

AUDE BILLARD

FULL PROFESSOR, SCHOOL OF ENGINEERING, EPFL

DIRECTOR OF LASA (LEARNING ALGORITHMS AND SYSTEMS LABORATORY)

SUMMARY

My research interests span the control and design of robotic systems meant to interact with humans. To this goal, I pursue research in three complementary areas: a) the development of control systems for teaching robots through human demonstration; b) the study of the neural and cognitive processes underpinning imitation learning in humans; c) the design of user-friendly human-computer interfaces to facilitate human-robot interaction. Additionally, I conduct research on societal aspects of the use of robotics with application to diagnosis and therapy of children with autism. My competences are in robot control, signal processing and machine learning. These are fundamental to the research I pursue and the core elements of my teaching.

CONTACT

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EXPERIENCE

EPFL

2013 - Present

● Full Professor, School of Engineering, EPFL

EPFL

2006 - 2012

● Associate Professor with Tenure, School of Engineering, EPFL

EPFL

2002 - 2005

● SNF Assistant Professor, School of Engineering, EPFL

University of Southern California

2000 - 2002

● Research Assistant Professor, Computer Science Department

University of Southern California

1999 - 2000

● Research Associate, Computer Science Department

EPFL

1998 - 1999

● Postdoctoral Fellow, Department of Informatics, EPFL

EDUCATION

University of Edinburgh, UK

1998

● PhD in Artificial Intelligence

University of Edinburgh, UK

1996

● MSc in Knowledge-Based Systems

EPFL

2002 - 2005

● MSc & BSc in Physics

APPOINTMENTS

Honorary Appointments

● Adjunct Faculty, Computer Science Department University of Southern California

● Fellow, Computer Science Department, University of Hertfordshire

Industry Appointments

● Founder & Member of Administrative Board, POMERLO SARL Switzerland (2011)

● Founder & Member of Administrative Board, DIDEL SA, Switzerland (2000)

AWARDS / HONORS

Plenary Speaker	2016	Distinguished Lecturer, King's College, London, UK
	2016	11 th ACM/IEEE International Conference on Human-Robot Interaction, Christchurch, NZ
	2015	IEEE International Conference on Humanoids, Seoul, Korea, November
	2013	IEEE-RAS International Conference on Robotics and Automation (ICRA), Karlsruhe
	2005	IEEE Symposium on Human-Robot Interactive Communication (ROMAN), Vanderbilt University, Nashville, TN USA
Best Paper Awards	2016	Best Paper Award, Robotics Science and Systems, (RSS)
	2014	King-Sun Fu Best Transactions Paper Award, IEEE & Robotics and Automation Society
	2012	Best Cognitive Robotics Paper Award, Int. Conf. on Robotics and Automation (ICRA)
	2011	JTSC Novel Technology Best Paper Award, IEEE Int. Conf. Intelligent & Robotics Systems (IROS)
	2005	Best Paper Award, IEEE Symposium on Human-Robot Interaction (ROMAN)
	2004	Best Paper Award, Workshop on Universal Access and Assistive Technology (CWUATT)
	2007	Nominated for Best Paper Award, Neural Information Processing Symposium
Personal Awards	2016	Nominated as Member of SATW, Swiss Academy of Engineering Sciences
	2016	Nominated for Outstanding Women in Academics, SNSF, AcademiaNet
	2013	Best reviewer award for the IEEE Robotics and Automation Society
	2002	Swiss National Science Foundation Career Award
	2003	Outstanding Young Person in Science and Innovation, Junior Chamber of Commerce, Switzerland
	2001	Innovative Teaching Grant, Intel Corporation, USA
Scholarships / Fellowships	1999	<i>Fellowship</i> , Medicus Foundation, New York, USA
	1997	<i>Fellowship</i> , Swiss National Science Foundation, Switzerland
	1996	<i>Scholarship</i> , Foundation Leon et Helene Mouttet, Lausanne, Switzerland
	1995	<i>Scholarship</i> , The Sunburst Foundation, USA.

