Publications

In the list below, students are in italic. Publications of special interest are in bold, with a short comment explaining why they have been selected.

Books


Journal papers


11. E Burdet, R Osu, DW Franklin, 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 is still in use after more than 10 years]


27. DW Franklin, G Liau, 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]


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]


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]


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 the end-users, i.e. subjects affected by neurological diseases (traumatic brain injury and cerebral palsy)]


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(6).

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 interaction experiments]


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 journal paper [26]]


64. A Kadiallah, DW Franklin and E Burdet (2012), Generalization in adaptation to stable and unstable dynamics. PLoS ONE 7(10): e45075. doi:10.1371/journal.pone.0045075. [State space formulation of the computational model of motor adaptation [34,41]


68. N Jarrassé, T Charalambous and Burdet E (2012), A Framework to describe, analyze and generate interactive motor behaviors. PLoS ONE 7(11): e49945. doi:10.1371/journal.pone.0049945 [First framework to specify roles in motor interaction between humans and/or robots]


Patents


90. CL Teo, L Tong, J Klein, E Burdet (2013), Therapy device for training fine motor skills. US Provisional Application No. 61/891,959.

Videos

(peer-reviewed)


Other peer-reviewed papers


118. KM Lim, T Poston, L Zhang, BF Liu, CL Teo and E Burdet (2002), Multi-scale simulation for a robotic surgical trainer. Proc International Conference on Biomedical Engineering (ICBME).


138. T Poston, A Dhanik, E Burdet, and CL Teo (2005), Haptics of buckling. Proc Haptic Symposium, Joint Eurohaptics and Symposium on Haptic and Teleoperation, IEEE International Conference on Virtual Reality (IEEE VR) 299-307. [A unique method for real-time haptic interaction with a mechanical chain, using bifurcation theory to yield computation growing only linearly with the number of chain elements]


175. O Lambercy, L Dovat, H Yun, SK Wee, CW Kuah, KS Chua, R Gassert, TE Milner, CL Teo and E Burdet (2009), Rehabilitation of grasping and forearm pronation/supination with the Haptic Knob. Proc IEEE International Conference on Rehabilitation Robotics (ICORR) 22-7 [best presentation paper award].


178. ELM Su, TL Win, WT Ang, TC Lim, CL Teo and E Burdet (2009), Micromanipulation accuracy in pointing and tracing investigated with a contact-free measurement system. Proc Int Conf of the IEEE Engineering in Medicine and Biology Society (EMBC) 1:3960-3.


180. A Melendez-Calderon, L Masia, M Casadio and E Burdet (2009), Force field compensation can be learned without proprioceptive error. Proc Medical Physics and Biomedical Engineering World Congress 381-4.


212. SH Zhou, D Oetomo, Y Tan, CT Freeman, E Burdet and I Mareels (2014), Modelling of the point to point learning in human motor system. Proc IEEE Control Systems Technology.


Book chapters


216. GA Liaw, DW Franklin, E Burdet, H Kadi-Allah and M Kawato (2008), Reflex contributions to the directional tuning of arm stiffness. Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 4984(1): 913-22.


Non-refereed contributions


235. G Liaw, A Kadi-Allah, E Burdet, M Kawato and DW Franklin (2008), The impedance controller tunes the muscle reflex gain to instability in the environment. Society for Neuroscience abstracts.


243. RM Gordon-Williams, A Allievi, T Hayat, T Arichi, E Burdet, AM Groves, AD Edwards (2012), A computer-controlled stimulator for fMRI of the neonatal olfactory system. Poster at the Pediatric Academic Meeting, USA.


245. H Cullen, A Allievi, T Arichi, SJ Counsell, E Burdet, JD Tournier and AD Edwards (2014), Probing the developing homunculus: high definition somatosensory tracts using high angular resolution diffusion-weighted imaging and fMRI. Pediatric Academic Society meeting (PAS).


Selected Media Coverage

- News’ comments at BBC on 13th June 2014 (http://m.bbc.co.uk/news/health-27828553).