



**Séminaire ISIR**  
Jeudi 28 novembre 2019 à  
14H00

**Etienne Burdet**

Campus Jussieu, 4 place Jussieu, Paris  
**Salle 107, tour 44, couloir 44-54**

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## Limits of the human hand

**Abstract :** In this presentation I will first present the rehabilitation technology we have developed over the years for neurorehabilitation of the hand function in stroke survivors. Starting from relatively complex robots, we have now developed affordable simple devices that can be used from the bedside to home, in most countries. I will also show how we attempt promoting the motivation to train for months long therapy. I will also present novel finding about the hand control obtained on polydactyly subjects having hands with more than five fingers. Using fMRI as well as targeted behavioural experiments and analysis techniques, we could demonstrate the superior manipulation abilities of polydactyly subjects.

Related papers:

- M Mace, N Kinany, P Rinne, A Rayner, P Bentley and E Burdet (2017), *Balancing the playing field: collaborative gaming for physical training*. *Journal of NeuroEngineering and Rehabilitation* 14(1): 116.
- C Mehring, M Akselrod, L Bashford, M Mace, H Choi, M Blüher, AS Buschhoff, T Pistohl, R Salomon, A Cheah, O Blanke, A Serino and E Burdet (2019), *Augmented manipulation ability in humans with six-fingered hands*. *Nature Communications* 10(1): 2401.

**Short bio :** Dr. Etienne Burdet is Chair of Human Robotics at the Imperial College of Science, Technology and Medicine in UK. He is also a visiting Professor at University College London. He holds an MSc in Mathematics (1990), an MSc in Physics (1991), and a PhD in Robotics (1996), all from ETH-Zurich. He was a postdoctoral fellow with TE Milner from McGill University, Canada, JE Colgate from Northwestern University, USA and Mitsuo Kawato of ATR in Japan. Professor Burdet's group uses an integrative approach of neuroscience and robotics to: i) investigate human motor control, and ii) design efficient systems for training and rehabilitation, which are tested in clinical trials and commercialised.