

## Publications of Etienne Burdet

Manuscripts of special interest are with a short comment (in **bold**) explaining the contribution.

### Books

1. E Burdet (1996), Algorithms of Human Motor Control and their Implementation in Robotics, PhD Thesis, ETH-Zurich.
2. E Burdet, DW Franklin and TE Milner (2013), Human Robotics: neuromechanics and motor control. MIT Press. **[Synthesis of biomechanics and neural control based on comprehensive experimental results and computational modelling. This book has been translated into Japanese (Maruzen) and Chinese (Tsinghua University Press)]**

### Journal papers

3. E Burdet (1995), A neural network model of the adaptive controller of the human arm. *Archives of Physiology and Biochemistry* 103(3).
4. E Burdet (1996), Improving the tracking of objects by a robot during the movements. *Studies in Informatics and Control* 5(3).
5. E Burdet and TE Milner (1998), Quantization of human motions and learning of accurate movements, *Biological Cybernetics* 78(4): 307-18. **[A stochastic optimal control formulation based on a discrete motion generation]**
6. E Burdet, A Codourey and L Rey (1998), Experimental evaluation of nonlinear adaptive controllers. *IEEE Control Systems Magazine* 18(2): 39-47 (invited). **[First experimental comparison of iterative and adaptive control]**
7. E Burdet and A Codourey (1998), Evaluation of parametric and nonparametric nonlinear adaptive controllers. *Robotica* 16: 59-73.
8. J Luthiger and E Burdet (1999), A modular and sensor-oriented motion planner. *Robotica* 17: 87-95.
9. E Burdet and M Nuttin (1999), Learning complex task using a stepwise learning approach. *Journal of Intelligent and Robotic Systems* 24: 43-68.
10. E Burdet and J Luthiger (1999), Coordination learning of robot movements with vision processes. *Robotica* 17: 563-70.
11. E Burdet, R Osu, DW Franklin, T Yoshioka, TE Milner and M Kawato (2000), A method for measuring hand stiffness during multi-joint arm movements. *Journal of Biomechanics* 33: 1705-09. **[This algorithm to estimate stiffness during movement has been in use for over 10 years]**
12. E Burdet, R Osu, DW Franklin, TE Milner, M Kawato (2001), The CNS skillfully stabilizes unstable dynamics by learning optimal impedance. *Nature* 414: 446-9. **[First direct evidence of impedance control (independent of force) in multi-joint arm reaching movements]**
13. E Burdet, L Rey and A Codourey (2001), A trivial method for trajectory and force control. *Engineering Applications of Artificial Intelligence* 14(4): 487-96.
14. TH Ang, FSA Sultana, DW Hutmacher, YS Wong, JYH Fuh, XM Mo, HT Loh, E Burdet and SH Teoh (2002), Fabrication of 3D chitosan hydroxyapatite scaffolds using a robotic dispensing system. *Materials Science and Engineering C* 20(1-2): 35-42. **[A pioneering technique for the fabrication of tissue engineering scaffolds]**
15. DW Franklin, E Burdet, R Osu, M Kawato and TE Milner (2003), Functional significance of stiffness in adaptation of multijoint arm movements to stable and unstable dynamics. *Experimental Brain Research* 151: 145-57. **[Comparison of force and impedance adaptation in stable vs. unstable interactions]**
16. R Osu, E Burdet, DW Franklin, TE Milner, M Kawato (2003), Different mechanisms in adaptation to stable and unstable dynamics. *Journal of Neurophysiology* 90(5): 3255-69. **[First study to describe motor adaptation both in stable and unstable novel dynamics]**
17. DW Franklin, R Osu, E Burdet, M Kawato and TE Milner (2003), Adaptation to stable and unstable dynamics achieved by combined impedance control and inverse dynamics model. *Journal of Neurophysiology* 90(5): 3270-82.
18. H Zhang, F Chollet, E Burdet, AN Poo and DW Hutmacher (2003), Fabrication of micro-parts to be assembled as scaffolds in tissue engineering applications. *International Journal of Computational Engineering Science* 4(2): 281-4.
19. KP Tee, E Burdet, CM Chew and TE Milner (2004), A model of endpoint force and impedance in human arm movements, *Biological Cybernetics* 90: 368-75.