EDITORIAL APPOINTMENTS / CONFERENCE ORGANIZATION / SERVICES

- *Industry Forum Chair, IEEE Robotics and Automation Society Committee, 2015*
- *Senior Editor of the IEEE Transactions in Robotics, 2015-present*
- *Member of Advisory Board, Ecole des Mines & Telecommunication, Paris, 2013-present*
- *President (elected) of the EPFL Teaching Body Assembly, 2013-present.*
- *Associate Editor of the International Journal of Social Robotics, 2013-present*
- *Associate Editor of the IEEE Transactions in Robotics, 2013-2014*
- *Member of the Editorial Board of the Interaction Studies Journal (John Benjamins Publishing Company), 2008-2011*
- *General chair IEEE-ACM International Conference on Human-Robot Interactions (HRI 2011)*
- *Co-General chair IEEE-RAS International Conference on Humanoid Robots (Humanoids 2006)*
- *Elected Member of the Administrative Committee of the IEEE Robotics and Automation Society from 2006- 2008 / 2009 – 2011 / 2015*
- *President (elected) of the EPFL School Assembly, 2006-2007*
- *Member of the organizational committee (general chair, publicity chair, panel chair, member of award committee, exhibition chair and associate editor, workshop/tutorial chair) for numerous international conferences (IROS, ICRA, HRI, Humanoids and RSS)*
- *Member of the program committee of numerous international conferences in robotics (ICRA, IROS, Humanoids, RSS, BioRob, HRI, ICDL), and in Machine Learning and Artificial Intelligence (ICML, NIPS, IJCAI, ECAL, ICANN, SAB)*
- *Chair of the steering committee of the IEEE Int. Conf. on Humanoid Robots (Humanoids) and member of the steering committee of the ACM-IEEE Int. Conf. on Human-Robot Interaction (HRI)*

ACADEMIC ACTIVITES

PhD Supervision

16 Completed (3 awards & 5 nominated)
8 in Progress

Postdoc Supervision

11 Completed (3 hold faculty positions, 4 are group leaders in Industry)
4 in Progress

Undergraduate / MSc Teaching

Applied Machine Learning, EPFL
Machine Learning, EPFL
Advanced Machine Learning, EPFL
Autonomous Robots, EPFL
Topics in Autonomous Robotics, EPFL
Mechatronics, University of Southern California

FUNDING RECORD

Projects funded by the Swiss National Science Foundation

2011 - 2014

National Center of Competence in Robotics (NCCR in Robotics)
Co-PI and Project Leader

2006 - 2013

National Center of Competences in Interactive Multimodal Information
Management (NCCR IM2): *Co-PI and Project Leader*
SNF Professorship, Swiss National Science Foundation

2002 - 2006

Projects funded by the European Commission

2015 - 2019

SECONDHANDS – H2020. PI, Scientific Coordinator and Work Package Leader

2015 – 2019

COGIMON – IP H2020. PI and Work Package Leader

2013 - 2017

ALTEREGO – STREP. PI and Work Package Leader

2012 – 2014

SKILLASSIST – Marie Curie Grant (to support postdoctoral fellow Suphi Erden)

2012 - 2016

ROBOHOW – Integrated Project. PI and Work Package Leader

2010 - 2015

AMARSI – Integrated Project. Co-PI for EPFL

2009 – 2013

FIRST-MM – STREP: PI and Work Package Leader

2008 - 2012

ROBOSKIN – STREP: PI and Work Package Leader

2006 – 2008

FEELIX-GROWING, FEEL, Interact, Express - STREP: PI

2006 - 2008

ROBOT@CWE – STREP: PI and Work Package Leader

2006 - 2008

TACT – STREP: PI and Work Package Leader

2004 – 2009

ROBOT-CUB – Integrated Project: PI and Work Package Leader

2004 - 2008

COGNIRON – Integrated Project: co-PI and Work Package Leader

ADDITIONAL INFORMATION

Nationality – Swiss, French
Languages – French, English
3 Daughters
h-index (google scholar) 52
h-index (Scopus) 30

Society Memberships

IEEE Robotics and Automation
IEEE Women in Engineering
Society for Neuroscience
Institute of Electrical and Electronics Engineers
American Association for Artificial Intelligence
Society for the Study of Artificial Intelligence and the Simulation of Behaviour
EPFL WISH Foundation

