2018-00356 - Doctoral/Advanced super-resolution techniques for high quality scanned images

**Contract type:** Public service fixed-term contract  
**Level of qualifications required:** Graduate degree or equivalent  
**Function:** PhD Position  
**Level of experience:** Recently graduated

**About the research centre or Inria department**

GeoStat projecting makes fundamental and applied research on new non linear methods for the analysis of complex signals and systems, using paradigms and tools coming from statistical physics.

**Research themes**

GeoStat’s research thematics are centered on the following theoretical developments:

- Multiscale methods developed in Physics for the analysis of complex systems,
- Predictibility in complex systems,
- Multiresolution analysis,
- Analysis, classification, detection,

and the following applied objectives:

- Analysis of complex and turbulent signals in earth observation, astronomy and remote sensing,
- Digital implementation of adaptive optics in astronomy,
- Analysis of biomedical signals.

**International and industrial relations**

GeoStat is working in close collaboration with the following teams:

- Laboratoire d’Astrophysique de Bordeaux.
- ICM-CSIC, Department of physical oceanography, Barcelona, Spain.
- LEGOS Laboratory, UMR CNRS 5566, Toulouse, France.
- Laboratory of theoretical physics and condensed matter University Paris 6, CNRS UMR 7600, Paris, France.
- IRIT, UMR CNRS 5505, Toulouse, France.

**Context**

**Within the framework of a partnership**

- value-creation and technology transfer contracts with i2S (Innovative Imaging Solution) Company

**Assignment**

Geostat is an INRIA research team specialized in advanced signal and image processing. Geostat is associated with a world leader company in imaging devices, i2S (Innovative Imaging Solutions) in a InnovationLab starting in 2017. This PhD offer takes the form of a CIFRE funding where the applicant will work in close collaboration both with Geostat researchers and i2S engineers.

INRIA provides an unique context for research, equal opportunity environment.

**Main activities**

In this thesis, the applicant will explore and develop different approaches for proposing efficient solutions to this problem of super-resolution, for instance and among others: optimization approaches (convex and non-convex), machine learning and deep learning approaches, etc.
Skills
Applied mathematics/Physics or Computer science student with a good applied maths background (image processing, Fourier transforms, optimization techniques). A good knowledge of a computer language is necessary.

Benefits package
- Subsidised catering service
- Partially-reimbursed public transport

Remuneration
1982€ / month (before taxes) during the first 2 years, 2085€ / month (before taxes) during the third year

Warning: you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.