20. H Zhang, DW Hutmacher, F Chollet, AN Poo and E Burdet (2005), Microrobotics and MEMS-based fabrication techniques for scaffold-based tissue engineering. *Macromolecular Bioscience* 24, 5(6): 477-89.
21. E Burdet, KP Tee, I Mareels, TE Milner, CM Chew, DW Franklin, R Osu and M Kawato (2006), Stability and learning in human arm movements. *Biological Cybernetics* 94: 20-32.
22. R Gassert, R Moser, E Burdet and H Bleuler (2006), An MRI/fMRI compatible robotic system with force-feedback for interaction with human motion. *IEEE/ASME Transactions on Mechatronics* 11(2): 216-24. **[First fMRI compatible haptic interface, led to interfaces used by four labs worldwide]**
23. R Gassert, A Yamamoto, D Chapuis, L Dovat, H Bleuler and E Burdet (2006), Actuation methods for applications in MR environments. *Concepts in Magnetic Resonance Part B: Magnetic Resonance Engineering* 29B: 191-209.
24. L Zhe, PCY Chen, A Ganapathy, G Zhao, JH Nam, G Yang, E Burdet, CL Teo, Q Meng and W Lin (2006), A force-feedback control system for Automatic Micro-assembly. *Journal of Micromechanics and Microengineering* 16: 1861-8.
25. ES Boy, E Burdet, CL Teo and JE Colgate (2007), Experimental evaluation of motion guidance with a cobot. *IEEE Transactions on Robotics* 23(2): 245-55. **[Elaboration of collaborative learning concept; ergonomics of planar movement involving translation and torsion]**
26. B Rebsamen, E Burdet, C Guan, CL Teo, Q Zeng, C Laugier and M Ang (2007), Navigating ones wheelchair in a building by thought. *IEEE Intelligent Systems* 22: 18-24 (featured article).
27. DW Franklin, G Liaw, TE Milner, R Osu, E Burdet and M Kawato (2007), The end-point stiffness of the arm is directionally tuned to instability in the environment. *Journal of Neuroscience* 27(29): 7705-16. **[The CNS learns to compensate for environment instability by using muscle impedance properties and reflexes]**
28. O Lambercy, L Dovat, R Gassert, CL Teo, T Milner and E Burdet (2007), A Haptic Knob for rehabilitation of hand function. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 15(3): 356-66.
29. DW Franklin, U So, E Burdet and M Kawato (2007), Visual feedback is not necessary for the learning of novel dynamics. *PLoS ONE* 2(12): e1336.
30. Q Zeng, E Burdet, B Rebsamen and CL Teo (2008), A Collaborative wheelchair system. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 16(2): 161-70.
