torras C.: “Service robots for citizens of the future”. **European Review**, vol. 24, num. 1, pp. 17-30, 2016.
- [ij.80] Husain F., Dellen B. and Torras C.: “Action recognition based on efficient deep feature learning in the spatio-temporal domain”. **IEEE Robotics and Automation Letters**, vol. 1, num. 2, pp. 984-991, 2016.
- [ij.81] Hoyos J.G., Prieto F., Alenyà G. and Torras C.: “Execution Fault Recovery in Robot Programming by Demonstration Using Multiple Models”. *IEEE Latin America Transactions*, vol. 14, num. 2, pp. 517-523, 2016.
- [ij.82] Rozo L., Calinon S., Caldwell D., Jiménez P. and Torras C.: “Learning physical collaborative robot behaviors from human demonstrations”. **IEEE Transactions on Robotics**, vol. 32, num. 3, pp. 513-527, 2016.
- [ij.83] Ramisa A., Alenyà G., Moreno-Noguer F. and Torras C.: “A 3D descriptor to detect task-oriented grasping points in clothing”. **Pattern Recognition**, vol. 60, pp. 936-948, 2016.
- [ij.84] Simó-Serra E., Torras C. and Moreno-Noguer F.: “3D Human Pose Tracking Priors using Geodesic Mixture Models”. **Intl. Journal of Computer Vision**, doi: 10.1007/s11263-016-0941-2, 2016.
- [ij.85] Martínez D., Alenyà G. and Torras C.: “Relational reinforcement learning with guided demonstrations”. **Artificial Intelligence**, Special Issue on “AI and Robotics”, to appear, 2016.
- [ij.86] Agostini A., Torras C. and Woergoetter F.: “Efficient interactive decision-making framework for robotic applications”. **Artificial Intelligence**, Special Issue on “AI and Robotics”, to appear, 2016.
- [ij.87] Husain F., Schulz H., Dellen B., Torras C. and Behnke S.: “Combining semantic and geometric features for object class segmentation of indoor scenes”. **IEEE Robotics and Automation Letters**, vol. 2, num. 1, pp. 49-55, 2017.

6.4 National Journals

- [nj.1] Torras C. and García Larrea L.J.: “El cervell dividit” *Quaderns*, num. 11, pp. 27-31, Dec. 1981.
- [nj.2] Basañez L., Huber R., Juan J. and Torras C.: “Percepción visual en robótica: Técnicas y algoritmos”. *Regulación y Mando Automático*, num. 114, pp. 43-54, Dec. 1981.
- [nj.3] Basañez L. and Torras C.: “Correspondencia por barrido: Una técnica de tratamiento de imágenes para la visión en robótica”. *Revista de Robótica*, num. 2, pp. 23-25, Dec. 1982.
- [nj.4] Amat J., Basañez L. and Torras C.: “Sistemas de visión tridimensional en los robots industriales: Obtención de distancias y extracción de superficies”. *Mundo Electrónico*, num. 130, pp. 71-78, June 1983.
- [nj.5] Sanfeliu A. and Torras C.: “Cooperación visión-robot en tareas de ensamblaje”. *Deformación Metálica*, num. 102, pp. 46-53, Jan. 1985.
- [nj.6] Torras C.: “Conversió de TFD’s i convolucions circulars bidimensionals en unidimensionals”. *Butlletí de la Societat Catalana de Ciències*, vol. V, pp. 177-209, June 1985.
- [nj.7] Torras C. and Thomas F.: “Sistemas de visión para la industria”. *Automática e Instrumentación*, num. 154, pp. 91-100, Dec. 1985.
- [nj.8] Torras C.: “Cap a una nova generació de robots”. *Butlletí de la Societat Catalana de Ciències*, vol. VIII, pp. 67-72, Dec. 1986.
- [nj.9] Thomas F. and Torras C.: “Visión por computador: Técnicas, equipos y aplicaciones”. *Revista CIM*, num. 8, pp. 68-82, Feb./Mar. 1989.
- [nj.10] Torras C.: “Visión por computador”. *Revista LIBE*, año XVIII, num. 205, Mar. 1989.
- [nj.11] Torras C.: “Redes neuronales para el control de robots”. *Revista Arbor*, tomo CLI, num. 595, pp. 155-172, July 1995.
- [nj.12] Jiménez P. and Torras C.: “Evaluación de interferencia estática y dinámica entre modelos geométricos”, *Informática y Automática*, vol. 29, num. 2, pp. 3-21, June 1996.
- [nj.13] Torras C.: “Aprenentatge neuronal per al control de robots”. *Butlletí de l’Associació Catalana d’Intel·ligència Artificial (ACIA)*, num. 8, pp. 7-12, July 1996.
- [nj.14] Casacuberta F. and Torras C.: “Redes neuronales artificiales”. Introducción al número monográfico sobre este tema en la revista *Inteligencia Artificial*, num. 1, pp. 5-7, 1997.
- [nj.15] Díaz J. and Torras C.: “Turing’s algorithmic lens: From computability to complexity theory”. *Revista Arbor - Ciencia, Pensamiento y Cultura*, vol. 189, num. 764, 2013.
- [nj.16] Torras C.: “Social robots: A meeting point between science and fiction”. *Mètode Science Studies Journal*, vol. 82, 2014.

6.5 International Conferences

Prof. Torras has published in the major conferences in the following three areas:

Robotics: 22 ICRA, 8 IROS, 2 Humanoids, 2 ICAR, 2 ICSR, RSS. In particular, she has at least one paper in all ICRA conferences for the last ten years (13 contributions of the 22).

Computer Vision: 5 ICPR, 2 CVPR, 2 ACIVS, 2 VISAPP, MVA, BMVC, WACV.

Artificial Intelligence: 6 ICANN, 3 ECAI, 2 IJCAI, 2 CP, AAAI, ICAPS, ICML.

- [ic.1] Torras C.: “A pacemaker model which displays phase-shifts, entrainment and plasticity in its firing pattern” (abstract). *Symposium “Cajal”: Horizons in Neuroscience*, Valencia, pag. 64, March 1982.
- [ic.2] Basañez L. and Torras C.: “The sweep mapping: A way to perform digital image processing for robot vision”. *12th Int. Symposium on Industrial Robots (ISIR)*, Paris, pp. 99-109, June 1982.
- [ic.3] Torras C.: “Modelling and simulation of a plastic pacemaker neuron”. *2nd World Conference on Mathematics at the Service of Man*, Las Palmas, pp. 633-640, June 1982.
- [ic.4] Basañez L. and Torras C.: “The sweep mapping in robot vision: Properties and computational savings”. *3rd IFAC-IFIP Int. Symposium on Software for Computer Control (SOCOCO)*, Madrid, pp. 73-78, Oct. 1982.
- [ic.5] Ilari J., Torras C. and Huber R.: “Tree-graph model of free-space for global collision-avoidance algorithms” (abstract). *SIAM Conference on Geometric Modelling and Robotics*, Albany, New York, pag. A18, July 1985.
- [ic.6] Torras C.: “La investigación en robótica en el Instituto de Cibernética: Visión y planificación”. *Journées Hispano-Françaises sur la Communication: “Nouvelles Technologies, Nouvelle Culture”*, Instituto Francés, Barcelona, edited by Agregaduría Científica of the French Embassy in Spain, pp. 45-54, Nov. 1985.
- [ic.7] Torras C. and Thomas F.: “Planning with constraints: Application to sensor-based robot assembly tasks”. *1st IFAC Symposium on Robot Control (SYROCO)*, Barcelona, pp. 453-456, Nov. 1985.
- [ic.8] Sanfeliu A., Torras C., Font J. and Ruiz J.: “Active-recognition system for the acquisition of overlapping partially-hidden workpieces”. *1st IFAC Symposium on Robot Control (SYROCO)*, Barcelona, pp. 355-359, Nov. 1985.
- [ic.9] Ilari J., Huber R. and Torras C.: “Applying a tree-graph model of free-space to the global search of collision-free paths”. *1st IFAC Symposium on Robot Control (SYROCO)*, Barcelona, pp. 463-465, Nov. 1985.
- [ic.10] Torras C.: “Automatic Planning of Assembly Robot Tasks”. *2èmes Journées INRIA - Universitat Politècnica de Catalunya sur Informatique et Robotique*, Rapport IRISA, edited by M. Banâtre, pp. 107-118, Nov. 1986.

- [ic.11] Ilari J. and Torras C.: “The classical 2D find-path problem: Improving search efficiency by using orientation heuristics”. *SPIE Symposium on “Advances in Intelligent Robotic Systems”*, Nov. 1987.
- [ic.12] Ruiz J. and Torras C.: “Extensión del algoritmo CF para que contemple ciclos en un cierto tipo de grafos Y/O”. *1er Congreso Iberoamericano de Inteligencia Artificial (IBERAM-IA)*, Barcelona, Jan. 1988.
- [ic.13] Avila F. and Torras C.: “Propuesta de un sistema para la planificación y monitorización de la aprehensión de piezas por un robot” (poster). *1er Congreso Iberoamericano de Inteligencia Artificial (IBERAM-IA)*, Barcelona, Jan. 1988.
- [ic.14] Thomas F. and Torras C.: “Constraint-based inference of assembly configurations”. **IEEE Conference on Robotics and Automation (ICRA’88)**, Philadelphia, April 1988.
- [ic.15] Basañez L., Kelley R.B., Moed M. and Torras C.: “A least-commitment approach to intelligent robotic assembly”. **IEEE Conference on Robotics and Automation (ICRA’88)**, Philadelphia, April 1988.
- [ic.16] Basañez L., Torras C., Sanfeliu A. and Ilari J.: “Automatic cell programming and monitoring through the cooperative interplay of operation specialists”. *2nd Int. Symp. on Robotics and Manufacturing: Research, Education and Applications*, Albuquerque, Nov. 1988.
- [ic.17] Torras C. and Bofill P.: “A neural solution to finding optimal multibus interconnection networks”. *Proc. IX Conf. of the Chilean Computer Science Society and XV Latinoamerican Conference on Informatics*, vol. 1, pp. 446-454, July 1989.
- [ic.18] Celaya E. and Torras C.: “Finding object configurations that satisfy spatial relationships”. **Proc. 9th European Conference on Artificial Intelligence (ECAI’90)**, pp. 91-96, Stockholm, Aug. 1990.
- [ic.19] Millán J. del R. and Torras C.: “Reinforcement learning: Discovering stable solutions in the robot path finding domain”. **Proc. 9th European Conference on Artificial Intelligence (ECAI’90)**, pp. 219-221, Stockholm, Aug. 1990.
- [ic.20] Iberall T., Torras C. and MacKenzie C.: “Parameterizing prehension: A mathematical model of opposition space”. *Proc. 3rd. COGNITIVA*, pp. 271-278, Madrid, Nov. 1990.
- [ic.21] Millán J. del R. and Torras C.: “Reinforcement learning in robot path finding: A comparative study”. *Proc. 3rd. COGNITIVA*, pp. 123-131, Madrid, Nov. 1990.
- [ic.22] Torras C.: “Motion planning and control: Symbolic and neural levels of computation”. *Proc. 3rd. COGNITIVA*, pp. 207-218, Madrid, Nov. 1990.
- [ic.23] Millán J. del R. and Torras C.: “Learning to avoid obstacles through reinforcement”. **Proc. 8th Intl. Workshop on Machine Learning**, pp. 298-302, Evanston, Illinois, June 1991.
- [ic.24] Ruiz de Angulo V. and Torras C.: “Minimally Disturbing Learning”. *Proc. Intl. Workshop on Artificial Neural Networks*, pp. 162-172, Granada, Sept. 1991.

