UNIVERSITY OF GENOA
DEPARTMENT OF INFORMATICS, BIOENGINEERING, ROBOTICS AND SYSTEMS ENGINEERING
MASTER'S PROGRAM IN BIOENGINEERING

Thesis Project Form

Title (tentative): Assessment and personalized training of driving skills in people with multiple sclerosis

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Description

Motivation and application domain

Driving is a daily living activity enabling independence and fostering social engagement, with a relevant impact on quality of life. However, driving requires physical abilities such as vision, hearing, mobility, and cognitive skills, e.g., evaluation of context-dependent risks, executive functions to change behaviour depending on road conditions, meta-cognition to respond appropriately to multiple transient signals. Both physical and cognitive functions could be impaired in people with multiple sclerosis (MS) and can also be affected by the individual emotional state and disease progression. The current technology mainly follow the one-fits-all approach, with personalisation features insufficient to account for the MS specific needs.This population can greatly benefit from personalised tools that allow advanced assessment and personalised training, accounting for the complexity and the multi-factorial aspects of MS.

General objectives and main activities

the main goal of the project is to develop and test a simulator
this simulator that will result in:
- an integrated platform for objective evaluating and monitoring the evolving sensorimotor and cognitive abilities in MS users, with the potential to detect early symptoms. Specifically, the simulator will be a powerful tool for assessments that will go beyond the test of the ability to drive, allowing for the evaluation of different abilities that could be compromised by MS in a unique engaging contest, perceived as important and useful by people with MS.
- a tool to improve self-evaluation of driving ability; this would on one hand reinsure people who have the ability to drive safely but gave up because they are scared by the possible side effects of MS; on the other hand, the simulator can help people understand when driving is becoming a risk for themselves

Training Objectives (technical/analytical tools, experimental methodologies)

The student will learn to
-use and modify the ADRIS driving simulator
- understand and administer psychological tests
- work in a multidisciplinary and in a clinical environment
- perform assessment with people suffering of MS
- performance analysis
- statistical analysis

Place(s) where the thesis work will be carried out: Dibris Unige, Fondazione Italiana Sclerosi Multipla

Additional information

Maximum number of students: 1