31. R Gassert, E Burdet, H Chinzei (2008), MR robotics: a critical tool for image guided interventions, clinical diagnostics and neuroscience. *IEEE Engineering in Medicine and Biology Magazine* 3: 12-14 (Guest Editor, special issue on MRI-Compatible Robotics).
32. R Gassert, E Burdet, H Chinzei (2008), Opportunities and Challenges of MRI-Compatible Robotics. *IEEE Engineering in Medicine and Biology Magazine* 3: 15-22.
33. R Gassert, D Chapuis, H Bleuler and E Burdet (2008), Sensors for Applications in Magnetic Resonance Environments. *IEEE/ASME Transactions on Mechatronics* 13(3): 335-44.
34. H Zhang, E Burdet, AN Poo and DW Hutmacher (2008), Microassembly fabrication of tissue engineering scaffolds with customized design. *IEEE Transactions on Automation Science and Engineering* 5(3): 446-56. **[Novel Tissue Engineering concept enabling spatial control of nutrients and cells]**
35. G Ganesh, E Burdet, M Haruno, M Kawato (2008), Sparse regression for mapping muscle to cortical activity in humans, *NeuroImage* 42(1): 1463-72.
36. DW Franklin, E Burdet, KP Tee, T Milner, R Osu and M Kawato (2008), CNS learns stable, accurate and efficient movements using a simple algorithm, *Journal of Neuroscience* 28(44): 11165-73. **[First computational model to describe the evolution of the motor command to muscle during the adaptation to stable and unstable interactions]**
37. Q Zeng, E Burdet, B Rebsamen and CL Teo (2008), Collaborative path planning for a robotic wheelchair, *Disability and Rehabilitation: Assistive Technology* 3(6): 315-24.
38. L Dovat, O Lambercy, R Gassert, T Maeder, CL Teo, T Milner and E Burdet (2008), HandCARE: a cable-actuated rehabilitation equipment to train hand function after stroke. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 16(6): 582-91.
39. Q Zeng, E Burdet and CL Teo (2009), Evaluation of a collaborative wheelchair system in cerebral palsy and traumatic brain injury users, *Neurorehabilitation and Neural Repair* 23(5): 494-504. **[First study of robotic wheelchair including a systematic trial with neurologically impaired end-users]**
40. I O'Sullivan, E Burdet and J Diedrichsen (2009), Dissociating variability and effort as determinants of coordination. *PLoS Computational Biology* 5(4): e1000345. **[Evidence for a cost function of error and effort in human motor control]**

