SECTOR: Higher Education Institution

LOCATION: France, Grenoble

RESEARCHER PROFILE:
□ First stage researcher,

INSTITUTION: Univ. Grenoble Alpes, University of Innovation

One of the major research-intensive French universities, Univ. Grenoble Alpes\(^1\) enjoys an international reputation in many scientific fields, as confirmed by international rankings. It benefits from the implementation of major European instruments (ESRF, ILL, EMBL, IRAM, EMFL*). The dynamic ecosystem, grounded on a close interaction between research, education and companies, has earned Grenoble to be ranked as the 5th most innovative city in the world. Surrounded by mountains, the campus benefits from a natural environment and a high quality of life and work environment. With 7000 foreign students and the annual visit of more than 8000 researchers from all over the world, Univ. Grenoble Alps is an internationally engaged university.

A personalized Welcome Center for international students, PhDs and researchers facilitates your arrival and installation.

In 2016, Univ. Grenoble Alpes was labeled «Initiative of Excellence ». This label aims at the emergence of around ten French world class research universities. By joining Univ. Grenoble Alpes, you have the opportunity to conduct world-class research, and to contribute to the social and economic challenges of the 21st century (“sustainable planet and society”, ”health, well-being and technology”, ”understanding and supporting innovation: culture, technology, organizations” ”Digital technology”).

* ESRF (European Synchrotron Radiation Facility), ILL (Institut Laue-Langevin), IRAM (International Institute for Radio Astronomy), EMBL (European Molecular Biology Laboratory), EMFL (European Magnetic Field Laboratory)

Key figures:

- + 50,000 students including 7,000 international students
- 3,700 PhD students, 45% international
- 5,500 faculty members
- 180 different nationalities
- 1st city in France where it feels good to study and 5th city where it feels good to work
- ISSO: International Students & Scholars Office affiliated to EURAXESS

\(^1\) https://edu.univ-grenoble-alpes.fr/en/
MANDATORY REFERENCES:

PROJECT TITLE: MIAI @ Grenoble Alpes
SUBJECT TITLE: Learning robot actions for audio-visual human behavior understanding
RESEARCH FIELD (cf mots clefs sur Euraxess Jobs): human behavior understanding, audio-visual machine perception, deep learning, reinforcement learning, sensor-based robot control.
SCIENTIFIC DEPARTMENT (LABORATORY’S NAME): Inria
DOCTORAL SCHOOL’S: MSTII
SUPERVISOR’S NAME: Xavier Alameda-Pineda and Radu Horaud

SUBJECT DESCRIPTION:

It is proposed to develop novel human behavior understanding (HBU) methods using audio and visual data collected with microphones and cameras embedded into a robotic head. Strategies for controlling the robot to move towards a person or a group of persons are necessary. Indeed, HBU and human-robot face-to-face communication require facial expression recognition, eye gaze tracking, lip movement detection, and speech recognition: these tasks cannot be robustly performed from a far distance, since they require high-resolution frontal images of faces and audio signals with good signal-to-noise ratios.

Existing HBU methods based on statistical and deep learning will be investigated and combined with active perception theories, in order to develop a novel methodological framework for embedding robot control into HBU. A promising research direction is the use deep reinforcement learning, such that the robot learns online and without human supervision (from trial-and-error and from rewards) to perform actions that are likely to optimize HBU and face-to-face communication. In case of shortage of real datasets, synthetic data generation techniques will be used.

References


Extended Gaze Following: Detecting Objects in Videos Beyond the Camera Field of View. Benoît Massé, Stéphane Lathuilière, Pablo Mesejo, Radu Horaud. 14th IEEE International Conference on Automatic Face and Gesture Recognition, May 2019, Lille, France.


ELIGIBILITY CRITERIA

Applicants must hold a Master’s degree (or be about to earn one) or have a university degree equivalent to a European Master’s (5-year duration),

Applicants will have to send an application letter in English and attach:
- Their last diploma
- Their CV
- A short presentation of their scientific project (2 to 3 pages max)
- Letters of recommendation are welcome.

Address to send their application: xavier.alameda-pineda@inria.fr