- [ic.25] Millán J. del R. and Torras C.: “Learning to avoid obstacles through reinforcement: Noise-tolerance, generalization and dynamic capabilities”. **IEEE/RSJ Intl. Conf. on Intelligent Robotics Systems (IROS’92)**, Raleigh, North Carolina, July 1992.
- [ic.26] Parsons D. and Torras C.: “The combinatorics of overlapping convex polygons in contact”. *Proc. 4th Canadian Conf. on Computational Geometry*, pp. 83-93, Sant John’s, Canada, Aug. 1992.
- [ic.27] Bofill P. and Torras C.: “Higher-order networks for the generation of block designs”. *Proc. 2nd Intl. Workshop on Artificial Neural Networks (IWANN’93)*, **Lecture Notes on Computer Science** No. 686, pp. 114-118, Springer-Verlag, June 1993.
- [ic.28] Bofill P. and Torras C.: “A second-order strategy for the optimization of block designs”. **Proc. World Conference on Neural Networks (WCNN’93)**, Vol. 4, pp. 323-327, Portland, INNS Press, July 1993.
- [ic.29] Thomas F. and Torras C.: “Interference detection between non-convex polyhedra revisited with a practical aim”. **Proc. IEEE Conf. on Robotics and Automation (ICRA’94)**, pp. 587-594, San Diego, May 1994.
- [ic.30] Ruiz de Angulo V. and Torras C.: “Random weights and regularization”. **Proc. Intl. Conf. on Artificial Neural Networks (ICANN’94)**, Sorrento, May 1994.
- [ic.31] Venaille C., Wells G. and Torras C.: “Application of neural networks to image-based control of robot arms”, *Proc. SICICA*, edited by Cs. Bányász, pp. 281-286, Budapest, June 1994.
- [ic.32] Torras C.: “Neural learning for robot control”. **Proc. 11th European Conf. on Artificial Intelligence (ECAI’94)**, edited by A. Cohn, pp. 814-819, Amsterdam, Aug. 1994.
- [ic.33] Millán J. del R. and Torras C.: “Efficient reinforcement learning of navigation strategies in an autonomous robot”. **Proc. Intl. Conf. on Intelligent Robotics Systems (IROS’94)**, Munchen, pp. 15-22, Sept. 1994.
- [ic.34] Cembrano G., Torras C. and Wells G.: “Neural networks in robot control”. *Proc. IFAC Symposium on Artificial Intelligence in Real-Time Control (AIRTIC’94)*, Valencia, pp. 159-166, Oct. 1994.
- [ic.35] Torras C., Cembrano G., Millán J. del R. and Wells G.: “Neural approaches to robot control: Four representative applications”. *Proc. 3rd Intl. Workshop on Artificial Neural Networks (IWANN’95)*, Málaga, **Lecture Notes in Computer Science** 930, pp. 1016-1035, June 1995.
- [ic.36] Torras C.: “Robot Neurocontrol: An Overview”. **Proc. Intl. Conf. on Artificial Neural Networks (ICANN’95)**, Paris, Vol. I, pp. 439-448, Oct. 1995.
- [ic.37] Jiménez P. and Torras C.: “Speeding up interference detection between polyhedra”. **Proc. IEEE Conf. on Robotics and Automation (ICRA’96)**, Minneapolis, pp. 1485-1492, April 1996.

- [ic.38] Ruiz de Angulo V. and Torras C.: “Automatic recalibration of a space robot: an industrial prototype”. **Proc. Intl. Conf. on Artificial Neural Networks (ICANN’96)**, Bochum, Alemania, **Lecture Notes in Computer Science** 1112, pp. 635-640, July 1996.
- [ic.39] Wells G., Venaille Ch. and Torras C.: “Vision-based robot positioning”. *Proc. 3rd Intl. Symp. on Methods and Models in Automation and Robotics (MMAR’96)*, Miedzydroje, Poland, pp. 899-908, Sept. 1996.
- [ic.40] Wells G. and Torras C.: “Selection of image features for robot positioning using mutual information”. **Proc. IEEE Intl. Conf. on Robotics and Automation (ICRA’98)**, Leuven, Belgium, pp. 2819-2826, May 1998.
- [ic.41] Ruiz de Angulo V. and Torras C.: “Quick learning of piecewise-linear approximations and its application to robot self-calibration” (two-page abstract). **Workshop on Learning**, Snowbird, Utah, April 1999.
- [ic.42] Jiménez P. and Torras C.: “Benefits of applicability constraints in decomposition-free interference detection between nonconvex polyhedral models”. **Proc. IEEE Intl. Conf. on Robotics and Automation (ICRA’99)**, Detroit, Michigan, pp. 1856-1862, May 1999.
- [ic.43] Meseguer P. and Torras C.: “Solving strategies for highly symmetric CSPs”. **Proc. Sixteenth Intl. Joint Conf. on Artificial Intelligence (IJCAI’99)**, Stockholm, pp. 400-405, Aug. 1999.
- [ic.44] Martínez E. and Torras C.: “Integration of appearance and geometric methods for the analysis of monocular sequences”. *Proc. IST/SPIE 12th Annual Symp. on Electronic Imaging*, San Jose, California, Jan. 2000.
- [ic.45] Todt E. and Torras C.: “Detection of natural landmarks through multiscale opponent features”. **Proc. 15th Intl. Conf. on Pattern Recognition (ICPR-2000)**, Barcelona, vol. 3, pp. 988-991, Sept. 2000.
- [ic.46] Martínez E. and Torras C.: “Epipolar geometry from the deformation of an active contour”. **Proc. 15th Intl. Conf. on Pattern Recognition (ICPR-2000)**, Barcelona, vol. 1, pp. 534-537, Sept. 2000.
- [ic.47] Torras C.: “Neuroadaptive robots”. **Proc. 15th Intl. Conf. on Pattern Recognition (ICPR-2000)**, Barcelona, vol. 2, pp. 172-177, Sept. 2000.
- [ic.48] Martínez E. and Torras C.: “Depth map from the combination of matched points with active contours”. **Proc. IEEE Intelligent Vehicles Symposium (IVS-2000)**, Dearborn, MI, USA, pp. 332-337, Oct. 2000.
- [ic.49] Ruiz de Angulo V. and Torras C.: “Neural learning invariant to network size changes”. **Proc. Intl. Conf. on Artificial Neural Networks (ICANN’01)**, Vienna, Austria, **Lecture Notes in Computer Science** 2130, pp. 33-40, Aug. 2001.
- [ic.50] Ruiz de Angulo V. and Torras C.: “Reducing 6D inverse kinematics to the learning of 3D functions”. *Proc. 9th European Workshop on Learning Robots (EWLR-9)*, Prague, Sept. 2001.

- [ic.51] Todt E. and Torras C.: “Color constancy for landmark detection in outdoor environments”. *Proc. 4th European Workshop on Advanced Mobile Robots (Eurobot’01)*, Lund, Sweden, pp. 75-82, Sept. 2001.
- [ic.52] Celaya E. and Torras C.: “Visual navigation outdoors: The ARGOS project”. 7th Intl. Conf. on Intelligent Autonomous Systems (IAS-7), Marina del Rey, California, March 2002. En “*Intelligent Autonomous Systems 7*”, editado por M. Gini, W-M. Shen, C. Torras and H. Yuasa, IOS Press, pp. 63-67, 2002.
- [ic.53] Martínez E. and Torras C.: “3D motion recovery while zooming using active contours”. 7th Intl. Conf. on Intelligent Autonomous Systems (IAS-7), Marina del Rey, California, March 2002. In “*Intelligent Autonomous Systems 7*”, editado por M. Gini, W-M. Shen, C. Torras and H. Yuasa, IOS Press, pp. 207-214, 2002.
- [ic.54] Porta J.M., Ros L., Thomas F. and Torras C.: “Solving multi-loop linkages by iterating 2D clippings”. 8th Intl. Symposium on Advances in Robot Kinematics (ARK-2002), Caldes de Malavella, Spain, Junio 2002. In “*Advances in Robot Kinematics - Theory and Applications*”, edited by J. Lenarcic and F. Thomas, Kluwer Academic Publishers, pp. 255-264, 2002.
- [ic.55] Ruiz de Angulo V. and Torras C.: “Learning inverse kinematics via cross-point function decomposition”. **Proc. Intl. Conf. on Artificial Neural Networks (ICANN-2002)**, Madrid, Spain, **Lecture Notes in Computer Science 2415**, pp. 856-861, Aug. 2002.
- [ic.56] Ruiz de Angulo V. and Torras C.: “Sequential learning in feedforward networks: proactive and retroactive interference minimization”. **Proc. Intl. Conf. on Artificial Neural Networks (ICANN-2002)**, Madrid, Spain, **Lecture Notes in Computer Science 2415**, pp. 1339-1344, Aug. 2002.
- [ic.57] Alenyà G., Martínez E. and Torras C.: “Fusing visual contour tracking with inertial sensing to recover robot egomotion”. **Proc. Intl. Conf. on Advanced Robotics (ICAR)**, Coimbra, Portugal, pp. 1891-1898, June 2003.
- [ic.58] Porta J.M., Thomas F., Ros L. and Torras C.: “A branch-and-prune algorithm for solving systems of distance constraints”. **Proc. IEEE Conf. on Robotics and Automation (ICRA’03)**, Taipei, Taiwan, Sept. 2003.
- [ic.59] Alenyà G., Escoda J., Martínez A.B. and Torras C.: “Using laser and vision to locate a robot in an industrial environment: A practical experience”. **Proc. IEEE Conf. on Robotics and Automation (ICRA’05)**, Barcelona, pp. 3539-3544, April 2005.
- [ic.60] Ruiz de Angulo V. and Torras C.: “Using PSOMs to Learn Inverse Kinematics through Virtual Decomposition of the Robot”. *Proc. 8th Intl. Work-Conference on Artificial Neural Networks (IWANN’2005)*, Vilanova i la Geltrú, **Lecture Notes in Computer Science 3512**, pp. 701-708, June 2005.
- [ic.61] Todt E. and Torras C.: “Color-contrast landmark detection and encoding in outdoor images”. *Proc. 11th Intl. Conf. on Computer Analysis of Images and Patterns (CAIP-2005)*, INRIA Rocquencourt, **Lecture Notes in Computer Science 3691**, pp. 612-619, Sept. 2005.

- [ic.62] Torras C.: “Natural inspiration for artificial adaptivity: some neurocomputing experiences in robotics”. *Proc. 4th Intl. Conf. on Unconventional Computation (UC’05)*, Sevilla, **Lecture Notes in Computer Science** 3699, pp. 32-45, Oct. 2005.
- [ic.63] Alberich-Carramiñana M., Thomas F. and Torras C.: “On redundant flagged manipulators”. **Proc. IEEE Intl. Conf. on Robotics and Automation (ICRA’06)**, Orlando, Florida, pp. 783-789, May 2006.
- [ic.64] Alberich-Carramiñana M., Alenyà G., Andrade-Cetto J., Martínez E. and Torras C.: “Affine epipolar direction from two views of a planar contour”. *Proc. Intl. Conf. on Advanced Concepts for Intelligent Vision Systems (ACIVS’06)*, Antwerp, Bélgica, **Lecture Notes in Computer Science** 4179, pp. 944-955, Sept. 2006.
- [ic.65] Alenyà G., Alberich-Carramiñana M. and Torras C.: “Depth from the visual motion of a planar target induced by zooming”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’07)**, Roma, pp. 4727-4732, April 2007.
- [ic.66] Todt E. and Torras C.: “Outdoor landmark-view recognition based on bipartite-graph matching and logistic regression”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’07)**, Roma, pp. 4289-4294, April 2007.
- [ic.67] Alenyà G. and Torras C.: “Zoom control to compensate camera translation within a robot egomotion estimation approach”, *Proc. 6th Intl. Workshop on Robot Motion and Control (RoMoCo)*, Bukowy Dworek, Poland, **Lecture Notes in Control and Information Sciences** 360, pp. 81-88, June 2007.
- [ic.68] Celaya E., Albarral J.L., Jiménez P. and Torras C.: “Natural landmark detection for visually-guided robot navigation”, *Proc. 10th Conf. of the Italian Assoc. for Artif. Intell. (AI*IA 2007)*, Roma, Italia, **Lecture Notes in Artificial Intelligence** 4733, pp. 555-566, Sept. 2007.
- [ic.69] Ruiz de Angulo V. and Torras C.: “Exploiting single-cycle symmetries in branch-and-prune algorithms”. *Proc. 13th Intl. Conf. on Principles and Practice of Constraint Programming (CP-2007)*, Providence, Rhode Island, **Lecture Notes in Computer Science** 4741, pp. 864-871, Sept. 2007.
- [ic.70] Agostini A.G., Celaya E., Torras C. and Woergoetter F.: “Action rule induction from cause-effect pairs learned through robot-teacher interaction”. *Proc. Intl. Conf. on Cognitive Systems (CogSys)*, Karlsruhe, April 2008.
- [ic.71] Borràs J., Thomas F. and Torras C.: “Architecture Singularities in Flagged Parallel Manipulators”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’08)**, Pasadena, CA, pp. 3844-3850, May 2008.
- [ic.72] Borràs J., Thomas F. and Torras C.: “Analyzing the Singularities of 6-SPS Parallel Robots Using Virtual Legs”. *II Intl. Workshop on Fund. Issues and Future Res. Directions for Parallel Mechanisms and Manipulators*, Montpellier, pp. 145-150, Sept. 2008.
- [ic.73] Dellen B., Alenyà G., Foix S. and Torras C.: “3D object reconstruction from Swissranger sensor data using a spring-mass model”. *4th Intl. Conf. on Computer Vision Theory and Applications (VISAPP’09)*, Lisboa, pp. 368-372, Feb. 2009.