41. B Safwat, E Su, R Gassert, CL Teo and E Burdet (2009), The role of posture, magnification and grip force on microscopic accuracy. *Annals of Biomedical Engineering* 37(5): 997-1006.
42. S Haller, D Chapuis, R Gassert, E Burdet, M Klarhoefer (2009), Supplementary motor area and anterior intraparietal area integrate fine-graded timing and force control during precision grip. *European Journal of Neuroscience* 30(12): 2401-06.
43. KP Tee, DW Franklin, T Milner, M Kawato and E Burdet (2010), Concurrent adaptation of force and impedance in the redundant muscle system. *Biological Cybernetics* 102: 31- 44. **[Presents an algorithm for the model of [36] and tests it in simulations on all known types of force fields]**
44. T Arichi, A Moraux, A Melendez, V Doria, M Groppo, N Merchant, S Combs, E Burdet, DJ Larkman, SJ Counsell, CF Beckmann, AD Edwards (2010), Somatosensory cortical activation identified by functional MRI in preterm and term infants. *Neuroimage* 49(3): 2063-71.
45. G Zhao, CL Teo, DW Hutmacher and E Burdet (2010), Force controlled, automatic microassembly of tissue engineering scaffolds. *Journal of Micromechanics and Microengineering* 20(035001).
46. H Kazemi, JK Rappel, T Poston, BH Lim, E Burdet and CL Teo (2010), Assessing suturing techniques using a virtual reality simulator. *Journal of Microsurgery* 30(6): 479-86. **[How age and expertise affect accuracy in micromanipulation]**
47. L Dovat, O Lambercy, B Salman, V Johnson, TE Milner, R Gassert, E Burdet and CL Teo (2010), A technique to train finger coordination and independence after stroke. *Disability and Rehabilitation: Assistive Technology* 5: 279-87.
48. G Ganesh, H Haruno, M Kawato and E Burdet (2010), Motor memory and local minimization of error and effort, not global optimization, determine motor behavior. *Journal of Neurophysiology* 104: 382-90. **[Evidence of learning based on memory rather than on global optimisation]**
49. B Rebsamen, C Guan, H Zhang, C Wang, CL Teo, M Ang and E Burdet (2010), A brain controlled wheelchair to navigate in familiar environments. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 18(6): 590-8. **[Describes the first brain controlled wheelchair able to move in a typical building environment, see also [26]]**
50. T Lemmin, G Ganesh, R Gassert, E Burdet, M Kawato and M Haruno (2010), Model based attenuation of movement artifacts in fMRI. *Journal of Neuroscience Methods* 192(1): 58-69.
51. S Balasubramanian, J Klein and E Burdet (2010), Robot-assisted rehabilitation of hand function. *Current Opinion in Neurology* 23(6): 661-70 (invited). **[A compact yet comprehensive review of hand rehabilitation robots, a promising field]**
52. A Melendez-Calderon, L Masia, R Gassert, G Sandini and E Burdet (2011), Force field adaptation can be learned using vision in the absence of proprioceptive error. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 19(3): 298-306.
53. D Campolo, F Widjaja, M Esmaeili, E Burdet (2011), Pointing with the wrist: a postural model for Donders' law. *Experimental Brain Research* 212(3): 417-27.
54. ELM Su, G Ganesh, CF Yeong, CL Teo, WT Ang and E Burdet (2011), Effects of grip force and training in unstable dynamics on accuracy in micromanipulation. *IEEE Transactions on Haptics* 4(3): 167-74.
55. J Kodl, G Ganesh and E Burdet (2011), CNS stochastically selects motor plan from extrinsic and intrinsic constraints. *PLoS ONE* 6(9): e24229. **[Evidence that to perform motion humans use a distinct planning stage in extrinsic coordinates]**
56. C Yang, G Ganesh, S Haddadin, S Parusel, A Albu-Schäffer and E Burdet (2011), Human like adaptation of force and impedance in stable and unstable interactions, *IEEE Transactions on Robotics* 27(5): 918-30. **[2011 King-Sun Fu Memorial IEEE Transactions on Robotics Best Paper Award. First robot controller able to deal with unstable interactions typical of tool use]**
57. J Ueda, E Burdet, J-L Gennisson, M Kaneko, A Mihailidis (2011), Guest Editorial, Focused Section on Sensing Technologies for Biomechatronics, *IEEE/ASME Transactions on Mechatronics* 16: 793-8.
58. A Kadiallah, G Liaw, M Kawato, DW Franklin and E Burdet (2011), Impedance control is selectively tuned to multiple directions of movement. *Journal of Neurophysiology* 106(5): 2737-48. **[Evidence of generalisation in impedance learning]**
59. O Lambercy, L Dovat, H Yun, SK Wee, C Kuah, K Chua, R Gassert, TE Milner, CL Teo and E Burdet (2011), Robot-assisted rehabilitation of grasp and pronation/supination. *Journal of NeuroEngineering and Rehabilitation* 8:63. **[One of the very few trials of robot-aided neurorehabilitation of the hand function]**
60. M Haruno, G Ganesh, E Burdet and M Kawato (2012), Distinct neural correlates of reciprocal and co-

