

**LERU STudent REseArch Mobility Programme (STREAM)
Project proposal**



Host University:
Università degli studi di Milano



Field:
Health and welfare

Specified field, subject:
Learning Disorders (LD)

Research project title:
EMPOWER



Possible starting month(s):

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
				x							



Possible duration in months:

1	2	3	4	5	6
					x



Suitable for students in: 2st cycle (master students)

Prerequisites: programming languages C++, Java in alternative, Knowledge of Machine Learning algorithms (Neural Networks, SVM). Optional: experience in developing mobile app

Restrictions: none

Description:

The candidate will be involved in lab activities focused on the study of Learning Disorders (LD), aiming at developing Artificial Intelligence (AI)-based apps to analyse EEG correlates through BCI (Brain Computer Interface) in response to specific stimuli, and, consequently, aiming at designing and developing cognitive empowerment apps, supporting people experiencing LDs.

In the meantime, we will also develop some neural networks to analyse historical data with the aim of detecting comorbidity among the different learning disorders.

The collected data will be used to develop an artificial intelligence simulating the cognitive processes involved in learning disorders for future experimental activities, in substitution of human individuals.

More in general, the project aims to “map” specific stimulations with the related EEG and cognitive correlates (Aston Jones and Cohen, 2005; Basar, 2012; Basar et al., 1999). This mapping could be used for several objectives: the empowerment of individual or group response mechanisms to specific stimuli (in socio-economic, psychological, health and educational fields), and also for pure Artificial Intelligence applications (Folgeri and Zichella, 2012; Banzi and Folgeri, 2012; Folgeri et Al., 2013; Calore et Al., 2012). The lab operates within the Cognitive Science and particularly Artificial Intelligence, so



the candidates are required to know advanced algorithms for data analysis and manipulation (such as Neural Networks, Agent-Based Modeling System, Support Vector Machine, Machine Learning and Kernel methods). During the lab, students will also use the EEG-based BCIs (Brain Computer Interfaces – Allison et Al., 2007) on single, couples or groups of individuals to identify and study mutual influence processes between two or among several individuals.

Faculty or Department: Department of Philosophy - Università degli Studi di Milano

Contact person: International relations office, University of Milan

Contact email: international.programmes@unimi.it.