Annex 1

Selection based on titles

Title of the research activity: “Development of an eye-tracking system based on Stereoscopic vision”

Fields of the research activity:
Development of an eye-tracker prototype using MATLAB, study and possible set up of the acquisition system of recorded stereo-footage available in the lab, implementation of a 2D artificial eye pupil detection algorithm in controlled environment, implementation of a 2D pupil detection algorithm robust to the noise caused by fast eye and animal movements and to the light conditions (localization of the pupil and in particular of its borders as they appear in a real frame), realization of the information fusion algorithm of the single cameras to obtain the localization in the 3D space, system validation, measurement of the algorithm stability in artificial eye, quantitative measurement of the stability and precision compared to the set up system.

Scientific Area of SISSA: Neuroscience

Company: Glance Vision Technologies S.r.l.

Places where the research activity shall be carried out: SISSA, via Bonomea 265, Trieste and Glance Vision Technologies S.r.l. operational headquarters at Area Science Park, Edificio Q1, s.s. 14, Km 163.5, Trieste

Smart specialisation strategy areas (S3) of Friuli Venezia Giulia and their development trajectories: Smart Health: Biomedical, in vivo and in vitro diagnostics

Area: AREA 11 – Historical, philosophical, pedagogical, psychological sciences and Area 09 – Industrial and information Engineering

Competition sector: 11/E1 General Psychology, Psychobiology and Psychometry, 09/H1 Information processing systems

Academic scientific sector: M-PSI/02 Psychobiology and Physiological psychology; ING-INF/05 Information processing systems

Scientific tutor: Prof. Davide Zoccolan

Company tutor: Dr. Walter Vanzella

Duration of the research fellowship: 12 months

Foreseen starting date of the activity: 01.04.2017

Gross annual fellowship: € 24.336

Requisites:
- Degree in Engineering, Physics or Mathematics;
- Knowledge of C++ and Matlab programming;
- Good knowledge of OpenCV library;
- Ability in Microsoft Windows and Linux operation systems and relevant development environments for programming;
- Experience in developing algorithm for images elaboration in particular in analysis of sequences acquired in real-time containing 3D information;
- Autonomy during the phase devoted to the research of the most suitable algorithms in scientific literature and autonomy in their realization and validation;
- Ability to work in team;
- Good knowledge of English.

The knowledge of microcontroller programming (such as Arduino) shall be taken into account in the evaluation.

A PhD in Engineering, Physics or Mathematics will be considered as an asset.

Gross total cost of the research fellowship € 29.690,00: shall be funded by project HEaD – HIGHER EDUCATION AND DEVELOPMENT SISSA OPERATION 2 (FP1619889003), approved with decree of the autonomous region Friuli Venezia Giulia n. 2242 dated 11.04.2016 for the exclusive scope of the project funding the research fellowship.

Evaluation criteria:

PhD (evaluated as an asset): max 11 points
Degree: max 9 points
Published works and other research products: max 20 points
Other postgraduate degrees: 0 points
Other titles: max 20 points