activation of muscles in dorsal and ventral premotor cortices. *Journal of Neurophysiology* 107: 126-33. **[Evidence of distinct fMRI correlates for force and impedance control]**

61. E Burdet, V Sanguineti, H Heuer and DB Popovic (2012), Motor skill learning and neuro-rehabilitation (editorial). *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 12(3): 237-8.
62. S Balasubramanian, A Melendez-Calderon and E Burdet (2012), A robust and sensitive metric for quantifying movement smoothness. *IEEE Transactions on Biomedical Engineering* 59(8): 2126-36. **[Novel smoothness metric addressing weaknesses of previous metrics]**
63. S Balasubramanian, R Colombo, V Sanguineti and E Burdet (2012), Robotic assessment of upper-limb motor function after stroke: a review. *American Journal of Physical Medicine and Rehabilitation* 91(11): 255-69 (invited).
64. A Kadiallah, DW Franklin and E Burdet (2012), Generalization in adaptation to stable and unstable dynamics. *PLoS ONE* 7(10): e45075. **[State space formulation of the computational model of motor adaptation [36,43]]**
65. T Arichi, G Fagiolo, M Varela, A Melendez, A Allievi, N Merchant, N Tusor, SJ Counsell, E Burdet, CF Beckmann and AD Edwards (2012), Development of BOLD signal hemodynamic responses in the human brain. *Neuroimage* 63(2): 663-73. **[Hemodynamic response evolves in infants, which is critical to fMRI analysis]**
66. SH Zhou, D Oetomo, Y Tan, E Burdet and I Mareels (2012), Modelling individual human motor behaviour through model reference iterative learning control. *IEEE Transactions on Biomedical Engineering* 59(7): 1892-901.
67. L Masia, V Squeri, E Burdet, G Sandini and P Morasso (2012), Wrist coordination in a kinematically redundant stabilization task. *IEEE Transaction on Haptics* 5: 231-9.
68. N Jarrassé, T Charalambous and E Burdet (2012), A Framework to describe, analyze and generate interactive motor behaviors. *PLoS ONE* 7(11): e49945. **[First framework to specify roles in motor interaction between humans and/or robots]**
69. N Roach, A Hussain and E Burdet (2012), H-CARD: Project based learning for rehabilitation technology design. *IEEE Medicine and Biology Magazine (PULSE)* 3(6): 51-8. **[A novel concept for project-oriented teaching of human centred rehabilitation technology]**
70. G Ganesh and E Burdet (2013), Motor planning explains human behaviour in tasks with multiple solutions. *Robotics and Autonomous Systems* 61(4): 362-8.
71. D Campolo, F Widjaja, H Xu, WT Ang and E Burdet (2013), Analysis of accuracy in pointing with hand-held tools via coordinate-free uncontrolled manifold method. *PLoS Computational Biology* 9(4): e1002978. **[An innovative use of differential geometry to tackle the features of human movements]**
72. AG Allievi, A Melendez-Calderon, T Arichi, D Edwards and E Burdet (2013), An fMRI compatible wrist robotic interface to study brain development in neonates. *IEEE Transactions on Biomedical Engineering* 41(6): 1181-92.
73. M Esmaeili, S Guy, WD Dailey, E Burdet, D Campolo (2013), Subject-specific wrist model calibration and application to ergonomic design of exoskeletons. *IEEE Sensors Journal* 13(9): 3293-301.
74. N Jarrassé, V Sanguineti and E Burdet (2013), Slaves no longer: review on role assignment for human-robot joint motor action. *Adaptive Behavior* 22: 70.
75. B Vanderborght, A Albu-Schäffer, A Bicchi, E Burdet, D Caldwell, R Carloni, M Catalano, G Ganesh, M Garabini, G Grioli, S Haddadin, A Jafari, M Laffranchi, D Lefeber, F Petit, S Stramigioli, N Tsagarakis, M Van Damme, R Van Ham, L Visser and S Wolf (2013), Variable Impedance Actuators: a Review. *Elsevier Robotics and Autonomous systems*. 61(12): 1601-14.
76. G Ganesh, A Takagi, R Osu, T Yoshioka, M Kawato and E Burdet (2014), Two is better than one: Physical interactions improve motor performance in humans. *Nature Scientific Reports* 4: 3824. **[A pioneering study revealing that sensorimotor interaction makes us involuntarily improve performance, even when connected to a worse partner]**
77. J Klein, N Roach and E Burdet (2014), 3DOM: a 3 degree of freedom manipulandum to investigate redundant motor control. *IEEE Transactions on Haptics* 7(2): 229-39.
78. M Esmaeili, N Jarrassé, W Dailey, E Burdet and D Campolo (2014), Ergonomic design of a wrist robot: the influence of hyperstaticity on reaction forces and motor strategies. *International Journal of Intelligent Computing and Cybernetics* 7(3): 289-306.
79. P Tommasino, A Melendez-Calderon, E Burdet and D Campolo (2014), Motor adaptation with passive ma-

chines: A first study on the effect of real and virtual stiffness. *Computational Methods and Programs in Biomedicine* 116(2): 145-55.