PUBLICATIONS LIST

Peer-Reviewed Journal Articles

1. Kronander, K. and [Billard, A.](#) (2016) **Passive Interaction Control with Dynamical Systems**. IEEE Robotics and Automation Letters, vol. 1, iss. 1, Jan. 2016, pp. 106-113. *selected for presentation at ICRA 2016, Stockholm, Sweden.*
2. Mirrazavi Salehian, S. S., Khoramshahi, M. and [Billard, A.](#) (2016) **A Dynamical System Approach for Catching Softly a Flying Object: Theory and Experiment**. in IEEE Transactions on Robotics, vol. 32, no. 2, pp. 462-471, April 2016. **Best Paper Award RSS 2016**
3. Kaiyu Hang, Miao, Li, Johannes A. Stork, [Billard, A.](#), Florian T. Pokorny, Aude Billard and D. Kragic (2016) **Hierarchical Fingertip Space: A Unified Framework for Grasp Planning and In-Hand Grasp Adaptation**. IEEE Transaction on Robotics, In press.
4. Khoramshahi, M., Shukla, A., Raffard, S, Bardy, B.G and [Billard, A.](#) (2016) **Role of Gaze Cues in Interpersonal Motor Coordination: Towards Higher Affiliation in Human-Robot Interaction**. Accepted in PlosOne.
5. Kronander, K., Khansari Zadeh, S. M. and Billard, A. (2015) **Incremental Motion Learning with Locally Modulated Dynamical Systems**. Robotics and Autonomous Systems. *In Press*
6. Magrelli, S., Noris, B., Jermann, P., Ansermet, F., Hentsch, F., Nadel, J and [Billard, A.](#) (2014) **A Wearable Camera Detects Gaze Peculiarities during Social Interactions in Young Children with Pervasive Developmental Disorders**. IEEE Transactions on Autonomous Mental Development (TAMD), Volume PP(99). *doi: 10.1109/TAMD.2014.2327812.*
7. Lukic, L, Santos-Victor, J. and [Billard, A.](#) (2014) **Learning robotic eye-arm-hand coordination from human demonstration: a coupled dynamical systems approach**. Biological Cybernetics.
8. Khansari Zadeh, S. M. and [Billard, A.](#) (2014) **Learning Control Lyapunov Function to Ensure Stability of Dynamical System-based Robot Reaching Motions**. Robotics and Autonomous Systems.
9. Kim, S., Shukla, A. and [Billard, A.](#) (2014) **Catching Objects in Flight**. IEEE Transactions on Robotics, Volume 30, Issue 5. **IEEE-RAS King-Sun Fu Best IEEE Transaction on Robotics Paper**
10. Erden, M.S. and [Billard, A.](#) (2014) **End-Point Impedance Measurements Across Dominant and Nondominant Hands and Robotic Assistance with Directional Damping**. IEEE Transactions on Cybernetics.
11. El-Khoury, S., de Souza, R. L. and [Billard, A.](#) (2014) **On Computing Task-Oriented Grasps**. Robotics and Autonomous Systems.
12. de Chambrier, Guillaume and [Billard, A.](#) (2014) **Learning search policies from humans in a partially observable context**. Journal of Robotics and Biomimetics in volume 1.
13. Magrelli, S., Jermann, P., Noris, B., Ansermet, F., Hentsch, F., Nadel, J. and [Billard, A.](#) (2013) **Social orienting of children with autism to facial expressions and speech: a study with a wearable eye-tracker in naturalistic settings**. Frontiers in Psychology, Volume 4(840). *doi: 10.3389/fpsyg.2013.00840.*
14. [Billard, A.](#) and Grollman, D.H (2013) **Learning by Demonstration**. Scholarpedia, 8(12):3824; *doi:10.4249/scholarpedia.3824.*
15. Kronander, K. and [Billard, A.](#) (2013) **Learning Compliant Manipulation through Kinesthetic and Tactile Human-Robot Interaction**. IEEE Transactions on Haptics. *10.1109/TOH.2013.54.*