- [ic.74] Alberich-Carramiñana M., Thomas F. and Torras C.: “Singularity charting and avoidance in a class of parallel robots” (abstract). *Intl. Workshop on Singularities in Generic Geometry and Applications*, Valencia, March 2009.
- [ic.75] Borràs J., Thomas F. and Torras C.: “Straightening-free algorithm for the singularity analysis of Stewart-Gough platforms with collinear/coplanar attachments”. *Computational Kinematics - 5th Workshop on Computational Kinematics (CK-2009)*, edited by A. Kecskeméthy and A. Muller, Springer, pp. 359-366, May 2009.
- [ic.76] Ulbrich S., Ruiz de Angulo V., Asfour T., Torras C. and Dillmann R.: “Rapid learning of Humanoid Body Schemas with Kinematic Bézier Maps”. **9th IEEE-RAS Intl. Conf. on Humanoid Robots (Humanoids’09)**, Paris, Dec. 2009.
- [ic.77] Borràs J., Thomas F. and Torras C.: “A Family of Quadratically-Solvable 5-SPU Parallel Robots”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’10)**, Anchorage, Alaska, May 2010.
- [ic.78] Foix S., Alenyà G., Andrade-Cetto J. and Torras C.: “Object Modeling using a ToF Camera under an Uncertainty Reduction Approach”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’10)**, Anchorage, Alaska, May 2010.
- [ic.79] Borràs J., Thomas F. and Torras C.: “Singularity-Invariant Leg Rearrangements in Doubly-Planar Stewart-Gough Platforms”. **Robotics Science and Systems (RSS-2010)**, Zaragoza, June 2010.
- [ic.80] Borràs J., Thomas F. and Torras C.: “Singularity-Invariant Leg Rearrangements in Stewart-Gough Platforms”. *12th Intl. Symp. on Advances in Robot Kinematics (ARK’10)*, Piran-Portoroz, Slovenia, July 2010.
- [ic.81] Rozo L., Jiménez P. and Torras C.: “Sharpening haptic inputs for teaching a manipulation skill to a robot”. *1st Intl. Conf. on Applied Bionics and Biomechanics (ICABB’10)*, Venecia, Italia, Oct. 2010.
- [ic.82] Dellen B., Alenyà G., Foix S. and Torras C.: “Segmenting color images into surface patches by exploiting sparse depth data”. *IEEE Workshop on Applications of Computer Vision (WACV-2011)*, Kona, Hawaii, pp. 591-598, Jan. 2011.
- [ic.83] Alenyà G., Dellen B. and Torras C.: “3D modelling of leaves from color and ToF data for robotized plant measuring”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’11)**, Shanghai, pp. 3408-3414, May 2011.
- [ic.84] Rozo L., Jiménez P. and Torras C.: “Robot learning from demonstration of force-based tasks with multiple solution trajectories”. **15th International Conference on Advanced Robotics (ICAR’11)**, Tallin, Estonia, pp. 124-129, June 2011.
- [ic.85] Agostini A.G., Torras C. and Woergoetter F.: “Integrating task planning and interactive learning for robots to work in human environments”. **IEEE Intl. Joint Conf. on Artificial Intelligence (IJCAI’11)**, Barcelona, pp. 2386-2391, July 2011.
- [ic.86] Rozo L., Jiménez P. and Torras C.: “Robot learning from demonstration in the force domain”. *IJCAI Workshop on Agents Learning Interactively from Human Teachers*, Barcelona, pp. 1-6, July 2011.

- [ic.87] Goldsztejn A., Jermann C., Ruiz de Angulo V. and Torras C.: “Symmetry breaking in numeric constraint problems”. **17th International Conference on Principles and Practice of Constraint Programming (CP’11)**, Perugia, Italia, **Lecture Notes in Computer Science**, 6876, pp. 317-324, Sept. 2011.
- [ic.88] Ramisa A., Alenyà G., Moreno-Noguer F. and Torras C.: “Using Depth and Appearance Features for Informed Robot Grasping of Highly Wrinkled Clothes”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’12)**, St. Paul, Minnesota, pp. 1703-1708, May 2012.
- [ic.89] Alenyà G., Ramisa A., Moreno-Noguer F. and Torras C.: “Characterization of Textile Grasping Experiments”. *ICRA Workshop on the Conditions for Replicable Experiments and Performance Comparison in Robotics Research*, St. Paul, Minnesota, May 2012.
- [ic.90] Simo-Serra E., Ramisa A., Alenyà G., Torras C. and Moreno-Noguer F.: “Single Image 3D Human Pose Estimation from Noisy Observations”. **IEEE Conf. on Computer Vision and Pattern Recognition (CVPR’12)**, Providence, Rhode Island, pp. 2673-2680, June 2012.
- [ic.91] Foix S., Kriegel S., Fuchs S., Alenyà G. and Torras C.: “Information-gain view planning for free-form object reconstruction with a 3D ToF camera”. *14th Intl. Conf. on Advanced Concepts for Intelligent Vision Systems (ACIVS’12)*, Brno, Czech Republic, **Lecture Notes in Computer Science** 7517, pp. 36-47, Sept. 2012.
- [ic.92] Colomé A. and Torras C.: “Redundant inverse kinematics: Experimental comparative review and two enhancements”. **IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS’12)**, Vilamoura, Portugal, pp. 5333-5340, Oct. 2012.
- [ic.93] Monsó P., Alenyà G. and Torras C.: “POMDP approach to robotized clothes separation”. **IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS’12)**, Vilamoura, Portugal, pp. 1324-1329, Oct. 2012.
- [ic.94] Alenyà G., Dellen B., Foix S. and Torras C.: “Robotic leaf probing via segmentation of range data into surface patches”. *IROS Workshop on Agricultural Robotics: Enabling Safe, Efficient, Affordable Robots for Food Production*, Vilamoura, Portugal, pp. 1-6, Oct. 2012.
- [ic.95] Colomé A., Pardo D., Alenyà G. and Torras C.: “External force estimation for textile grasp detection” (abstract). *IROS Workshop Beyond Robot Grasping: Modern Approaches for Learning Dynamic Manipulation*, Vilamoura, Portugal, Oct. 2012.
- [ic.96] Pardo D., Rozo, L., Alenyà G. and Torras C.: “Dynamically consistent probabilistic model for robot motion learning” (two-page abstract). *IROS Workshop on Learning and Interaction in Haptic Robots*, Vilamoura, Portugal, Oct. 2012.
- [ic.97] Dellen B., Husain S.F. and Torras C.: “Joint segmentation and tracking of object surfaces in depth movies along human/robot manipulations”. *8th Intl. Conf. on Computer Vision Theory and Applications (VISAPP’13)*, Barcelona, pp. 244-251, Feb. 2013.
- [ic.98] Colomé A., Pardo D., Alenyà G. and Torras C.: “External force estimation during compliant robot manipulation”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’13)**, Karlsruhe, Germany, May 2013.

- [ic.99] Colomé A., Alenyà G. and Torras C.: “Handling high parameter dimensionality in reinforcement learning with dynamic motor primitives” (abstract). *ICRA Workshop on Novel Methods for Learning and Optimization of Control Policies and Trajectories for Robotics*, Karlsruhe, Germany, May 2013.
- [ic.100] Martínez D., Alenyà G. and Torras C.: “Planning Surface Cleaning Tasks by Learning Uncertain Drag Actions Outcomes”. *1st ICAPS Workshop on Planning and Robotics (PlanRob)*, pp. 106-111, Roma, Italia, June 2013.
- [ic.101] Simo-Serra E., Quattoni A., Torras C. and Moreno-Noguer F.: “A Joint Model for 2D and 3D Pose Estimation from a Single Image”. **IEEE Conf. on Computer Vision and Pattern Recognition (CVPR’13)**, Portland, Oregon, June 2013.
- [ic.102] Rozo L., Jiménez P. and Torras C.: “Force-based Robot Learning of Pouring Skills using Parametric Hidden Markov Models”. *Proc. 9th Intl. Workshop on Robot Motion and Control (RoMoCo’13)*, Wasowo, Poland, July 2013.
- [ic.103] Rozo L., Calinon S., Caldwell D., Jiménez P. and Torras C.: “Learning Collaborative Impedance-based Robot Behaviors”. **Proc. 27th Intl. Conf. of the Assoc. for the Advancement of Artificial Intelligence (AAAI-13)**, Bellevue, Washington, USA, July 2013.
- [ic.104] Ramisa A., Alenyà G., Moreno-Noguer F. and Torras C.: “FINDDD: A Fast 3D Descriptor to Characterize Textiles for Robot Manipulation”. **IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS’13)**, Tokyo, Japan, Nov. 2013.
- [ic.105] Torras C.: “Robot manipulation in human environments: Challenges for learning algorithms”. *14081 Dagstuhl Seminar “Robots Learning from Experiences”*, Dagstuhl Reports, vol. 4, num. 2, pp. 99-101, Feb. 2014.
- [ic.106] Husain F., Colomé A., Dellen B., Alenyà G. and Torras C.: “Realtime tracking and grasping of a moving object from range video”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’14)**, Hong-Kong, pp. 2617-2622, June 2014.
- [ic.107] Martínez D., Alenyà G., Jiménez P., Torras C., Rossmann J., Wantia N., Aksoy E.E., Haller S. and Piater J.: “Active learning of manipulation sequences”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’14)**, Hong-Kong, pp. 5671-5678, June 2014.
- [ic.108] Torras C.: “Learning algorithms for robot manipulation of clothing and plant leaves”. *ICRA Workshop on Advances in Robot Manipulation of Clothes and Flexible Objects*, Hong-Kong, June 2014.
- [ic.109] Husain F., Dellen B. and Torras C.: “Recognizing Point Clouds using Conditional Random Fields”. **22nd Intl. Conf. on Pattern Recognition (ICPR’14)**, pp. 4257-4262, Stockholm, Aug. 2014.
- [ic.110] Simó-Serra E., Torras, C. and Moreno-Noguer F. “Geodesic Finite Mixture Models”. **British Machine Vision Conf. (BMVC’14)**, pp. 381-396, Nottingham, Sept. 2014.
- [ic.111] Colomé A. and Torras C.: “Dimensionality Reduction and Motion Coordination in Learning Trajectories with Dynamic Movement Primitives”. **IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS’14)**, pp. 1414-1420, Chicago, Sept. 2014.