80. G Grioli, S Wolf, M Garabini, M Catalano, E Burdet, D Caldwell, R Carloni, W Friedl, M Grebenstein, M Laffranchi, D Lefeber, S Stramigioli, N Tsagarakis, M van Damme, B Vanderborght, A Albu-Schäffer and A Bicchi (2014), Variable Stiffness Actuators: the users point of view. *International Journal of Robotics Research* 34(6): 727-43.

81. T Arichi, SJ Counsell, AG Allievi, AT Chew, M Martinez-Biarge, V Mondi, N Tusor, N Merchant, E Burdet, FM Cowan, AD Edwards (2014), The effects of hemorrhagic parenchymal infarction on the establishment of sensorimotor structural and functional connectivity in early infancy. *Neuroradiology* 56: 985-94. **[Pioneer study of interaction between stroke and development]**

82. AG Allievi, T Arichi, AL Gordon and E Burdet (2014), Technology-aided assessment of motor function in early infancy. *Frontier in Neurology* 5: 197.

83. P Liang, C Yang, N Wang, Z Li, R Li and E Burdet (2014), Implementation and test of human-operated and human-like adaptive impedance controls on Baxter robot. *Advances in Autonomous Robotics Systems* 109-19.

84. S-H Zhou, D Oetomo, Y Tan, I Mareels and E Burdet (2014), Effect of sensory experience on motor learning strategy. *Journal of Neurophysiology* 113(4): 1077-84.

85. A Melendez-Calderon, V Komisar and E Burdet (2015), Interpersonal strategies for disturbance attenuation during a rhythmic joint motor action. *Physiology and Behavior* 147: 348-58.

86. AMC Smith, C Yang, H Ma, P Culverhouse, A Cangelosi and E Burdet (2015), Novel hybrid adaptive controller for manipulation in complex perturbation environments. *PLoS ONE* 10(6): e0129281.

87. A Allievi, T Arichi, AD Edwards and E Burdet (2015), Maturation of sensori-motor functional responses during the third trimester of human development. *Cerebral Cortex* 26(1): 402-13. **[Evolution of brain activity in preterm infants from birth to term corrected age, using advanced MRI techniques and a compatible dedicated robotic interface]**

88. E Abdi, E Burdet, M Bouri and H Bleuler (2015), Control of a supernumerary robotic hand by foot: An experimental study in virtual reality. *PLoS ONE* 10(7): e0134501.

89. S Balasubramanian, A Melendez-Calderon, A Roby-Brami and E Burdet (2015), On the analysis of movement smoothness. *Journal of NeuroEngineering and Rehabilitation* 12: 112.

90. S Wolf G Grioli, O Eiberger, W Friedl, M Grebenstein, H Hoeppner, E Burdet, D Caldwell, R Carloni, MG Catalano, D Lefeber, S Stramigioli, T Nikos, M Vandamme, B Vanderborght, A Bicchi, A Albu-Schäffer (2016), Variable stiffness actuators: review on design and components. *IEEE Transactions on Mechatronics* 21(5): 2418-30.

91. M Kolossiatis, T Charalambous and E Burdet (2016), How variability and effort determine coordination at large forces. *PLoS ONE* 11.3: e0149512.

92. F Riillo, C Bagnato, A Allievi, A Takagi, L Fabrizi, G Saggio, T Arichi and E Burdet (2016), A simple MR safe and fMRI compatible robotic stimulator to study the neural mechanisms of touch and pain. *Annals of Biomedical Engineering* 44(8): 2431-41.