16. Davilla-Ross, M., Hutchinson, J., Russel, J., Schaeffer, J., [Billard, A.](#), Hopkins, W. and Bard, K. (2013) **Triggering social interactions: chimpanzees respond to imitation by a humanoid robot and request responses from it.** *Animal Cognition*. 10.1007/s10071-013-0689-9.
17. El-Khoury, S., Miao, Li and [Billard, A.](#) (2013) **On the Generation of a Variety of Grasps.** *Robotics and Autonomous Systems*. Volume 61, Issue 12, Pages 1335–1349.
18. Pais, A. L., Argall, Brenna Dee and [Billard, A.](#) (2013) **Assessing Interaction Dynamics in the Context of Robot Programming by Demonstration.** *International Journal of Social Robotics*, November 2013, Volume 5, Issue 4, pp 477-490.
19. Schmitow, C, Stenberg, G and [Billard, A.](#) (2013) **Measuring Gaze Direction with a Head-Mounted Camera.** *International Journal of Behavioral Development*, Volume 37 No 5, September 2013.
20. Noris, B., Nadel, J, Barker, M., Hadjikhani, N. and [Billard, A.](#) (2012) **Investigating gaze of children with ASD in naturalistic settings.** *PLOS ONE*. 7(9): e44144. doi:10.1371
21. Khansari Zadeh, S. M., Kronander, K. and [Billard, A.](#) (2012) **Learning to Play Minigolf: A Dynamical System-based Approach.** *Advanced Robotics*. vol. 26, num. 17, p. 1967-1993.
22. Grollman, D and [Billard, A.](#) (2012), **Robot Learning from Failed Demonstrations**, *Int. Journal of Social Robotics*, Volume 4, Issue 4, pp 331-342.
23. Kim, S. and [Billard, A.](#) (2012), **Estimating the non-linear dynamics of free-flying objects.** *Robotics and Autonomous Systems*. Volume 60, Issue 9, P. 1108–1122..
24. Khansari Zadeh, S. M. and [Billard, A.](#) (2012) **A Dynamical System Approach to Realtime Obstacle Avoidance.** *Autonomous Robots*, 32(4), 433-454.
25. Shukla, A. and [Billard, A.](#) (2012) **Coupled dynamical system based arm-hand grasping model for learning fast adaptation strategies.** *Robotics and Autonomous Systems*. Volume 60, p. 424--440.
26. Sauser, E., Argall, Brenna Dee, Metta, Giorgio and [Billard, A.](#) (2012) **Iterative Learning of Grasp Adaptation through Human Corrections.** *Robotics and Autonomous Systems*. Volume 60, Issue 1, Pages 55–71.
27. Khansari, M, [Billard, A.](#) (2011) **Learning Stable Non-Linear Dynamical Systems with Gaussian Mixture Models**, *IEEE Transactions in Robotics*. vol. 27, num 5, p. 943-957.
28. Hersch, M., [Billard, A.](#) and Bergmann, S. (2011) **Iterative Estimation of Rigid Body Transformations.** *Journal of Mathematical Imaging and Vision*. vol. 43, p. 1-9.
29. Lichocki, P, Kahn, P and [Billard, A.](#) (2011) **A Survey of the Current Ethical Landscape in Robotics.** *IEEE Robotics and Automation Magazine*, vol. 18:1, p. 39 - 50.
30. Noris, B., Keller, J-B. and [Billard, A.](#) (2011) **A Wearable Gaze Tracking System for Children in Unconstrained Environments.** *Computer Vision and Image Understanding*. Volume 115 Issue 4, Pages 476-486.
31. Argall, B. D., Sauser, E. and [Billard, A.](#) (2011) **Tactile Guidance for Policy Adaptation.** *Foundations and Trends in Robotics*. 1(2), 79-133.
32. Argall, B. D. and [Billard, A.](#) (2010) **A Survey of Tactile Human-Robot Interactions.** *Robotics and Autonomous Systems*, vol. 58, num. 10, 2010, p. 1159-1176.
33. Gribovskaya, E., Khansari Zadeh, S. M. and [Billard, A.](#) (2010) **Learning Nonlinear Multivariate Dynamics of Motion in Robotic Manipulators.** *International Journal of Robotics Research*. vol. 30, 1: p. 80-117.
34. Murphy, R, Nomura, T, [Billard, A.](#) and Burke, J. (2010) **Human-Robot Interaction: An exclusive course for Computer Scientists and Engineers.** *IEEE Robotics and Automation Magazin*, p.83-89.
35. Petreska, B, Billard, A, Hermsdörfer, J and Goldenberg, G. (2010), **Revisiting callosal apraxia: the right hemisphere can imitate the orientation but not the position of the hand.** *Neuropsychologia*, vol. 48, num. 9, p. 2509-2516.