- [ic.112] Martínez D., Alenyà G. and Torras C.: “Finding Safe Policies in Model-Based Active Learning”. *IROS Workshop on Machine Learning in Planning and Control of Robot Motion*, Chicago, Sept. 2014.
- [ic.113] Colomé A., Neumann G., Peters J. and Torras C.: “Dimensionality Reduction for Probabilistic Movement Primitives”. **IEEE Intl. Conf. on Humanoid Robots (Humanoids’14)**, Madrid, Nov. 2014.
- [ic.114] Martínez D., Alenyà G. and Torras C.: “V-MIN: Efficient Reinforcement Learning through Demonstrations and Relaxed Reward Demands”. **Proc. 29th Intl. Conf. of the Assoc. for the Advancement of Artificial Intelligence (AAAI-15)**, pp. 2857-2863, Austin, Texas, Jan. 2015.
- [ic.115] Simó-Serra E., Torras C. and Moreno-Noguer F.: “Lie algebra-based kinematic prior for 3D human pose tracking”. **14th IAPR International Conference on Machine Vision Applications (MVA’15)**, pp. 394-397, Tokyo, May 2015.
- [ic.116] Colomé A., Planells A. and Torras C.: “A friction-model-based framework for reinforcement learning of robotic tasks in non-rigid environments”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’15)**, pp. 5649-5654, Seattle, May 2015.
- [ic.117] Martínez D., Ribeiro T., Inoue K., Alenyà G. and Torras C.: “Learning probabilistic action models from interpretation transitions”. *Technical Communications of the 31st Intl. Conf. on Logic Programming (ICLP’15)*, vol. 1433 of CEUR Workshop Proceedings, Cork, Ireland, Aug. 2015.
- [ic.118] Martínez D., Alenyà G. and Torras C.: “Safe robot execution in model-based reinforcement learning”. **IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS’15)**, pp. 6422-6427, Hamburg, Sept. 2015.
- [ic.119] Foix S., Alenyà G. and Torras C.: “3D sensor planning framework for leaf probing”. **IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS’15)**, pp. 6501-6506, Hamburg, Sept. 2015.
- [ic.120] Husain F., Dellen B. and Torras C.: “Action recognition based on efficient deep feature learning in the spatio-temporal domain”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’16)**. Published in IEEE Robotics and Automation Letters (see [ij.80]), Stockholm, May 2016.
- [ic.121] Husain F., Schulz H., Dellen B., Torras C. and Behnke S.: “Combining semantic and geometric features for object class segmentation of indoor scenes”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’16)**. Published in IEEE Robotics and Automation Letters (see [ij.87]), Stockholm, May 2016.
- [ic.122] Jevtic A., Colomé A., Alenyà G. and Torras C.: “Learning Robot Motion through User Intervention and Policy Search” (Poster). *ICRA Workshop Nature versus Nurture in Robotics*, Stockholm, May 2016.
- [ic.123] Martínez D., Alenyà G., Torras C., Ribeiro T. and Inoue K.: “Learning relational dynamics of stochastic domains for planning”. **26th Intl. Conf. on Automated Planning and Scheduling (ICAPS’16)**, pp. 235-243, London, June 2016.

- [ic.124] Gabàs A., Corona E., Alenyà G. and Torras C.: “Robot-aided cloth classification using depth information and CNNs”. *9th Conf. on Articulated Motion and Deformable Objects (AMDO’16)*, Palma de Mallorca, **Lecture Notes in Computer Science** 9756, pp. 16-23, July 2016.
- [ic.125] Jevtic A., Colomé A., Alenyà G. and Torras C.: “User Evaluation of an Interactive Learning Framework for Single-Arm and Dual-Arm Robots”. *Intl. Conf. on Social Robotics (ICSR’16)*, Kansas City, Nov. 2016.
- [ic.126] Canal G., Alenyà G. and Torras C.: “Personalization Framework for Adaptive Robotic Feeding Assistance”. *Intl. Conf. on Social Robotics (ICSR’16)*, Kansas City, Nov. 2016.
- [ic.127] Martin Garcia G., Husain F., Schulz H., Frintrop S., Torras C. and Behnke S.: “Semantic Segmentation Priors for Object Discovery”. **23rd Intl. Conf. on Pattern Recognition (ICPR’16)**, Cancun, Mexico, Dec. 2016.

6.6 National Conferences

- [nc.1] Sanfeliu A. and Torras C.: “Cooperación visión-robot en tareas de ensamblaje”. *II Simp. Nacional de Automática en la Industria*, Zaragoza, pp. 147-154, Nov. 1984.
- [nc.2] Torras C.: “Visión 3D y planificación para robots”. *1as Jornadas del Grupo Técnico de Reconocimiento de Formas de la CEA-IFAC*, Barcelona, Dec. 1984.
- [nc.3] Torras C.: “Modelización y simulación del aprendizaje neuronal de ritmos”. *VI Jornadas de Automática*, Valladolid, pp. 139-148, April 1985.
- [nc.4] Ilari J., Huber R. and Torras C.: “Planificación de trayectorias sin colisión mediante un nuevo modelo del espacio libre”. *VI Congreso de la Asociación Española de Informática y Automática (AEIA)*, Madrid, Oct. 1985.
- [nc.5] Torras C.: “Modelo de neurona osciladora con patrón de descarga plástico: Asimilación de ritmos en aislamiento y en una red” (abstract). *1er Congreso de la Sociedad Española de Neurociencia (SEN)*, Madrid, pag. 88, Nov. 1985.
- [nc.6] Thomas F. and Torras C.: “Planificación de tareas robotizadas de ensamblaje desde la perspectiva del sistema MOLGEN”. *VII Jornadas de Automática*. Gijón, April 1986.
- [nc.7] Torras C.: “Modelos de neuronas osciladoras y de sus interacciones sinápticas” (abstract). *2o Congreso de la Sociedad Española de Neurociencia (SEN)*, Barcelona, July 1987.
- [nc.8] Avila F. and Torras C.: “Generación automática de zonas de aprehensión de una pieza, a partir de su modelo CAD”. *Primer Congreso de la Asociación Española de Robótica (AER)*, pp. 377-385, Zaragoza, Nov. 1989.
- [nc.9] Millán J. del R. and Torras C.: “Un sistema conexionista para planificación de trayectorias”. *III Reunión Técnica de la Asociación Española para la Inteligencia Artificial (AEPIA)*, pp. 321-333, Madrid, Nov. 1989.
- [nc.10] Jiménez P. and Torras C.: “Interferencia entre poliedros: Pares arista-cara susceptibles de entrar en contacto”. *6 Encuentros de Geometría Computacional (6EGC)*, pp. 230-237, Barcelona, July 1995.

- [nc.11] Torras C.: “Detección de colisiones en 3D”. *6 Encuentros de Geometría Computacional (6EGC)*, pp. 37-50, Barcelona, July 1995.
- [nc.12] Ros L., Thomas F., Porta J.M., Torras C., Ruiz V., Creemers T., Cantó J., Corcho F. and Sabater A.: “Geometric methods in robotics”. *1a Jornada de Recerca en Automàtica, Visió i Robòtica*, edited by A. Grau and V. Puig, Edicions de la Universitat Politècnica de Catalunya, pp. 33-41, Barcelona, Feb. 2004.
- [nc.13] Alenyà G., Martínez E. and Torras C.: “Estimació del moviment d’un robot observant contorns actius”. *1a Jornada de Recerca en Automàtica, Visió i Robòtica*, edited by A. Grau and V. Puig, Edicions de la Universitat Politècnica de Catalunya, pp. 319-324, Barcelona, Feb. 2004.
- [nc.14] Andrade-Cetto J. and Torras C.: “PACO-PLUS - Perception, Action and Cognition through Learning of Object-Action Complexes”. *2a Jornada de Recerca en Automàtica, Visió i Robòtica*, edited by A. Grau and V. Puig, Edicions de la Universitat Politècnica de Catalunya, Barcelona, 2006.
- [nc.15] Alenyà G. and Torras C.: “Anàlisi estadística de la propagació de l’error per a aplicacions de deformacions de contorns actius”. *2a Jornada de Recerca en Automàtica, Visió i Robòtica*, edited by A. Grau and V. Puig, Edicions de la Universitat Politècnica de Catalunya, Barcelona, 2006.
- [nc.16] Alenyà G. and Torras C.: “Monocular object pose computation with the foveal-peripheral camera of the humanoid robot Armar-III”. *11th Intl. Conf. of de Catalan Assoc. for AI*, St. Martí d’Empúries, Girona, pp. 355-362, Oct. 2008.
- [nc.17] Alenyà G., Hernández S., Andrade-Cetto J., Sanfeliu A. and Torras C.: “Humanoid robotics and human-centered initiatives at IRI”. *Jornadas de Automàtica*, Valladolid, Sept. 2009.
- [nc.18] Rozo L., Jiménez P. and Torras C.: “Learning force-based robot skills from haptic demonstration”. *Artificial Intelligence Research and Development - Proc. 13th Intl. Conf. of the Catalan Assoc. for AI*, edited by René Alquézar, Antonio Moreno and Josep Aguilar, *Frontiers in Artificial Intelligence and Applications*, 220, pp. 331-340, IOS Press, 2010.
- [nc.19] Foix S., Alenyà G. and Torras C.: “Towards plant monitoring through next best view”. *Artificial Intelligence Research and Development - Proc. 14th Intl. Conf. of the Catalan Assoc. for AI*, edited by Cèsar Fernández, Hector Geffner and Felip Manyà, *Frontiers in Artificial Intelligence and Applications*, 232, pp. 101-109, IOS Press, Oct. 2011.
- [nc.20] Ramisa A., Alenyà G., Moreno-Noguer F. y Torras C.: “Determining where to grasp cloth using depth information”. *Artificial Intelligence Research and Development - Proc. 14th Intl. Conf. of the Catalan Assoc. for AI*, edited by Cèsar Fernández, Hector Geffner and Felip Manyà, *Frontiers in Artificial Intelligence and Applications*, 232, pp. 199-207, IOS Press, Oct. 2011.
- [nc.21] Alenyà G., Moreno-Noguer F., Ramisa A. and Torras C.: “Active perception of deformable objects using 3D cameras”. *Workshop de Robòtica Experimental (ROBOT-2011)*, Sevilla, pp. 434-440, Nov. 2011.

- [nc.22] Borràs J., Thomas F. and Torras C.: “New geometric approaches to the singularity analysis of parallel platforms”. *Workshop de Robòtica Experimental (ROBOT-2011)*, Sevilla, pp. 173-180, Nov. 2011.
- [nc.23] Rigual F, Ramisa A., Alenyà G. and Torras C.: “Object detection methods for robot grasping: Experimental assessment and tuning”. *Artificial Intelligence Research and Development - Proc. 15th Intl. Conf. of the Catalan Assoc. for AI*, edited by D. Riaño, E. Onaindia and M. Cazorla, *Frontiers in Artificial Intelligence and Applications*, 248, pp. 123-132, IOS Press, Oct. 2012.
- [nc.24] Torras C.: “From the Turing test to science fiction: The challenges of social robotics” (abstract). *Artificial Intelligence Research and Development - Proc. 16th Intl. Conf. of the Catalan Assoc. for AI*, edited by V. Botti, K. Gibert and R. Reig-Bolaño, *Frontiers in Artificial Intelligence and Applications*, 256, pp. 5-7, IOS Press, Oct. 2013.
- [nc.25] Ramisa A. and Torras C.: “Large-scale image classification using sets of embedded dichotomies”. *Artificial Intelligence Research and Development - Proc. 16th Intl. Conf. of the Catalan Assoc. for AI*, edited by V. Botti, K. Gibert and R. Reig-Bolaño, *Frontiers in Artificial Intelligence and Applications*, 256, pp. 87-90, IOS Press, Oct. 2013.
- [nc.26] Solé X., Ramisa A. and Torras C.: “Evaluation of random forests on large-scale classification problems using a bag-of-visual-words representation”. *Artificial Intelligence Research and Development - Proc. 17th Intl. Conf. of the Catalan Assoc. for AI*, edited by Ll. Museros, O. Pujol and N. Agell, *Frontiers in Artificial Intelligence and Applications*, 269, pp. 273-276, IOS Press, Oct. 2014.

