Position: Neurophysiology/motor control post-doctoral position in Caen (France)

Project: The 4-year project PRESAGE (*PREdementia motoric cognitive risk Syndrome in AGEing*) is funded through the European Regional Development Fund, the Normandie Region, and resources from public and private actors of the French pension and health care systems. It is implemented jointly by research centres hosted by the University of Caen Normandie (GIP Cyceron - biomedical imaging platform; CIREVE - centre for interdisciplinary virtual reality; COMETE / UMR-S 1075 – motor control and biotechnologies for health; NIMH / UMR-S 1077 - imaging of human memory) and is also conducted in collaboration with the University of Grenoble (TIMC-IMAG / UMR 5525 - computer sciences and applied mathematics for health ; GIPSA-lab / UMR 5216 – theoretical and applied research in signals and systems). Its aim is to identify markers that predict transition to Alzheimer's disease or related dementia. To this end, we collect lifestyle, behavioral and brain indicators in community-dwelling older adults with motoric cognitive risk (MCR) syndrome, a predementia condition characterized by the presence of cognitive complaints and slow gait, and use machine learning to identify indicators that best predict cognitive evolution over time.

Missions: The post-doc will be responsible of: 1/ the gait data collection in virtual environment (CIREVE) and in real-world environment (wearable inertial measurement units or IMU), 2/ the evolution of existing pipelines, or development of new pipelines, for processing kinematic, kinetic and EMG data. The use of machine learning algorithms for processing signals from wearable IMU sensors to characterize walking behavior would be skills highly appreciated. The post-doc will also organize the raw and processed data in a standardized fashion to make it accessible to all the consortium and to the scientific community at large. These missions fall into our commitment to ensuring reproducible science through open code and data.

Profile: The candidate should hold a PhD degree in biomechanics or biomedical engineering or other relevant disciplines. (S)he should have strong background in computer programming (python, matlab) and have significant knowledge and/or experience in combing EMG with both kinematic and kinetic data. Knowledge and/or experience in machine learning would be appreciated. Publication activity in the aforementioned disciplines is mandatory. (S)he should demonstrate a high motivation and interest for developing computational analyses that relate neurophysiological and behavioural outcomes to health status. Other selection criteria are to be able to work both in a research team as well as carry out personal research projects and to have good written and oral English language skills.

Working environment: The position is based on the campus of the University of Caen Normandie at COMETE, which is hosted in new research facilities inside the Health Education and Research Center (Pôle des Formations et de Recherche en Santé, PFRS). These facilities are located at the heart of EPOPEA Caen Normandie Science and Innovation Park, a site of 300 hectares where entrepreneurs, researchers, students and apprentices innovate and build the solutions of the future in the fields of materials, energy, health and digital sciences. COMETE also benefits from strong collaborations with external platforms, notably the CIREVE, equipped with the M-Gait instrumented dual-belt treadmill (Motekforce Link), where the PRESAGE's behavioral experiment will take place. The CIREVE is a top-ranked French four-sided virtual reality CAVE that gathers cross-departmental researchers examining behavior in life-like and controllable environments. There will be also interaction with collaborators from the University of Grenoble who work in the field of neuroimaging and machine learning. The city of Caen is located on the Atlantic shore and offers great possibilities to enjoy both nature and the French art of Living. Caen is also a vibrant city moulded by its rich culture and several centuries of history. Caen is also only 2h away from Paris, the city of lights.

Salary: Gross monthly salary is 2622 € (about 2130 € for net salary). The initial appointment is for 12 months, with a possible renewal for 10 months.

Application: The application must include: 1/ an application letter describing your motivation, relevant experience, skills and qualifications, 2/a CV including information about education background and work experience, 3/ contact information for two references. eDocuments must be sent to leslie.decker@unicaen.fr, fabien.cignetti@univ-grenoble-alpes.fr.

Application deadline: end-December 2020
Starting date: as early as January 2021