36. S. Calinon, F. D'halluin, E. Sauser, D. Caldwell and [Billard, A.](#), (2010) **A probabilistic approach based on dynamical systems to learn and reproduce gestures by imitation**. IEEE Robotics and Automation Magazine, vol. 17, num. 2, 2010, p. 44–54.
37. S. Calinon and [Billard, A.](#), (2009), **Statistical Learning by Imitation of Competing Constraints in Joint Space and Task Space**. Advanced Robotics, 23 2059-2076.
38. B. Petreska and [Billard, A.](#), (2009), **Movement Curvature Planning through Force Field Internal Models**. Biological Cybernetics, vol. 100, p. 331-350.
39. M. Hersch, F. Guenter, S. Calinon and [Billard, A.](#), **Dynamical System Modulation for Robot Learning via Kinesthetic Demonstrations**, IEEE Transactions on Robotics, *In press*, (2008).
40. M. Hersch, E. Sauser and [Billard, A.](#), (2008). **Online learning of the body schema**, International Journal of Humanoid Robotics, 5:2, 161-181.
41. Hersch, M. and [Billard, A.](#) (2008) **Reaching with Multi-Referential Dynamical Systems**. Autonomous Robots. 25 p.71-83.
42. Guenter, F., Hersch, M., Calinon, S. and [Billard, A.](#) (2007) **Reinforcement Learning for Imitating Constrained Reaching Movements**. RSJ Advanced Robotics, Special Issue on Imitative Robots. Vol. 21, No. 13, 1521-1544.
43. Calinon, S. and [Billard, A.](#) (2007) **What is the Teacher's Role in Robot Programming by Demonstration? - Toward Benchmarks for Improved Learning**. Interaction Studies, Special Issue on Psychological Benchmarks in Human-Robot Interaction, 8:3, 441-464.
44. Brooks, A., van der Zwan, R., [Billard, A.](#), Petreska, B., Clarke, S. and Blanke, O. (2007) **Auditory motion affects visual biological motion processing**. Neuropsychologia, Vol. 45(3), 523-530.
45. Calinon, S., Guenter, F. and [Billard, A.](#) (2007) **On Learning, Representing and Generalizing a Task in a Humanoid Robot**. IEEE Transactions on Systems, Man and Cybernetics, 37:2. Part B. Special issue on robot learning by observation, demonstration and imitation, 286–298.
46. Sauser, E. and [Billard, A.](#) (2006) **Dynamic Updating of Distributed Neural Representations using Forward Models**. Biological Cybernetics, 95(6), 567-588.
47. [Billard, A.](#), Robins, B, Dautenhahn, K. and Nadel, J (2006) **Building Robota, a Mini-Humanoid Robot for the Rehabilitation of Children with Autism**. The RESNA Assistive Technology Journal. Vol. 19, Issue 1.
48. Sauser, E. and [Billard, A.](#) (2006) **Parallel and Distributed Neural Models of the Ideomotor Principle: An Investigation of Imitative Cortical Pathways**. Neural Networks, 19(3): 285-298.
49. Sauser, E. and [Billard, A.](#) (2005) **Three dimensional frames of reference transformations using gain modulated populations of neurons**. Neurocomputing, 64, 5-24.
50. [Billard, A.](#), Calinon, S. and Guenter, F. (2006) **Discriminative and Adaptive Imitation in Uni-Manual and Bi-Manual Tasks**. Robotics and Autonomous Systems, 54:5.
51. Robins, B, Dautenhahn, K., te Boekhorst, R. and [Billard, A.](#) (2004) **Robotic Assistants in Therapy and Education of Children with Autism: Can a Small Humanoid Robot Help Encourage Social Interaction Skills?** Special issue of the International Journal of Universal Access in the Information Society (UAIS), Springer-Verlag.
52. [Billard, A.](#), Epars, Y., Calinon, S., Cheng, G. and Schaal, S. (2004) **Discovering Optimal Imitation Strategies**. Robotics & Autonomous Systems, 47:2-3, p.69-77.
53. [Billard, A.](#) (2003) **Robota: Clever Toy and Educational Tool**. Robotics & Autonomous Systems, 42, 259-269.
54. Schaal, S., Ijspeert, A.J. and [Billard, A.](#) (2003) **Computational Approaches to Motor Learning by Imitation**. Philosophical Transactions: Biological Sciences (The Royal Society), 358:1431, p.537-547.

