Recruitment Associate/full professors
School year 2012-2013

Short profile	Advanced information processing for very high resolution remote sensing		
Category	MCF	**Job number**	600
Posted	*26-1*		
Field of expertise	**Section 1 : 61**		
	Section 2 : *(eventually)*		
Position available	Start from 01 September 2012		
School to which the position is attached	ENSE3		
Associated Research lab	GIPSA-Lab		
Location	Grenoble		
Contact *(mail – tel)*	Teaching: Jérôme MARS 33 (0)4 76 82 62 53 jerome.mars@grenoble-inp.fr Research: Jocelyn CHANUSSOT 33 (0)6 62 73 84 44 Jocelyn.chanussot@gipsa-lab.grenoble-inp.fr Barbara NICOLAS 33 (0)4 76 82 64 22 barbara.nicolas@gipsa-lab.grenoble-inp.fr		

Grenoble INP, Grenoble Institute of Technology has been training engineers, and PhDs, and developing outstanding international research for the past hundred years. As a public Higher Education Institution and a leader in innovation, it is one of the preferred partners of the industrial world. As a cofounder of MINATEC, and an active member of Grenoble Innovation University, it is involved in international projects. Grenoble INP, Grenoble Institute of Technology is made up of approximately 1100 staff (administrative and academic), 6 engineering schools, 5400 students and 32 Research labs.
http://www.grenoble-inp.fr/

School to which the position is attached

http://ense3.grenoble-inp.fr/

Owing to its outstanding scientific environment and its pioneering activities linked with hydroelectricity, Grenoble has always been in the forefront of the development of new technologies in the field of energy, water management and information processing.

Taking full advantage of this background, the ENSE^3 school trains high-level engineers and doctors able to take up the challenges associated with the new energy order, with the increasing demand of water, both in quantity and quality, and with the sustainable development and country planning.

The school combines technical and scientific skills in the domains of electrical, mechanical, hydraulic, civil and environmental engineering to be able to handle the full energy chain (production, distribution, usages, trading) as well as the full water cycle (harnessing, storage, supply, treatment).

In collaboration with the school PHELMA (Physics, Electronics and Material sciences), ENSE^3 offers a master program devoted to information sciences, namely the SICOM program on Signal and Image processing, Communications and Multimedia gathering around 50 students originating from both school every year.

Recruitment Associate/full professors
School year 2012-2013

Teaching experience

Information processing is a discipline that impacts a broad spectrum of activities for today's engineers. In particular, it is an essential aspect for many issues related to the interests of the Ense3 (Energy, Water and Environment Engineers School). Observation and measurement are the early stages of any process or system, whether natural or industrial. The processing, filtering and characterization of the information are the next steps involved in the analysis and the understanding of the condition, behavior or evolution of the studied systems. The candidate will join the signal and image processing pedagogic team and will teach at various stages of the cursus: in the first year (courses and labworks in signal processing in the core curriculum as well as in elective modules, reinforcements for mathematics team); in the engineering and master degree (2nd and 3rd year), (s)he will participate in the ASI (Automatic Systems and Information), SICOM (Signal, Image, Communication, Multimedia), IEE (Electric Power Engineering) and SEM (Energy Systems and Markets) programs, for the image and signal processing, the remote sensing and the digital signal processing lectures and labs, respectively. (S)he should also develop new courses / labworks related to the observation for knowledge and exploration works in natural environments (hydroelectricity, works and environment). Finally, the candidate will participate to the proposal for an international master program, as well as to the preparation of a summer program.
(S)he must demonstrate her/his ability to teach in English.

Associated research lab

http://www.gipsa-lab.inpg.fr/

GIPSA-Lab is one of the largest and most recognized research facility in information processing, generally speaking. With around 300 staff members, including researchers, assistant/associate/full professors, administrative staff members, PhD students and post-docs, it is divided in three departments. One on speech processing and cognitive sciences (DPC), one on automatics and control sciences (DAuto), and one on image and signal processing (DIS). The position is attached to the DIS department. More specifically, it is with the SIGMA-Phy team (SIGnal iMAges and PHYsics) devoted to the development of advanced information processing techniques for the remote sensing of natural environment (airborne and satellite remote sensing, underwater acoustics, subsurface sensing).

Research experience

Today, remote sensing is a widely used tool for the monitoring of the environment, and very high resolution remote sensing is a blooming technology. By very high resolution, we mean spatial resolution, but also temporal resolution and spectral resolution, with, in particular, hyperspectral imagery which should be a central point of the proposed research plan. The (semi-)automatic extraction and optimal use of the information acquired by this new generation of sensors remain a key scientific challenge. As a matter of fact, most of the standard data processing methods fail when confronted to the very high dimensionality of the data.

The recruited person will develop advanced image and signal processing methods, bridging the gap with the researchers and end-users involved in the monitoring and management of the environment, especially within the *Observatoire des Sciences de l'Univers de Grenoble* (OSUG).

From the methodological point of view, the following lines of research can be investigated – but are not limited to : segmentation and classification in hyperspectral imagery, source separation and spectral unmixing, dimension reduction, machine learnning, kernel methods, data and decision fusion.

The recruited person will interact with thematicians, but should focus on theoretical and methodological developments. In particular, the development of generic methods that could be applied to other domains of activities within the SIGMA-Phy team will be a key issue to be developped in the research proposal.

Details of the position, specific requirements and responsibilities

Recruitment Associate/full professors
School year 2012-2013

Languages: an excellent command of English is required.
Skills

General kwowledge	Image processing, signal processing, remote sensing, statistics
Technical knowledge	C/C++, matlab
Behavourial abilities	Team player, project management, supervision of Msc and PhD students

Keywords : remote sensing, classification, imagery, filtering, monitoring, pattern recognition