Billard Laboratory of Learning Algorithms and Systems, 2 positions.

**PhD Position in Machine Learning applied to Shared Control of Prosthesis via Brain-Machine Interfaces**

This position is part of a collaboration between the LASA laboratory led by Prof. A. Billard and the CNBI laboratory led by Prof. J. Millan. The PhD candidate will develop algorithms based on inverse reinforcement learning to enable decoding of the objective function optimized by humans during natural reach and grasp motion. This decoding will support the control of a robotic hand and arm prosthesis. Information will be based on measurement of error potential from EEG data. The challenge will be to perform this detection on-line and to adapt it to the specific user. The PhD student must have a background in machine learning and in neuroscience. S/he must be proficient in programming. More information can be found on the LASA and CNBI websites: [http://lasa.epfl.ch](http://lasa.epfl.ch); [http://cnbi.epfl.ch](http://cnbi.epfl.ch)

Interested candidates can contact [aude.billard@epfl.ch](mailto:aude.billard@epfl.ch)

**PhD Position in Machine Learning applied to Modeling Acquisition of Dexterous Bimanual Skills**

This position is part of an advanced ERC grant awarded to Prof. Billard. The project develops computational models of the acquisition of highly dexterous bimanual skills in humans, so as to inform development of similar skills in robots. As an example of highly dexterous manipulation, we have chosen the acquisition of watch making. We collaborate with a local school that trains apprentices at watch making and conduct a longitudinal study of the hand motion of the apprentice through their studies. The PhD student will be tasked to analyze the data using machine learning tools to model the relations between the finger postures and the forces produced during the tool manipulation. Interested candidates should have a background in machine learning and in the conduct of user studies. More information can be found on the website of the project: [http://sahr.epfl.ch](http://sahr.epfl.ch)

Interested candidates can contact [aude.billard@epfl.ch](mailto:aude.billard@epfl.ch)