55. Ijspeert, A.J., Martinoli, A., [Billard, A.](#) and Gambardella, L.M. (2001) **Collaboration through the exploitation of local interactions in autonomous collective robotics: the stick pulling experiment.** *Autonomous Robots*, 11:2, 149-171.
56. [Billard, A.](#) and Mataric, M. (2001) **Learning human arm movements by imitation: Evaluation of a biologically-inspired connectionist architecture.** *Robotics & Autonomous Systems* 941, 1-16.
57. Christel, M. and [Billard, A.](#) (2001) **How monkeys morphology constrain natural prehension kinematics. unconstrained conditions and simulation.** *Behavioral Brain Research*, 131 (1-2), 169-184.
58. [Billard, A.](#), Ijspeert, A.J. and Martinoli, A. (2000) **A multi-robot system for adaptive exploration of a fast changing environment: probabilistic modeling and experimental study.** *Connection Science*, Vol. 11, No. 3/4, 357-377.
59. [Billard, A.](#) and Dautenhahn, K. (2000) **Experiments in social robotics: grounding and use of communication in autonomous agents.** *Adaptive Behavior*, vol. 7:3/4, 411-434.
60. [Billard, A.](#) (2000) **Learning motor skills by imitation: a biologically inspired robotic model.** *Cybernetics & Systems*, 32, 1-2, 155-193.
61. Arbib, M., [Billard, A.](#), Iacoboni, M. and Oztop, E. (2000) **Synthetic brain imaging: grasping, mirror neurons and imitation.** *Neural Networks*, 13 (8/9), 975-997.
62. [Billard, A.](#) and Hayes, G. (1999) **DRAMA, a connectionist architecture for control and learning in autonomous robots.** *Adaptive Behavior Journal*, Vol. 7:1, 35-64.
63. [Billard, A.](#) (1999) **DRAMA, a connectionist architecture for on-line learning and control of autonomous robots: Experiments on learning of a synthetic proto-language with a doll robot.** *Industrial Robot Journal*, 26:1, 59-66.

Peer-reviewed Conference Proceedings

64. Figueroa, N., Pais, A. L. and [Billard, A.](#) (2016) **Learning Complex Sequential Tasks from Demonstration: A Pizza Dough Rolling Case Study.** In Proceedings of the 2016 ACM/IEEE International Conference on Human-Robot Interaction. *HRI Pioneers Workshop*.
65. Kaiyu Hang, J. A. Haustein, Miao, Li, [Billard, A.](#), C. Smith and D. Kragic (2016) **On the Evolution of Fingertip Grasping Manifolds.** ICRA.
66. Mirrazavi Salehian, S. S., Figueroa, N. and [Billard, A.](#) (2016) **Coordinated multi-arm motion planning: Reaching for moving objects in the face of uncertainty.** In Proceedings of Robotics: Science and Systems XVI , Arbor, Michigan, USA.
67. Beetz, M., Bessler, D., Winkler, J., Bartels, G., [Billard, A.](#), Figueroa, N., Pais, A. L. and et al. (2016) **Open Robotics Research Using Web-based Knowledge Services.** In Proceedings of the International Conference on Robotics and Automation (ICRA), Stockholm, Sweden, 2016.
68. Yin, H., Alves-Oliveira, P., Melo, F. S., [Billard, A.](#) and Paiva, A. (2016) **Synthesizing Robotic Handwriting Motion by Learning from Human Demonstrations.** In Proceedings of International Joint Conference on Artificial Intelligence (IJCAI). *In press*.
69. Pais, A. L. and [Billard, A.](#) (2015) **Learning Bimanual Coordinated Tasks From Human Demonstrations.** Proceedings of the 2015 ACM/IEEE International Conference on Human-robot Interaction.

