Post Doc position in Cognitive sciences

Digital biomarkers for the early detection of neurocognitive disorders in the elderly: image exploration through finger tracking (12 months)

Research unit: [CoBTeK lab (Cognition Behavior Technology)](#) / Research unit of Université Côte d'Azur, in partnership with INRIA

Project summary:

Context
Early detection of people at risk of cognitive decline in the elderly is a research and clinical priority. Indeed, the early detection of symptoms of Alzheimer's disease (AD) and other neurodegenerative disorders allows the implementation of early treatment strategies, which are known to be more effective. The introduction of new disease modifiers for early AD patients reinforces the necessity of simple and effective tools to help clinicians in this diagnosis. Today, the available biomarkers (e.g., lumbar puncture and PET imaging) are invasive and expensive, which is why researchers are looking for new behavioral markers, which are less intrusive, more objective, and less expensive. In this context, the use of digital biomarkers (such as automated audio analysis, movement tracking, and game-like applications) as AD proxies is increasingly recognized.

Objectives
This project aims to investigate whether the exploration of visual images using finger tracker technologies (as a proxy of eye movement measure) can be used as an early marker for cognitive decline in the elderly, and to investigate links between visual exploration patterns and other digital biomarkers.

Methods
The interdisciplinary study will start from the development of a research protocol that can be implemented in the "Digitrack technology" (developed by Sibius, https://www.sibius.eu/our-solution) and is potentially able to detect early signs of cognitive decline and behavioral impairments (such as apathy) in elderly people, but also to monitor cognitive and behavioral decline in the early stages of the pathological process. After the implementation, the protocol will be tested in a clinical study involving healthy elderly people, elderly people with subjective cognitive decline, and patients with Mild Neurocognitive Disorders, to investigate the interest in employing this technology for early screening, and its links with classical biomarkers.

Candidate profile:

We are looking for a post-doc with a clinical background (medicine, psychology, speech therapy, …) that can successfully interact with people from different fields, including research engineers in charge of the application development. An experience with elderly people and patients with cognitive disorders will be an added value. The project will require some interactions with patients, so a basic knowledge of French is mandatory.

CoBTeK laboratory:

The candidate will be hosted at the CoBTeK laboratory of Université Cote d'Azur, an interdisciplinary lab that puts new technologies at the service of mental health, with the objective is to develop clinical and translational research using ICT (Information and Communication Technologies) in order to prevent, help to diagnose and assist patients suffering from neuropsychiatric and neurodevelopmental disorders. CoBTeK is located at the *Institut Claude Pompidou*, a pilot institute that hosts also the Nice Hospital Memory Center, a clinical facility that welcomes more than 1000 outpatients per year with different cognitive disorders and different degrees of disease severity.

Supervision:

The candidate will be supervised by Valeria MANERA, research project coordinator at CoBTeK laboratory, in coordination with Guillaume SACCO, geriatrician at Nice University Hospital (CHU Nice).