SECTOR: Higher Education Institution

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

LOCATION: France, Grenoble

\(^1\) https://edu.univ-grenoble-alpes.fr/en/
MANDATORY REFERENCES:
PROJECT TITLE: MIAI @ Grenoble Alpes; chair: LargeDATA
JOB PROFILE (Title): Random tensors in the large dimensional regime
SCIENTIFIC HOSTING DEPARTMENT (LABORATORY'S NAME): GIPSA-Lab
SUPERVISOR'S NAME: Romain Couillet (PI), and Pierre Comon
CONTACT: romain.couillet@gipsa-lab.fr

RESEARCH FIELD: Computer Science, Statistics, Multi-linear algebra

RESEARCHER PROFILE:
- Recognized researcher (PhD holder not yet fully independent)
- Established researcher (Researchers who have developed a level of independence)
- Leading researcher (Researchers leading their research area or field)

JOB PROFILE (Description):
The research project consists in developing a study at the intersection of random matrix theory and tensor theory. The idea is to use the flexibility of the results from random matrix theory to determine non-deterministic (i.e. random) results on large tensors.
In particular, it will be sought to detect fundamental limits and phase transitions that allow (or prevent) the detection of signals in tensor noise for models that are ideally more structured and realistic than those previously used in the state of the art.
These theoretical results will also be compared with standard algorithms developed in the tensor literature, and heuristics and "simple rules" will be provided to anticipate the existence of valid solutions, the expected accuracy of algorithms, and possibly improve them.

The long-term objective of the project is to develop a theory of random tensors with practical implications in machine learning methods using tensor structures. This is where the joint expertise of the supervisors in random matrices and tensor theory will play a key role in the project.

Required languages: English

TYPE of CONTRACT: 12 months, with possibility of renewal
JOB STATUS (Full time or part time): full time
HOURS PER WEEK: 35
APPLICATION STARTING DATE: November 1st, 2019
APPLICATION DEADLINE: September 15, 2019

ELIGIBILITY CRITERIA
Applicants must hold a PhD degree (or be about to earn one) or have a University degree equivalent to a European PhD (8-year duration)

Applicants will have to send an application letter in English and attach:
- Their last diploma
- Their CV
- Letters of recommendation are welcome.

Address to send their application to: romain.couillet@gipsa-lab.fr