93. E Abdi, E Burdet, M Bouri, S Himidan and H Bleuler (2016), In a demanding task, three-handed manipulation is preferred to two-handed manipulation. *Scientific Reports* 6: 21758 **[First investigation of three-hands control in humans]**

94. D Reinkensmeyer, E Burdet, M Casadio, G Kwakkel, JW Krakauer, C Lang, N Ward and N Schweighofer (2016), Computational neurorehabilitation: Modeling plasticity and learning to predict recovery. *Journal of NeuroEngineering and Rehabilitation* 13: 42. **[Foundation paper on Computational Neurorehabilitation]**

95. Z Li, C Yang, E Burdet (2016), An overview of biomedical robotics and bio-mechatronics systems and applications. *IEEE Transactions on Systems, Man, and Cybernetics: Systems* 46(7): 869-74.

96. C Wang, Y Xiao, E Burdet, J Gordon and N Schweighofer (2016), The duration of reaching movement is longer than predicted by minimum variance. *Journal of Neurophysiology* 00148. **[First experimental evidence that the duration of reaching arm movements depends on error and effort]**

97. A Hussain, S Balasubramanian, I Lamers, S Guy P Feys and E Burdet (2016), Investigation of isometric strength and control of the upper-extremity in multiple sclerosis. *Journal of Rehabilitation and Assistive Technologies Engineering* 3: 2055668316663977.

98. T Tjahjowidodo, K Zhu, W Dailey, E Burdet and D Campolo (2016), Multi-source friction identification for a class of cable-driven robots with passive backbone. *Mechanical Systems and Signal Processing* 80: 152-65.

99. A Takagi, C Bagnato and E Burdet (2016), Facing the partner influences tit-for-tat exchanges in force. *Scientific Reports* 6: 35397. **[First evidence of social influence on force perception]**

100. A Hussain, A Budhota, C Hughes, WD Dailey, DA Vishwanath, CWK Kuah, LHL Yam, YJ Loh, L Xiang, KSG Chua, E Burdet and D Campolo (2016), Self-paced reaching after stroke: a quantitative assessment of longitudinal and directional sensitivity using the H-Man planar robot for upper limb neurorehabilitation. *Frontiers in Neuroscience* 10: 477.

101. P Rinne, M Mace, T Nakornchai, K Zimmerman, S Fayer, P Sharma, J-L Liardon, E Burdet and P Bentley (2016), Democratizing neurorehabilitation: How accessible are low-cost mobile-gaming technologies for self-rehabilitation of arm disability in stroke? *PLoS ONE* 11(10): e0163413.

102. A Takagi, N Beckers and E Burdet (2016), Motion plan changes predictably in dyadic reaching. *PLoS ONE* 11(12): e0167314.

103. M Mace, P Rinne, J-L Liardon, C Uhomoibhi, P Bentley and E Burdet (2017), Elasticity improves handgrip performance and preference during visuomotor training. *Royal Society Open Science* 4(2): 160961.

104. A Takagi, G Ganesh, T Yoshioka, M Kawato and E Burdet (2017), Physically interacting individuals estimate the partners goal to enhance their movements. *Nature Human Behaviour* 1: 54. **[The first computational model of interpersonal sensorimotor integration, showing that one uses haptic information to infer an interacting partner's motion planning and improve one own motor performance]**.

105. M Ogrinc, I Farkhatdinov, R Walker and E Burdet (2017), Horseback riding therapy for a deaf-blind individual enabled by a haptic interface. *Assistive Technology* (2017): 1-8.

106. A Melendez-Calderon, M Tan, M Fisher Bittmann, E Burdet, JL Patton (2017), Transfer of dynamic motor skills acquired during isometric training to free motion. *Journal of Neurophysiology* 118.1: 219-33.

107. S Martin-Brevet, N Jarrassé, E Burdet, A Roby-Brami (2017), Taxonomy based analysis of force exchanges during object grasping and manipulation. *PLoS ONE* 12(5): e0178185.