6.7 Other publications

- [o.1] Torras C.: “Neural model for the recognition of temporal patterns of stimulation”. *Master Thesis*, Computer and Information Sciences Department, University of Massachusetts, Amherst, Feb. 1981.
- [o.2] Torras C. and García Larrea, L.J.: “El cerebro dividido” *Scientific Dissemination Prizes of the Science Museum in Barcelona*, June 1981.
- [o.3] Torras C.: “Correspondència 2D-1D: Aplicació al càlcul de la TFD i la convolució circular”, *Master Thesis*, Mathematics Faculty, Universitat de Barcelona, Jan. 1983.
- [o.4] Torras C.: “Modelització i simulació de neurones i xarxes neuronals amb capacitat d’aprenentatge de patrons temporals”. *Doctoral Thesis*, Computer Science Faculty, Universitat Politècnica de Catalunya, May 1984.
- [o.5] Torras C.: “Computadors neuronals: Una nova generació?”. *AVUI*, 1988.
- [o.6] Torras C.: “Els robots intel·ligents demanen computadors neuronals”. *7a. Universitat d’Estiu de Gandía*, Aug. 1988.
- [o.7] Torras C.: “Report of the group discussion about ‘neural networks in robotics’”. In *“Sensor-Based Robots: Algorithms and Architectures”*, edited by C.S.G. Lee, NATO ASI Series F, Vol. 66, pp. 281-282, Springer-Verlag, Berlin Heidelberg New-York London Paris Tokyo HongKong Barcelona, 1991.

- [o.8] Torras C. and Wells G.: “An Introduction to Neural Networks”. *Course CIMPA on “Parallel Computing”*, Temuco, Chile, Jan. 1994.
- [o.9] Torras C.: “Neural Learning Approaches to Robot Control”. *Tutorial en el Technology Transfer Workshop on Industrial Vision, Advanced Robots and Medical Imaging (IVAR’94)*, Leuven, June 1994.
- [o.10] Sainz M., Thomas F. and Torras C.: “Estimación de la granularidad mediante barrido láser”. Report of the project PARALIN, *Technical Report IRI-DT-9707*, Institut de Robòtica i Informàtica Industrial (CSIC-UPC), Nov. 1997.
- [o.11] Guimerà R., Torras C. and Bofill P.: “Aplicació de simulated annealing i teoria de camp mig a la generació de dissenys en blocs”. *Technical Report IRI-DT-9901*, Institut de Robòtica i Informàtica Industrial (CSIC-UPC), Jan. 1999.

7 Editorial tasks

7.1 Editor

- **IEEE Transactions on Robotics**, since January 2013.

7.2 Associate editor

- **AI Communications**, IOS Press, since December 1997. Previously, member of the Advisory Committee of this journal since 1992, and Area Editor of “Action and Perception” since November 1995.
- **International Journal on Computational Intelligence and Applications**, Imperial College Press - World Scientific Publishing, since August 1999.
- **Natural Computing**, Kluwer Academic Publishers, since October 2002.
- **Theoretical Computer Science. C - Natural Computing**, Elsevier Publishing Company, since May 2003.
- **IEEE Transactions on Robotics**, from March 2010 to March 2013.
- Book collection **Natural Computing Series**, Springer-Verlag, since April 2003.

7.3 Editorial Board member

- **Connection Science**, Carfax Publishing, since January 1989.
- **Applied Bionics and Biomechanics**, Open Mind Journals Ltd., New Zealand, since May 2003.
- **Journal of Robotics**, Hindawi Publishing, from October 2008 to March 2011.
- **ARBOR - Journal of CSIC**, since March 2014.

- **Robotics and Autonomous Systems**, since July 2014.
- Handbook of Natural Computing (Area Neural Networks), Springer-Verlag, 2012.

7.4 Steering Committee member

- **IEEE Robotics and Automation Letters**, since its launching in 2016.

7.5 Special issue editor

- Guest Co-editor (together with F. Casacuberta) of the special issue on “Neural Networks” of the journal **Inteligencia Artificial**, num 1, Winter 1997.
- Member of the Editorial Board of the special issue on “Robot Learning: The New Wave” of the journal **Robotics and Autonomous Systems**, vol. 22, num 3-4, Dec. 1997.
- Member of the Review Panel of the special issue on “Biorobotics” of the journal **Connection Science**, vol. 10, num 3-4, Dec. 1998.
- Guest Editor of the special issue on “Adaptive Robots” of the journal **Connection Science**, vol. 11, num. 3-4, Dec. 1999.
- Guest Editor of the special issue on “**Neural Networks at IJCAI’01**” of the journal **Intl. Journal of Computational Intelligence and Applications**, vol. 1, num. 4, Dec. 2001.
- Guest Co-editor (together with M. Gini and W-M. Shen) of the special issue on “Best papers presented at IAS-7” of the journal **Robotics and Autonomous Systems**, vol.44, num.3/4, Sept. 2003.

7.6 Reviewer for journals

Artificial Intelligence
 Autonomous Robots
 Biological Cybernetics
 Computer Methods in Applied Mechanics and Engineering
 Computers & Graphics
 Constraints Journal
 IEE Proceedings
 IEEE Trans. on Neural Networks
 IEEE Trans. on Robotics
 IEEE Trans. on Robotics and Automation
 IEEE Trans. on Systems, Man and Cybernetics (Part B)
 IEEE Trans. on Visualization and Computer Graphics
 Image and Vision Computing
 Informática y Automática
 Integrated Computed-Aided Engineering
 Intl. Journal of Robotics Research

Journal of Intelligent and Robotic Systems
Journal of Robotics and Autonomous Systems
Journal of the Canadian Society of Mechanical Engineering (CSME)
Machine Learning
Mechanism and Machine Theory
Neural Networks
Neurocomputing
Revue d'Intelligence Artificielle
Robotics and Autonomous Systems
The Visual Computer

8 Conference organization tasks

8.1 Conference chairing

- 2nd PROMotion Workshop on “Robot Motion Planning”, Barcelona, Oct. 1994. **Organizing Committee Chair.**
- IEEE Intl. Symp. on Computational Intelligence in Robotics and Automation (CIRA'97), Monterey, CA, July 1997. **Program Committee Co-chair** for Europe/Africa (together with Sukhan Lee -chair-, Toshio Fukuda -Asia/Oceania-, and George Lee -America-).
- 7th Intl. Conf. on Intelligent Autonomous Systems (IAS-7), Marina del Rey, California, March 2002. **Program Committee Co-chair** (together with Maria Gini -chair-, Wei-Min Shen, and Hideo Yuasa).
- Intl. Conf. on Artificial Neural Networks (ICANN-2002), Madrid, Aug. 2002. **Program Committee Co-chair** (together with José R. Dorronsoro -chair-, Senén Barro, Javier de Felipe, and Juan A. Sigüenza).
- ESF-JSPS Frontier Science Conference on “Robotics”, Tokyo, March 2008. **Program Committee Co-chair** (together with Yoshihiko Nakamura and Juan Andrade-Cetto).
- 11th Ibero-American Conference on Artificial Intelligence (IBERAMIA'08), Lisbon, Portugal, Oct. 2008. **Area Chair** for Robotics and Vision.
- XI Congrés Català d'Intelligence Artificial (CCIA'08), Empúries, Girona, Oct. 2008. **Conference Co-chair** (together with J. Puyol-Gruart).
- IEEE Intl. Conf. on Robotics and Automation (ICRA-2015), Seattle, May 2015. **Senior PC member and Awards Co-chair** (together with Lydia Kavraki and Jessica Hodgins).
- Intl. Joint Conf. on Artificial Intelligence (IJCAI'17), Melbourne, August 2017. **Area Chair.**

8.2 Editor for Conference Review Board

- IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS), 2015 - 2017.

8.3 Associate Editor for Conference Review Board

- **IEEE/RSJ Intl. Conf. on Intelligent RObots and Systems (IROS)**, 2012- 2013.
- **IEEE Intl. Conf. on Robotics and Automation (ICRA)**, 2013 - 2016.

8.4 Program Committee membership

- 1er Symposium Internacional sobre Ingeniería del Conocimiento, Madrid, Spain, Nov. 1985.
- 1er Congreso Iberoamericano de Inteligencia Artificial (IBERAM-IA), Barcelona, Jan. 1988.
- **2nd IEEE Conference on Neural Networks**, San Diego, California, USA, July 1988.
- III Reunión Técnica de Inteligencia Artificial (AEPIA-89), Madrid, Nov. 1989.
- 2o. Congreso Iberoamericano de Inteligencia Artificial (IBERAMIA'90), Morelia Michoacán, México, July 1990.
- **9th European Conference on Artificial Intelligence (ECAI-90)**, Stockholm, Aug. 1990.
- COGNITIVA'90, Madrid, Nov. 1990.
- First Intl. Workshop on Artificial Neural Networks (IWANN'91), Granada, Sept. 1991.
- IV Reunión Técnica de Inteligencia Artificial (AEPIA-91), Madrid, Oct. 1991.
- **2nd European Conference on Computer Vision (ECCV'92)**, Santa Margherita, Italia, May 1992.
- IFAC Intl. Symposium on Industrial Robots (ISIR'92), Barcelona, Oct. 1992.
- Second Intl. Workshop on Artificial Neural Networks (IWANN'93), Sitges, Barcelona, June 1993.
- 6th Intl. Conf. on Neural Networks and their Industrial and Cognitive Applications (NeuroNimes'93), Nimes, Oct. 1993.
- AMCA/IEEE International Workshop on Neural Networks Applied to Control and Image Processing (NNACIP'94), Mexico DF, Nov. 1994.
- 7th Intl. Conf. on Neural Networks and their Industrial and Cognitive Applications (NeuroNimes'94), Marseille, Dec. 1994.
- Third Workshop on Learning Robots, within the European Conference on Machine Learning (ECML'95), Heraklion, Crete, April 1995.
- Third Intl. Workshop on Artificial Neural Networks (IWANN'95), Málaga, June 1995.
- Trobada de Joves Investigadors (TJI'95), Bellaterra, Set. 1995.
- **Intl. Conf. on Artificial Neural Networks (ICANN'95)**, Paris, Oct. 1995.
- 6 Conf. de la Asociación Española de Inteligencia Artificial, Alicante, Nov. 1995.

