Junior Research Engineer Positions: Machine Learning for Artificial Olfaction

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**, CEA Minatec campus). 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

MANDATORY REFERENCES:

1     Univ. Grenoble Alpes
2
IDEIX PROJECT TITLE: AI for the Environment: "Detection, classification and localisation of pollutants in air and liquids"
SUBJECT TITLE: Machine Learning for Artificial Olfaction
RESEARCH FIELD: Computer science, Signal processing, Chemometrics, Engineering.
SCIENTIFIC DEPARTMENT (LABORATORY’S NAME): GIPSA-lab
SUPERVISOR’S NAME: Simon Barthelmé (co-supervisor Pierre Comon).

DESCRIPTION:

Motivation. Chemical sensors are used in a wide array of tasks, for instance for the detection of pollutants or toxic chemicals. While most chemical sensors target a specific molecule, “artificial noses” are designed to be non-specific, and can detect a wide range of different molecules. Machine learning is directly involved: the instrument is exposed to the target molecules, the signatures of different molecules is learned, after which they can be recognised in the wild.

Aryballe Technologies is a start-up company that has been developing a new technology for gas sensing based on Plasmon Resonance Imaging or silicon photonics. Aryballe’s instrument, the NeOse, shows a capacity for identifying molecules that is much beyond the state-of-the-art. While artificial noses are typically used in a highly-controlled laboratory setting, we have been trying to push the technology forward in more challenging environments (for instance, by equipping a mobile robot with a NeOse).
For more information on the project, see here.

Open positions. We have two short-term positions available (one 3 month contract, one 6 month contract) for junior engineers. The objective is to help us streamline our different research protocols and automatise data collection as much as possible.

Organization. The positions are held within GIPSA-lab at University Grenoble-Alpes, as part of the MIAI chair on “AI for Environmental Applications: Detection, classification and localisation of pollutants in air and liquids”. GIPSA-lab is a highly dynamic work environment for signal processing and ML, with a strong focus on methods with sound theoretical footing. All work will be conducted in close collaboration with Aryballe Technologies, also located in Grenoble.

The candidate will be advised by Simon Barthelmé, CNRS research fellow, and co-advised by Pierre Comon (CNRS research director).

Expected Outcomes. Results will be published in international journals and presented at international conferences. Potential IP will also be considered.

Profile. The candidates are expected to have a background in signal processing. Some experience with development in the R language or with embedded systems would be a plus.

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 French or English and attach a CV.
Address to send their application: simon.barthelme@gipsa-lab.grenoble-inp.fr pierre.comon@gipsa-lab.grenoble-inp.fr

Applications are open until March 17th 2020.