Professional/formative profile and duties required for the recruitment of a research fellow at the joint Neurosense laboratory

Partners:

Joint Laboratory components

Liquidweb srl

Liquidweb site
https://www.liquidweb.it/en/

EVAlab

EVAlab site
https://evalab-eyetech.com/?lang=en

RoNEURO Istitute

RoNEURO site
https://www.roneuro.ro/en/

Neurosense Description

The “NEUROSENSE” Joint Research Laboratory is located in Siena (Italy) on the premises of:

- The Department of Medicine, Surgery and Neuroscience of the University at Via Bracci 16, Siena

The “NEUROSENSE” Joint Research Laboratory is an economically autonomous unit of the Department of Medicine, Surgery and Neuroscience and pursues the following objectives:

- To associate the scientific and technological competencies (university related research and company related technological development) to analyze, and eventually depict, prototype and patent instruments, techniques, innovative services to be used in the field of bio-signal and biometrics integration. With particular interest in the eye-tracking and other cognitive (EEG) and motion tracking techniques and of their relative applications in the neuroscientific, diagnostic, rehabilitative, assistive, domotics, digital communication, video-games, virtual reality and marketing domains
- Develop a platform based on the use and integration of eye tracking technology for neurological and neurocognitive diagnostic and rehabilitation purposes for neurodegenerative or cerebrovascular diseases
- Incorporate eye tracking devices with different body tracking, and devices that collect brain signals related to cognitive and emotional activities through electroencephalography and/or pupil activity analysis
- Move from the experimental setting to the use of lightweight, wieldy and handy portable instruments with the aim of obtaining behavioural information in natural conditions, but also self-testing of cognitive or motor performance, and ultimately remote monitoring. This research and development activity will enable to create a multifunctional platform that can be applied in medical, rehabilitative or assistive, but also social (companies, schools, art) and marketing contexts
- Produce envisioning scenarios in which to express the role of the proposed software
- Develop and implement innovative digital solutions that may be translate to market and innovative 4.0 industry programmes
- Introduce and disseminate the results of joint research activities (publishing such as RoNeuro Institute, Liquidweb and Evalab-Eyetech, University of Siena) through journals in the field of national and international conferences or public events specially organized
- To test the developed stimulation and analysis software and to collect data for offline testing and integration with other devices. To apply big data analysis techniques and classification analysis techniques, and to interpret the results and identify the surrogate markers

Role description

The research fellow must have a profile compatible with the required technical skills (listed below), and the initiative in proposing innovative solutions and research projects will be particularly appreciated. Knowledge of English is essential for the international context of collaborations. The research fellow will be responsible for organizing the monthly reports to be proposed to the partners and for keeping in contact with RoNeuro and LiquidWeb. The publication of at least 2 scientific articles in the first name is required, and any participation in collaborative articles with the partners.
The activity must take place in the Neurosense laboratory and on projects of the joint laboratory shared between the partners.

The following skills are required:

- Statistics
- Signal analysis and processing
- Deep Learning (DL)
- Machine Learning (ML)
- Data mining
- Data visualization

The tasks that will be performed during the hiring period are the following:

- Data analysis
- Drafting of documentation and participation in scientific articles
- Collaboration with company professionals within the joint laboratory
- Creation of models through DL and ML
- Prototype development for results presentation
- Maintain contact with RoNeuro and Liquidweb
- Prepare and communicate the activities carried out to the partners, through monthly reports

Contract

The contract will be made to the winner of a competition based on qualifications and interview, which follows the procedures of public competitions and will take place at the DSMCN.
The contract is generally a research grant, for different types it is necessary to evaluate case by case with UNISI or DSMCN. The research grant is 26,000 euros, of which approximately 21,000.00 gross beneficiary. A period of 2 years must be guaranteed.