- Intl. Conf. on Neural Networks and their Applications (NEURAP'95), Marseilles, Dec. 1995.
- Fourth European Workshop on Learning Robots, Karlsruhe, Dec. 1995.
- Intl. Symp. on Robotics and Automated Manufacturing (ISRAM'96), Montpellier, May 1996.
- Fifth European Workshop on Learning Robots, Bari, July 1996.
- **Intl. Conf. on Artificial Neural Networks (ICANN'96)**, Bochum, July 1996.
- European Workshop on Hazardous Robotics (HEROS'96), Barcelona, Nov. 1996.
- Third Intl. Conference on Neural Networks and their Applications (NEURAP'97), Marseilles, March 1997.
- **IEEE Intl. Conf. on Robotics and Automation (ICRA'97)**, Albuquerque, NM, April 1997.
- Fourth Intl. Workshop on Artificial Neural Networks (IWANN'97), Lanzarote, June 1997.
- Congreso Español de Informática Gráfica, Barcelona, June 1997.
- Conf. Towards Intelligent Mobile Robots (TIMR'97), Buxton, Sept. 1997.
- Congreso Español de Informática Gráfica (CEIG'98), Orense, June 1998.
- Seventh European Workshop on Learning Robots, Edinburgh, July 1998.
- **Intl. Conf. on Artificial Neural Networks (ICANN'98)**, Skoevde, Sweden, Sept. 1998.
- **Intl. Conf. on Intelligent Robotics Systems (IROS'98)**, Victoria, Canada, Oct. 1998.
- Primer Congrés Català d'Intel·ligència Artificial, Tarragona, Oct. 1998.
- Third Intl. Conf. on Autonomous Agents (Agents'99), Seattle, WA, US, May 1999.
- **16th Intl. Conf. on Machine Learning (ICML-99)**, Bled, Slovenia, June 1999.
- Eighth European Workshop on Learning Robots, Lausanne, Switzerland, Sept. 1999.
- Third European Workshop on Advanced Mobile Robots (Eurobot'99), Zurich, Switzerland, Sept. 1999.
- **European Conf. on Machine Learning (ECML-2000)**, Barcelona, May 2000.
- **14th European Conf. on Artificial Intelligence (ECAI-2000)**, Berlin, Aug. 2000.
- 6th Brazilian Symposium on Neural Networks (SBRN'2000), Rio de Janeiro, Nov. 2000.
- **17th Intl. Joint Conf. on Artificial Intelligence (IJCAI-2001)**, Seattle, Washington, Aug. 2001.
- **Intl. Conf. on Artificial Neural Networks (ICANN-2001)**, Vienna, Austria, Aug. 2001.
- 9th European Workshop on Learning Robots, Prague, Sept. 2001.
- Fourth European Workshop on Advanced Mobile Robots (Eurobot'01), Lund, Sweden, Sept. 2001.

- **IEEE Intl. Conf. on Robotics and Automation (ICRA-2002)**, Washington D.C., May 2002.
- 11th IEEE Intl. Workshop on Robot and Human Interactive Communication (ROMAN 2002), Berlin, Germany, Sept. 2002.
- International Twelfth Turkish Symposium on Artificial Intelligence and Neural Networks, Çanakkale, Turkiye, July 2003.
- International Conference on Machine Learning and Cybernetics, Xi-an, China, Aug. 2003.
- 8th Intl. Conf. on Intelligent Autonomous Systems (IAS-8), Amsterdam, The Netherlands, March 2004.
- 8th International Work-Conference on Artificial Neural Networks (IWANN 2005), Barcelona, June 2005.
- 9th Intl. Conf. on Intelligent Autonomous Systems (IAS-9), Tokyo, Japan, March 2006.
- **21st Nat. Conf. on Artificial Intelligence (AAAI-06)**, Boston, USA, July 2006.
- 5th Intl. Conf. on Unconventional Computation (UC'06), York, Sept. 2006.
- 9th Intl. Work-Conference on Artificial Neural Networks (IWANN'2007), San Sebastián, June 2007.
- 6th Intl. Conf. on Unconventional Computation (UC'07), Kingston, Canada, Aug. 2007.
- 6th Intl. Workshop on Self-Organizing Maps (WSOM 2007), Bielefeld, Germany, Sept. 2007.
- Intl. Conf. on Cognitive Systems (CogSys 2008), Karlsruhe, Germany, April 2008.
- 7th Intl. Conf. on Unconventional Computation (UC'08), Vienna, Austria, Aug. 2008.
- **IEEE/RSJ Intl. Conf. on Intelligent RObots and Systems (IROS 2008)**, Nice, France, Sept. 2008.
- 40th Intl. Symp. on Robotics (ISR 2009), Barcelona, March 2009.
- 10th Intl. Work-Conference on Artificial Neural Networks (IWANN-2009), Salamanca, June 2009.
- 7th Intl. Workshop on Self-Organizing Maps (WSOM 2009), St Augustine, Florida, June 2009.
- **14th Intl. Conf. on Advanced Robotics (ICAR'09)**, Munich, Germany, June 2009.
- **IEEE/RSJ Intl. Conf. on Intelligent RObots and Systems (IROS 2009)**, St. Louis, USA, Oct. 2009.
- XII Congrés Català d'Intel·ligència Artificial (CCIA'09), Cardona, Oct. 2009.
- 13th Conf. of the Spanish Assoc. for AI (CAEPIA 2009), Sevilla, Spain, Nov. 2009.
- 1st Intl. Conf. on Applied Bionics and Biomechanics (ICABB-2010), Venecia, Italia, Oct. 2010.

- XIII Congrés Català d'Intel·ligència Artificial (CCIA'10), L'Espluga de Francolí, Oct. 2010.
- 8th Intl. Workshop on Self-Organizing Maps (WSOM 2011), Espoo, Finland, June 2011.
- 11th International Work-Conference on Artificial Neural Networks (IWANN 2011), Torremolinos, June 2011.
- XIV Congrés Català d'Intel·ligència Artificial (CCIA'11), Lleida, Oct. 2011.
- 14th Conf. of the Spanish Assoc. for AI (CAEPIA 2011), Tenerife, Nov. 2011.
- IX Latin American Robotics Symposium (LARS 2012), Fortaleza, Cear, Brazil, Oct. 2012.
- XV Congrés Català d'Intel·ligència Artificial (CCIA'12), Alacant, Oct. 2012.
- 12th Intl. Work-Conference on Artificial Neural Networks (IWANN-2013), Tenerife, June 2013.
- XVI Congrés Català d'Intel·ligència Artificial (CCIA'13), Vic, Oct. 2013.
- XVII Congrés Català d'Intel·ligència Artificial (CCIA'14), Barcelona, Oct. 2014.
- 13th Intl. Work-Conference on Artificial Neural Networks (IWANN-2015), Palma de Mallorca, June 2015.
- **Robotics Science and Systems (RSS-2015)**, Roma, July 2015.
- IROS Workshop on "Machine Learning in Planning and Control of Robot Motion", Hamburg, Sept. 2015.
- XVIII Congrés Català d'Intel·ligència Artificial (CCIA'15), Valencia, Oct. 2015.
- **Intl. Joint Conf. on Artificial Intelligence (IJCAI'16)**, New York, July 2016.
- XIX Congrés Català d'Intel·ligència Artificial (CCIA'16), Barcelona, Oct. 2016.

8.5 Other organization duties

- 1st IFAC Symposium on Robot Control (SYROCO), Barcelona, Spain, Nov. 1985. Organizing Committee member.
- NATO Workshop on Structural and Syntactic Pattern Recognition, Sitges, Spain, Oct. 1986. Organizing Committee member.
- European Conf. on Artificial Life (ECAL'95), Granada, June 1995. Organizing Committee member.
- Intl. Conf. on Pattern Recognition (ICPR'00), Barcelona, Sept. 2000. Organizing Committee member.
- Secretary of the course "HAL 9000: realidades y utopías de la Inteligencia Artificial", organized by R. López de Mántaras, Universidad Internacional Menéndez Pelayo, Valencia, Oct. 2001.

- 4th Intl. Conf. on Unconventional Computation (UC'05), Sevilla, Oct. 2005. Steering Committee member.
- 5th Intl. Conf. on Unconventional Computation (UC'06), York, Sept. 2006. Steering Committee member.
- Jornadas Nacionales de Robótica, Barcelona, May 2007. Organizing Committee member.
- 6th Intl. Conf. on Unconventional Computation (UC'07), Kingston, Canada, Aug. 2007. Steering Committee member.
- Intl. Joint Conf. on Neural Networks (IJCNN 2008), Hong Kong, June 2008. Technical Committee member.
- 7th Intl. Conf. on Unconventional Computation (UC'08), Vienna, Austria, Aug. 2008. Steering Committee member.
- 8th Intl. Conf. on Unconventional Computation (UC'09), Ponta Delgada, Portugal, Sept. 2009. Steering Committee member.
- 2nd Intl. Conf. on Ethics and Values in Engineering (ICEHVE'10), Barcelona, March 2010, CSIC representative in the Sponsoring Committee.
- 9th Intl. Conf. on Unconventional Computation (UC'10), Tokyo, Japan, June 2010. Steering Committee member.
- 10th Intl. Conf. on Unconventional Computation (UC'11), Turku, Finland, June 2011. Steering Committee member.
- 11th Intl. Conf. on Unconventional Computation and Natural Computation (UCNC'2012), Orléans, France, Sept. 2012. Steering Committee member.
- 12th Intl. Conf. on Unconventional Computation and Natural Computation (UCNC'2013), Milano, Italia, July 2013. Steering Committee member.
- 13th Intl. Conf. on Unconventional Computation and Natural Computation (UCNC'2014), Ontario, Canada, July 2014. Steering Committee member.
- 14th Intl. Conf. on Unconventional Computation and Natural Computation (UCNC'2015), Auckland, New Zealand, August 2015. Steering Committee member.
- 15th Intl. Conf. on Unconventional Computation and Natural Computation (UCNC'2016), Manchester, July 2016. Steering Committee member.

9 Invited lectures

9.1 Plenary/Keynote lectures at conferences

- "Motion planning and control: Symbolic and neural levels of computation". **3rd. COGNITIVE Conference**, Madrid, Nov. 1990.

- “Neural Networks for Robot Control”. **11th European Conference on Artificial Intelligence (ECAI’94)**, Amsterdam, Aug. 1994.
- “Neural approaches to robot control: Four representative applications”. *3rd Intl. Workshop on Artificial Neural Networks (IWANN’95)*, Málaga, June 1995.
- “Robot Neurocontrol: An Overview”. **Intl. Conf. on Artificial Neural Networks (ICANN’95)**, Paris, Oct. 1995.
- “Neuroadaptive robots”. **Intl. Conf. on Pattern Recognition (ICPR-2000)**, Barcelona, Sept. 2000.
- “Natural Inspiration for Artificial Adaptivity: Some Neurocomputing Experiences in Robotics”. *4th Intl. Workshop on Unconventional Computation (UC’05)*, Sevilla, Oct. 2005.
- “Being human in the robot age”. **Science Forum at IEEE Intl. Conf. on Robotics and Automation (ICRA’13)**, Karlsruhe, May 2013.
- “From the Turing test to science fiction: The challenges of social robotics”. *16th Intl. Conf. of the Catalan Assoc. for AI (CCIA’13)*, Vic, Oct. 2013.
- “Service robots for citizens of the future”. **26th Annual Conf. of the Academia Europaea**, Barcelona, July 2014.
- “Clothing assistants: Challenges for robot learning”. **IEEE Intl. Conf. on Robotics and Automation (ICRA’15)**, Seattle, July 2015.
- “Confluence of science and fiction in current robotics” (in Catalan). *Intl. Conf. on Science and Fiction*, Barcelona, Sept. 2015.
- “Robotic assistants: research challenges, ethics, and the role of fiction”. **2nd Intl. Conf. on Social Robots in Therapy and Education (NewFriends’16)**, Barcelona, Nov. 2016.

9.2 Invited talks

- “Visión por Computador”. *Jornada sobre Fabricación Integrada por Computador, METROMATICA’85*, Zaragoza, Dec. 1985.
- “La investigación en robótica en el Instituto de Cibernética: Visión y planificación”. *Jornadas Hispano-Francesas sobre Comunicación: “Nuevas tecnologías, nueva cultura”*, Instituto Francés, Barcelona, Nov. 1985.
- “Automatic Planning of Assembly Robot Tasks”. *2èmes Journées INRIA - Universitat Politècnica de Catalunya sur Informatique et Robotique*, Saint-Maló, France, Nov. 1986.
- “Modelos de neuronas osciladoras y de sus interacciones sinápticas”. *2o Congreso de la Sociedad Española de Neurociencia (SEN)*, Barcelona, July 1987.
- “Sensorimotor integration in robots”. **3rd Int. Workshop on “Visuomotor Coordination: Experiments, Comparisons, Models, and Robots”**, Kassel, Alemania, Aug. 1987.

