



## Thesis Project Form

**Title (tentative):** Mobile applications to contrast cognitive impairment

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### Description

#### Motivation and application domain

About 15-20% of people aged 65+ have signs of mild cognitive impairment (MCI). A person with MCI has a greater risk of developing Alzheimer's disease or other forms of dementia. Lifestyle, regular exercise and cognitive stimulation can reduce the risk of cognitive decline and dementia. Today, standardized tests and exercise protocols for cognitive stimulation are available, but frequent administration is made difficult by limitations in access to outpatient diagnostic and therapy services.

#### General objectives and main activities

In collaboration with the Cognitive Disorders and Dementia Center of the Galliera Hospital, the main objective is to study the effectiveness of administering exercises aimed at contrasting cognitive decline through the use of an Android smartphone app. Exercises aim at testing memory, attention, problem solving, cognitive flexibility. Exercise outcomes are made available to therapists through a dedicated web service, so that they will be able to observe performance, to monitor their evolution and possibly to modify the prescriptions.

Thesis work focuses on the definition of additional cognitive stimulation exercises in collaboration with doctors and psychologists; their implementation within an existing Android app; the development of an interface for therapists; the conduction of a clinical study involving persons with MCI.

#### Training Objectives (technical/analytical tools, experimental methodologies)

- Design of cognitive stimulation exercises and their implementation in the Android environment.
- Development of techniques for analysis of cognitive functions
- Experiments with persons with mild cognitive impairment

**Place(s) where the thesis work will be carried out:** DIBRIS; Cognitive Disorders and Dementia Center, Galliera Hospital

### Additional information

**Maximum number of students:** 1