70. Pais, A. L. and [Billard, A.](#) (2015) **Metrics for Assessing Human Skill When Demonstrating a Bimanual Task to a Robot.** Proceedings of the 2015 ACM/IEEE International Conference on Human-robot Interaction.
71. Tanwani, A. K., Millan, J. d. R and [Billard, A.](#) (2014) **Rewards-Driven Control of Robot Arm by Decoding EEG Signals.** 36th IEEE Engineering in Medicine and Biology Society Conference (EMBC).
72. Pais, A. L. and [Billard, A.](#) (2014) **Encoding bi-manual coordination patterns from human demonstrations.** In Proceedings of the 9th ACM/IEEE International Conference on Human-Robot Interaction.
73. Miao, Li, Hang, Yin, Kenji, Tahara and [Billard, A.](#) (2014) **Learning Object-level Impedance Control for Robust Grasping and Dexterous Manipulation.** IEEE International Conference on Robotics and Automation (ICRA), HongKong, China, May 31-June 7
74. Sommer, N, Miao, Li and [Billard, A.](#) (2014) **Bimanual Compliant Tactile Exploration for Grasping Unknown Objects.** IEEE International Conference on Robotics and Automation (ICRA), HongKong, China, May 31-June 7.
75. de Souza, R. L., El-Khoury, S., Santos-Victor, J. and [Billard, A.](#) (2014) **Towards comprehensive capture of human grasping and manipulation skills.** In proceedings of the Thirteenth International Symposium on the 3-D Analysis of Human Movement.
76. Khoramshahi, M., Shukla, A. and [Billard, A.](#) (2014) **Cognitive mechanism in synchronized motion: An internal predictive model for manual tracking control.** The 2014 IEEE International Conference on Systems, Man, and Cybernetics (SMC2014).
77. Khansari Zadeh, S. M., Kronander, K. and [Billard, A.](#) (2014) **Modeling robot discrete movements with state-varying stiffness and damping: A framework for integrated motion generation and impedance control.** To be appeared in proceedings of Robotics: Science and Systems X (RSS 2014), Berkeley, California.
78. Miao, Li, Yasemin Bekiroglu, Danica Kragic and [Billard, A.](#) (2014) **Learning of Grasp Adaptation through Experience and Tactile Sensing.** International Conference on Intelligent Robots and Systems.
79. Erden, M.S. and [Billard, A.](#) (2014) **End-point Impedance Measurements at Human Hand during Interactive Manual Welding with Robot.** In Proceedings of 2014 IEEE International Conference on Robotics & Automation (ICRA). [ICRA2014]
80. de Chambrier, Guillaume and [Billard, A.](#) (2013) **Learning search behaviour from humans.** IEEE-Robotics and Biomimetics.
81. Rai, Akshara, de Chambrier, Guillaume and [Billard, A.](#) (2013) **Learning from Failed Demonstrations in Unreliable Systems.** IEEE-RAS International Conference on Humanoid Robots, Humanoids 2013.
82. Lukic, L, [Billard, A.](#) and Santos-Victor, J. (2013) **Modulating Vision with Motor Plans: A Biologically-inspired Efficient Allocation of Visual Resources.** In Proceedings of the IEEE International Conference on Humanoid Robots, Humanoids 2013.
83. Tanwani, A. K. and [Billard, A.](#) (2013) **Transfer in Inverse Reinforcement Learning for Multiple Strategies.** IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS'2013.
84. Vasic, M and [Billard, A.](#) **Safety Issues in Human-Robot Interactions.** 2013 IEEE International Conference on Robotics and Automation, Karlsruhe, Germany, May 6-10, ICRA 2013.
85. Huang, B, El-Khoury, S., Miao, Li, Joanna J. Bryson and [Billard, A.](#) (2013) **Learning a Real Time Grasping Strategy.** IEEE International Conference on Robotics and Automation, Karlsruhe, Germany, May 6-10, ICRA 2013.
86. Figueiredo, R., Shukla, A., Aragao, D., Moreno, P., Bernardino, A., Santos-Victor, J. and [Billard, A.](#) (2012) **Reaching and grasping kitchenware objects.** In Proceedings of International Symposium on System Integration (SII).
87. Sommer, N and [Billard, A.](#) (2012) **Face Classification Using Touch with a Humanoid Robot Hand.** in Proceedings of the 2012 IEEE-RAS International Conference on Humanoid Robots
88. Lukic, L, Santos-Victor, J. and [Billard, A.](#) (2012) **Learning Coupled Dynamical Systems from Human Demonstration for Robotic Eye-Arm-Hand Coordination.** In Proceedings of the IEEE-RAS International Conference on Humanoid Robots (Humanoids), Osaka, Japan.

89. Shukla, A and [Billard, A.](#) (2012). **Augmented-SVM: Automatic space partitioning for combining multiple non-linear dynamics.** Proceedings of the Neural Information Processing Systems Conference. [NIPS'2012]. **Nominated for Best Paper Award**
90. El-Khoury, S., Miao, Li and [Billard, A.](#) (2012) **Bridging the Gap: One Shot Grasp Synthesis Approach.** In Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems. [IROS'2012]
91. Kronander, K. and [Billard, A.](#) (2012) **Online Learning of Varying Stiffness through Physical Human-Robot Interaction.** Proceedings of the International Conference on Robotics and Automation (ICRA 2012).
92. Kheddar, A. and [Billard, A.](#) (2011) **A Tactile Matrix for Whole-body Humanoids Haptic Sensing and Safe Interaction.** Proceedings of the IEEE International Conference on Robotics and Biomimetics, 2011. (ROBIO 2011).
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