108. A Hussain, S Balasubramanian, N Roach, J Klein, N Jarrassé, M Mace, A David, S Guy and E Burdet (2017), SITAR: a sensor-based assessment of the (pathological) motor function. *Journal of Rehabilitation and Assistive Technologies Engineering* 4: 2055668317729637 **[Innovative system for task-oriented-therapy, commercialised as Tyromotion Myro]**

109. HT Ong, CL Teo, J Lin, JX Tan, M Lee, E Burdet and SS Ge (2017), Upper limb rehabilitation in children with hemiplegic cerebral palsy using a novel paediatric robotic device - Results from a pilot study. *European Journal of Paediatric Neurology* 21: e146.

110. SH Zhou, Y Tan, D Oetomo, C Freeman, E Burdet and IM Mareels (2017), Modeling of endpoint feedback learning implemented through point-to-point learning control. *IEEE Transactions on Control Systems Technology* 25(5): 1576-85.

111. A Hussain, A Budhota, C Hughes, WD Dailey, DA Vishwanath, CWK Kuah, LHL Yam, YJ Loh, L Xiang, KSG Chua, E Burdet and D Campolo (2017), Self-paced reaching after stroke: A quantitative assessment of longitudinal and directional sensitivity using the H-man planar robot for upper limb neurorehabilitation. *Frontiers in Neuroscience* 10: 477.

112. I Farkhatdinov, N Roehri and E Burdet (2017), Anticipatory detection of turning in humans during locomotion for intuitive control of robotic mobility assistance. *Bioinspiration and Biomimetics* 12: 055004. **[How the anticipatory head and upper body movement can be used to trigger turning in full-body exoskeletons]**.

113. M Mace, N Kinany, P Rinne, A Rayner, P Bentley and E Burdet (2017), Balancing the playing field: Collaborative gaming for training. *Journal of NeuroEngineering and Rehabilitation* 14: 116 **[First interpersonal rehabilitative game automatically matching the respective difficulty level to the skill of each partner]**.

114. M Ogrinc, I Farkhatdinov, R Walker, E Burdet (2018), Sensory integration of apparent motion speed and vibration magnitude. *IEEE Transactions on Haptics* 11(3): 455-63.

115. A Takagi, F Usai, G Ganesh, V Sanguineti and E Burdet (2018), Haptic communication between humans is tuned by the hard or soft mechanics of interaction. *PLoS Computational Biology* 14(3): e1005971 (This paper has been highlighted by PLoS Computational Biology). **[Describes how the interaction mechanics influences haptic communication]**.

116. Y Li, G Ganesh, N Jarrassé, S Haddadin, A Albu-Schäffer and E Burdet (2018), Force, impedance, and trajectory learning for contact tooling and haptic identification. *IEEE Transactions on Robotics* 34(5): 1170-82. **[First model of interactive control with simultaneous adaptation of force, impedance and trajectory, to interact with rigid and soft environments]**.

117. S Dall'Orso, A Allievi, J Steinweg, D Edwards, E Burdet, T Arichi (2018), Somatotopic mapping of the

developing sensorimotor cortex in the preterm human brain. *Cerebral Cortex* 28(7): 2507-15. **[Describes the cortical organisation in preterm infants using fMRI and dedicated robotic interfaces]**

118. A Donadio, K Whitehead, F Gonzalez, E Wilhelm, D Formica, J Meek, L Fabrizi and E Burdet (2018), A novel sensor design for accurate measurement of facial somatosensation in pre-term infants. *PLoS ONE* 13(11): e0207145.
119. S Balasubramaniam, E Garcia, N Birbaumer, E Burdet and A Ramos (2018), Is EMG a viable alternative to detect movement intention in severe stroke survivors? *IEEE Transactions on Biomedical Engineering* 65(12): 2790-7.
120. D Borzelli, B Cesqui, DJ Berger, E Burdet and A d'Avella (2018), Muscle patterns underlying voluntary modulation of co-contraction. *PLoS ONE* 13(10): e0205911.
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