- “Exploring three possibilities in network design: Spontaneous node activity, node plasticity and temporal coding”. **NATO Advanced Research Workshop on “Neural Computers”**, Düsseldorf, Alemania, Sept./Oct. 1987.
- “Neural Learning Algorithms and their Applications in Robotics”. **NATO Advanced Research Workshop on “Self-Organization, Learning and Emergent Properties”**, Austin, Texas, March 1990.
- “Neuronal Oscillators: Experiments and Models”. *XI Sitges Conference*, Sitges, June 1990.
- “Redes Neuronales”. *Seminario “La Inteligencia Artificial en el Umbral del Siglo XXI”*, Universidad Internacional Menéndez Pelayo, Santander, June 1990.
- “Aplicaciones de redes neuronales en Ingeniería”. *Reunión Nacional sobre Redes Neuronales (RNsRN)*, Miraflores de la Sierra, Madrid, Sept. 1991.
- “Neural learning approaches to robot control”. **First IFIP Workshop of the Working Group 10.6 on Neural Computer Systems**, Grenoble, Francia, March 1992.
- “Adaptivity”. **NATO ASI “The Biology and Technology of Intelligent Autonomous Agents”**, Trento, Italia, Feb. 1993.
- “Motion in Contact”. **PROMotion School on “Robot Motion Planning”**, Rodez, Francia, April 1993.
- “Aplicaciones de las Redes Neuronales Artificiales en Robótica”. *Curso de “Redes Neuronais Naturais e Artificiais”*, Universidade de Santiago de Compostela, July 1993.
- “On Finding the Set of Inverse Kinematic Solutions for Redundant Manipulators”. **Workshop on “Computational Kinematics”**, Dagstuhl, Alemania, Oct. 1993.
- “An Introduction to Neural Networks”. *Course CIMPA on “Parallel Computing”*, Temuco, Chile, Jan. 1994.
- “Neural Learning Approaches to Robot Control”. *Tutorial in the Technology Transfer Workshop on Industrial Vision, Advanced Robots and Medical Imaging (IVAR’94)*, Leuven, June 1994.
- “Detección de colisiones en 3D”. *6 Encuentros de Geometría Computacional (6EGC)*, Barcelona, July 1995.
- “3D Collision Detection: A Survey”. **3rd PROMotion Workshop**, Roma, July 1995.
- “Enfoques alternativos de la cinemática inversa de robots: Razonamiento geométrico y redes neuronales”. *Course “Cinemática Computacional: Informática y Matemáticas para el Posicionamiento de Robots”*, organized by T. Recio, Cursos de Verano de la Universidad Complutense de Madrid, El Escorial, Aug. 1995.
- “Robot Neurocontrol: An Overview and Four Industrial Prototypes”. **Informatik Kolloquium**, Fakultät für Informatik, Universität Ulm, Jan. 1996.
- “Aprenentatge neuronal per al control de robots”. *Cicle de Conferències de l’Associació Catalana d’Intel·ligència Artificial (ACIA)*, Facultat de Ciències, Universitat Autònoma de Barcelona, Bellaterra, March 1996.

- “Aplicaciones de las redes neuronales artificiales en robótica”. **Celebration of the 3rd anniversary of the inauguration of the E.T.S. de Ingeniería Informática**, Universidad de Granada, May 1997.
- “Aplicaciones de redes neuronales en robótica y visión artificial”. Facultad de Ingeniería, Universidad de Santiago de Chile, Nov. 1997.
- “Control de robots mitjançant xarxes neuronals”. Societat Catalana de Tecnologia, *Institut d’Estudis Catalans*, Feb. 1999.
- “Robòtica”. Course “Inteligencia Artificial”, *Museu de la Ciència de Barcelona*, May 2001.
- “Robots con neuronas”. Course “HAL 9000: realidades y utopías de la inteligencia artificial”, *Universidad Internacional Menéndez Pelayo (UIMP)*, Valencia, Oct. 2001.
- “Robots con neuronas”. *XI Scientific Dissemination Conference*, Centro Cultural Caja de Burgos, Burgos, Nov. 2001.
- “A brach-and-prune algorithm for solving systems of distance constraints”. *AI Problem Solving Seminar*, Universitat Pompeu Fabra, Barcelona, May 2003.
- “L’estat actual de la recerca en robòtica”. *X Trobada de Ciència-Ficció*, Mataró, March 2006.
- “Natural inspiration for artificial adaptivity in robots”. **Seminar Series of the Max-Planck-Institut fur Dynamik und Selbstorganisation**, Bernstein Center for Computational Neuroscience, Gottingen, June 2006.
- “Intel·ligència robòtica: Quins robots volem?”. *2as Jornades de Robòtica*, Parc de Recerca Biomèdica de Barcelona (PRBB), Sept. 2007.
- “Robòtica”. *Aula d’Extensió Universitària*, Arenys de Mar, March 2009.
- “Volem robots intel·ligents o que ens facin intel·ligents?”. *Jornada First Lego League - Taller de Robòtica Lego*, CEIP Bogatell - IES Ítaca, Barcelona, April 2009.
- “Intel·ligència robòtica: quin tipus de robots volem?”. *4as Jornades de Robòtica Open Source*, Fira de Sabadell, May 2009.
- “Volem robots intel·ligents o que ens facin intel·ligents?”. *Jornades de Robòtica - II Concurs Intl. de Robòtica JET*, UPC, Campus de Terrassa, May 2009.
- “Robot Learning. PACO-PLUS project”. *Robot Learning Seminar*, UPC, Oct. 2009.
- “Volem robots intel·ligents o que ens ajudin a ser més intel·ligents?”. *Aula d’Extensió Universitària*, Sant Cugat, March/April 2010.
- “The Brain Theory roots of Cognitive Robotics”. **Symposium on Multidisciplinary Approaches to Understanding Mind and Brain**, Celebration of Michael Arbib’s 70th birthday, University of Arizona, Tucson, May 2010.
- “Fronteres de la Ciència: Els robots canviaran els éssers humans?”, **Opening Ceremony of the Institut Català d’Antropologia**, Universitat de Barcelona, Oct. 2010.
- “La interacció amb robots... canviarà l’ésser humà?”. *Aula d’Extensió Universitària*, Cerdanyola del Vallès, March 2011.

- “Robots y seres humanos”, **Intl. Workshop on ’The power of social classification systems’**, Universitat Autònoma de Barcelona (UAB), Nov. 2011.
- “La interacció amb robots... canviarà l’ésser humà?”. *Aula d’Extensió Universitària*, Castellar del Vallès, Nov. 2011.
- “Ciència i ficció: quina inspira quina?”. *CSIC Seminar Series “Inspiraciència”*, Biblioteca Sagrada Família, Jan. 2012.
- “Robots and human beings: closer ties”. **080 Future Fashion Festival**, Palau de Pedralbes, Barcelona, July 2012.
- “Service robots for citizens of the future”. **Smart City Expo World Congress**, Fira de Barcelona, Nov. 2012.
- “Current Challenges in Robotics Research”. **Opening Ceremony of the Catalan Society for Mathematics (SCM)**, Institut d’Estudis Catalans, Nov. 2012.
- “From industrial robots to social robots: An interdisciplinary challenge”. **Graduation Ceremony CFIS-UPC**, Science Museum (CosmoCaixa), Dec. 2012.
- “La interacció amb robots... canviarà l’ésser humà?”. *Aula d’Extensió Universitària*, Sabadell, March 2013.
- “Robots i éssers humans: els vincles s’estrenyen”. *Festa (ciència + tecnologia)*, Parc de la Ciutadella, Barcelona, June 2013.
- “Robot manipulation in human environments: Challenges for learning algorithms”. **Dagstuhl Seminar “Robots Learning from Experiences”**, Dagstuhl, Germany, Feb. 2014.
- “Robots socials: punt de trobada entre cinca i ficci”. *Octubre Centre de Cultura Contemporània*, Valencia, April 2014.
- “Robots humans”. *Cafs científics*. Casa Orlandai, Barcelona, May 2014.
- “Learning algorithms for robot manipulation of clothing and plant leaves”. **ICRA Workshop on “Advances in Robot Manipulation of Clothes and Flexible Objects”**, Hong-Kong, June 2014.
- “Social robots: Technology meets the Humanities”. Session on New Frontiers in Informatics, **26th Annual Conf. of the Academia Europaea**, Barcelona, July 2014.
- “Teaching Robots to help Humans with Clothing”. **Texas A&M Robotics Symposium**, College Station, Jan. 2015.
- “UU: teaching robots to Understand situations and reason about Uncertainties”. **AAAI NSF Sponsored Workshop: Research Issues at the Boundary of AI and Robotics**, Austin, Texas, Jan. 2015.
- “Robots i éssers humans: Els vincles s’estrenyen”. 3r Premi Llegim Ciència. Universitat de Vic, Feb. 2015.
- “La interacció amb robots... canviarà l’ésser humà?”. *Aula d’Extensió Universitària Les Corts*, Barcelona, March 2015.

- “Els reptes de la robòtica assistencial”. *75th anniversary of the Spanish Scientific Research Council (CSIC)*, Barcelona, March 2015.
- “Assistent(e)s robòtic(e)s: un punt de confluència entre tecnociència i humanitats”. Talk Series “Inspiraciència”, Library Sagrada Família, Barcelona, April 2015.
- “Robotic Assistants: Science meets Fiction”. *IJARS Lecture Series*, InTech, Seattle, May 2015.
- “La interacció amb robots... ens portar a una mutació sentimental?”. *Tertúlies de Literatura Científica*, Vic, Oct. 2015.
- “La interacció amb robots... ens portar a una mutació sentimental?”. *Cicle ”+Humans: ciència, tecnologia i coneixement”*, Ateneu Barcelonès, Barcelona, Jan. 2016.
- “Dilemes ètics en les novel·les, pel·lícules i sèries sobre robots”. *Cursos ”Els Juliors”*, Universitat de Barcelona, Jul. 2016.
- “Uncertainty, Usability and Understanding: U-turns of Robotic-AI”. **Robotics in the 21st century: Challenges and Promises**, Uslar, Germany, Sept. 2016.
- “How Robot Companions will change us: Science beyond Fiction”. *EuroCon’16*, Barcelona, Nov. 2016.

10 Theses advised

10.1 PhD Theses

- Joan Ilari i Valentí: “*Study of new heuristics to compute collision-free paths of rigid bodies in a 2D universe*”. Universitat Politècnica de Catalunya, April 1987.
- Federico Thomas Arroyo: “*Planificación de tareas de ensamblado basada en análisis de restricciones*”. Universitat Politècnica de Catalunya, July 1988.
- José del Rocio Millán Ruiz: “*A reinforcement learning connectionist approach to robot path finding*”. Universitat Politècnica de Catalunya, Oct. 1992.
- Enric Celaya Llover: “*Geometric reasoning for the determination of the position of objects linked by spatial relationships*”. Universitat Politècnica de Catalunya, Oct. 1992.
- Vicente Ruiz de Angulo García: “*Interferencia catastrófica en redes neuronales: Soluciones y relación con otros problemas del conexionismo*”. Euskal Herriko Unibertsitatea - Universidad del País Vasco, Jan. 1996.
- Robert Griñó Cubero: “*Contribución a la identificación de sistemas dinámicos mediante métodos conexionistas*” (co-advised by Dra. Gabriela Cembrano). Universitat Politècnica de Catalunya, Oct. 1997.
- Pau Bofill Soliguer: “*Xarxes neuronals per a la generació de dissenys en blocs*”. Universitat Politècnica de Catalunya, Nov. 1997.

