

Rodolphe Héliot, Ph.D.

337C Cory Hall, University of California, Berkeley / heliot@berkeley.edu / Phone: (510) 642 3248

Research interests Dynamical systems – Modelling & Simulation – Signal processing – Control – Robotics.

Work experience

02/2008 → Present **Post-Doc, University of California, Berkeley, USA**

Research area: Dynamical systems for Brain-Machine Interfaces (BMI). The ultimate goal is to control an upper-limb prosthesis that would be controlled simply by thought, by means of intra-cortical neural recordings. My research focuses on neural information decoding, where modeling with dynamical systems allows more accurate and more comprehensive information extraction. Specific robotic control algorithms are in turn required to handle the newly estimated variables, and constitute the second part of this research.

01/2005 → 01/2008 **CEA – LETI, Grenoble, France** (Electronics and Information Processing laboratory)

Ph.D. Thesis: *“Functional rehabilitation of posture and walking: Coordination of healthy and deficient limbs”*

Research area: Signal processing for functional rehabilitation. When controlling postural movement through artificial prosthetic limbs or muscle Functional Electrical Stimulation, an important issue is the patient interaction with the artificial system, which can be achieved through the observation of his valid limb motions. Our objectives were: 1) to detect and identify subject voluntary actions as early as possible after a movement decision is taken, and 2) to monitor the current motion in order to estimate the task state variables.

➤ 3 months fellowship in Aalborg University (Denmark): *“Timing of muscle activation sequences”*

04/2004 → 09/2004 **INRIA, Grenoble, France** (National Institute for Research in Computer Science & Control)

Final Internship

Research area: smart prostheses. Led a feasibility study of a system which should include an active knee prosthesis, a microsensor-based motion analysis system, and movements models. This included a bibliographic part, followed by the set up of experimentations and the development of dedicated algorithms.

04/2003 → 08/2003 **UNIC – CNRS, Gif sur Yvette, France** (National Scientific Research Organization)

Research Internship

Research area: theoretical neuroscience. Carried out a study on image processing by the human brain, in order to highlight interactions between cortical neurons, and describe the non-linearities. First studied theoretical issues (simulations), and then created an experimental protocol.

Education

10/2007 Ph.D., Signal Processing & Control (Grenoble Institute of Technology, France).

09/2004 Supélec, a top Engineering School in Electrical Engineering and Computer Sciences (Gif, France)

07/2004 Master’s Degree of Science in electronic hardware and software structures (Rennes, France)

Specials Skills

Fluent English

Conversational Spanish

Community Involvement

2006 – 2007 Snowboard touring manager with the French Alpine Club

2002 – 2003 CEO of Supélec Robotics club. **Goal:** build a mobile robot in order to take part in the French Robotic Cup. Leader of a 15 students team; defined & planned tasks, chose technical solutions

1999 Set up and managed a LAN games association