- Pablo Jiménez Schlegl: “*Static and dynamic interference detection between polyhedra*”. Universitat Politècnica de Catalunya, Sept. 1998.
- Elisa Martínez Marroquín: “*Recovery of 3D structure and motion from the deformation of an active contour in a sequence of monocular images*”. Universitat Ramon Llull, Oct. 2000.
- Eduardo Todt: “*Visual landmark detection for navigation in outdoor environments*”. Universitat Politècnica de Catalunya, July 2005.
- Guillem Alenyà Ribas: “*Estimació del moviment de robots mitjançant contorns actius*”. Universitat Politècnica de Catalunya, Oct. 2007.
- Leonel Rozo: “*Robot learning from demonstration of force-based manipulation tasks*” (co-advised by Dr. Pablo Jiménez). Universitat Politècnica de Catalunya, June 2013.
- Stefan Ulbrich: “*Sensorimotor learning for an artificial body schema on humanoid robots*” (co-advised by Prof. Dr.-Ing. Rüdiger Dillmann). Karlsruher Instituts für Technologie, Feb. 2014.
- Edgar Simó Serra: “*Understanding Human-Centric Images: From Geometry to Fashion*” (co-advised by Dr. Francesc Moreno-Noguer). Universitat Politècnica de Catalunya, June 2015.
- Sergi Foix Salmerón: “*Task-oriented viewpoint planning for free-form objects*” (co-advised by Dr. Guillem Alenyà). Universitat Politècnica de Catalunya, July 2016.
- Syed Farzad Husain: “*Perceiving Dynamic Environments: From Surface Geometry to Semantic Representation*” (co-advised by Dr. Babette Dellen). Universitat Politècnica de Catalunya, Oct. 2016.
- David Martínez Martínez: “*Learning Relational Models with Human Interaction for Planning in Robotics*” (co-advised by Dr. Guillem Alenyà). Universitat Politècnica de Catalunya, under development.
- Adrià Colomé Figueras: “*Bimanual robot manipulation of deformable objects*”. Universitat Politècnica de Catalunya, under development.
- Gerard Canal Camprodon: “*Adapting robot performance to user preferences learned from visual monitoring*” (co-advised by Dr. Guillem Alenyà). Universitat Politècnica de Catalunya, under development.

10.2 Master Theses

- Marçal Garolera Huguet: “*Study of singularities of a family of parallel manipulators*” (co-advised by Dr. Maria Alberich-Carramiñana). E.T.S. Ingeniería de Telecomunicaciones de Barcelona, Universitat Politècnica de Catalunya, June 2007.
- Adrià Colomé Figueras: “*Anàlisi de l’espai de treball i de la manipulabilitat d’un robot redundant*”. Universitat Politècnica de Catalunya, Sept. 2011.
- Pol Monsó Purtí: “*POMDP approach to robotic sorting and manipulation of deformable objects*” (co-advised by Dr. Guillem Alenyà). Universitat Politècnica de Catalunya, Sept. 2011.

10.3 Bachelor Theses

- Antoni Planells València: “*Control d’un manipulador redundant basat en un model dinàmic obtingut per identificació*”. School of Industrial Engineering, Universitat Politècnica de Catalunya, July 2014.
- Alejandro Suárez Hernández: “*Integration of task and motion planning for robotics*” (co-advised by Dr. Guillem Alenyà). Computer Science Department, Universitat Politècnica de Catalunya, April 2016.

11 Research management and evaluation

11.1 Management appointments

1983-1987: *Head* of the Signals and Systems department at the Institut de Cibernètica (CSIC-UPC).

1984-1985: *Member of the Committee that started the Asociación Española Para la Inteligencia Artificial (AEPIA)*, enclosed within the European Committee for the Coordination of Artificial Intelligence (ECCAI).

1985-1988: *Secretary of the Asociación Española Para la Inteligencia Artificial (AEPIA)*.

1989-1991: *Coordinator of the Doctoral Program* on “Advanced Automation and Robotics”, Universitat Politècnica de Catalunya.

1990-1992: *Vice-director* of the Institut de Cibernètica (CSIC-UPC).

1993-1996: *Member of the Area Committee* on Physics and Physics Technologies at CSIC.

2001-2004 *Member of the Advisory Council for Research Evaluation (CASA)* of the Commission for Research and Technological Innovation (CIRIT) of the Generalitat de Catalunya.

2004-2008 *Member of the Area Committee* on Physics and Physics Technologies at CSIC.

2006-2008 *Head* of the Robotics Group at the Institut de Robòtica i Informàtica Industrial (CSIC-UPC).

2006-2010 *Member of the Advisory Commission for Research Quality* of the Agency for Quality of the University System of Catalunya (AQU), in the area of Engineering and Architecture.

2009-pres. *Head* of the Perception and Manipulation Group at the Institut de Robòtica i Informàtica Industrial (CSIC-UPC).

2012-2013 *Associate Vice-President for Publications* of the Robotics and Automation Society (RAS) of IEEE.

2012-pres. *Member of the Scientific Advisory Board* of the Bernstein Center for Computational Neuroscience (BCCN) and the Bernstein Focus Neurotechnology (BFNT), Göttingen, Germany.

2016-2018 *Elected Member of the Administration Committee (AdCom)*, IEEE Robotics and Automation Society (RAS).

2016-2020 *Member of the Review Panel* of the Swiss National Centre of Excellence (NCCR) in Robotics, Zürich and Lausanne, Switzerland.

11.2 Assessment Committees

1987-pres. Regular member of *PhD Committees* at UPC, and occasional member at other Spanish universities such as Cantabria, Jaume I, Euskal Herriko, Ramon Llull, among others.

2011 *PhD Evaluation Committee* of Jeannette Bohg (Advisor: Danica Kragic), Kungliga Tekniska Högskolan (KTH), Stockholm, Sweden.

1991-pres. Regular member of *Assessment Committees* for new CSIC positions and promotion ones.

2013 *Assessment Committee* for a position of Associate Professor in Cognitive and Applied Robotics, Southern Denmark University (SDU), Odense, Denmark.

2016-2019 *Doctoral Thesis Committee* of Matev Pobernik (Advisor: Ivan Bratko), Faculty of Computer and Information Sciences, University of Ljubljana, Slovenia.

11.3 Research evaluation

Spanish Commission for Science and Technology (CICYT):

- Member of the Advisory Committee of the Spanish Research Program on Information and Communication Technologies (TIC), 1995-1999.
- Reviewer of the final outcome of projects CICYT, area TIC, several years.
- Member of the Advisory Committee of the Spanish Research Program on Industrial Design and Manufacturing (DPI), 2000-2003.
- Reviewer of the final outcome of projects CICYT, in the area of Industrial Design and Manufacturing (DPI), May 2001.

Spanish Agency of Evaluation and Prospective (ANEP):

- Evaluation of projects submitted to several calls of CICYT and Autonomic Communities.
- Member of the Committee to appoint Ramón y Cajal positions in the area of Computer Science and Computer Technology, July 2002.

Ministry of Science and Technology (MCYT):

- Member of the jury for the Spanish Research Award “Leonardo Torres Quevedo” in the area of Engineering, Sept. 2002 and Sept. 2006.
- Member of the jury for the III Certamen Universitario “Arquímedes”, Jan. 2006.

Spanish Scientific Association for Informatics (SCIE):

- Member of the jury for the Spanish National Informatics Award, Sept. 2010.

Spanish Association for Normalization and Certification (AENOR), Terminology Center (Term-cat):

- Advisor in the development of norm UNE-EN ISO 14539 on “Manipulation robots”.

Generality of Catalonia, Commission of Research and Technological Innovation (CIRIT):

- Evaluation report for the II Research Program of Catalonia, Nov. 2003.
- Contribution to the report “Catalonia Research and Innovation 2020”, National Agreement for Research and Innovation, May 2009.
- Collaboration with the Department of Labour in the project “ARIADNA - mentoring net”, acting as advisor of young researchers, May-Nov. 2010.
- Advisor of the Agency for Quality of the University System of Catalunya (AQU) in the area of Engineering and Architecture, 2010-2013.

City Council of Barcelona:

- Member of the jury for the “Barcelona City Award” in the area of Technological Research, February 2009.

Aragón Government, Dept. of Education and Science:

- Evaluation for the Research Mobility Program EUROPA XXI, Sept. 2007.

Commission of the European Communities:

- Evaluation of several project proposals submitted to the III Framework Program (Basic Research) and IV Framework Program (Long-Term Research).
- Review meetings at the CEC Headquarters to assign reviewers and integrate evaluations, Sept-Oct. 1995, Sept. 1997.
- Annual reviews for the three years of the project MUCOM II (Esprit III BRA), 1992-95.
- Participant in the brainstorm workshop “Beyond the Made and the Born” to define the call for joint projects in the areas of Computing and Neurosciences, Brussels, June 1999.
- Annual reviews of the networks of excellence NEuroNet (28103), MLNet and COIL (28103), Feb. 2000.
- Annual reviews for the three years of the project MOLOG (28226) (IV framework, LTR), 1999-2002.
- Participant in the Strategic Planning Workshop on Future and Emerging Technologies, to define the main lines of the VI Framework Program in this area, April 2001.
- Annual reviews for the three years of the project MOVIE (39250) (V framework, IST), 2004-2006.

- Evaluation of several project proposals submitted to the VI Framework Program (IST-FET Open), 2005-2006.
- 1st annual review of the project TOPOSYS (318493) (VII framework, IST), 2013.
- Annual reviews for the four years of the project SoMa (645599), (H2020, ICT), 2016-2019.

NATO Scientific Affairs Division:

- Evaluation of project proposals submitted to several calls.

European Science Foundation (ESF):

- Evaluation of workshop proposals submitted to several calls.

European Coordinated Research on Long-term Challenges in ICST (CHIST-ERA):

- Evaluation of project proposals submitted to the first call, 2011.

European Research Council (ERC):

- Evaluation of Starting Grant proposals, 2015.

12 Awards

1981: “*Scientific dissemination*” Award from the Science Museum in Barcelona, for the paper “El cerebro dividido” (written together with L.J. García Larrea).

1982: Prize “*Mundo Electrónico*” to the best book on professional electronics, for the book “Robótica Industrial” (written together with G. Ferraté, J. Amat, J. Ayza, L. Basañez, F. Ferrer and R. Huber).

1983: *Second Prize “Mundo Electrónico”* to the best paper in this journal during the academic year 1982-83, for the paper “Sistemas de visión tridimensional en los robots industriales” (written together with J. Amat and L. Basañez).

1983: **Best Master’s record in Mathematics.** Universitat de Barcelona.

1984: *Best student award* of the Institut d’Estudis Catalans, for the monograph “Correspondència 2D-1D: Aplicació al càlcul de la TFD i la convolució circular”.

1985: Prize “**Rafael Campalans**” of the Institut d’Estudis Catalans, for the monograph “Modelització i simulació de neurones i xarxes neuronals amb capacitat d’aprenentatge de patrons temporals”.

2000: **Narcís Monturiol Medal to a significant scientific and technological career** of the Generalitat de Catalunya.

2007: **Fellow of ECCAI** (European Coordinating Committee for Artificial Intelligence).

2010: **Nominated Member of Academia Europaea.**

2011: *Senior Member of IEEE* (Institute of Electrical and Electronic Engineers).

2011: *Senior Member of INNS* (International Neural Networks Society).

2013: **Elected Member of the Royal Academy of Sciences and Arts of Barcelona.**

2015: *Best Paper Award* at the IAPR Intl. Conf. on Machine Vision Applications (MVA'15) for "Lie Algebra-Based Kinematic Prior for 3D Human Pose Tracking" by E. Simó-Serra, C. Torras and F. Moreno-Noguer (see [ic.115]).

2016: *Prize Marc Esteva to best PhD thesis*, Catalan Association for AI (ACIA), to E. Simó-Serra's thesis entitled "Understanding Human-Centric Images: From Geometry to Fashion", co-advised with F. Moreno-Noguer.