TELECOM Paris

Hi! PARiS
HEC PARIS
INSTITUT POLYTECHNIQUE DE PARIS
PARIS ARTIFICIAL INTELLIGENCE FOR SOCIETY

IP PARIS

Faculty position (Tenure track professor) at Telecom Paris in Numerical optimization for frugal artificial intelligence.

Important Dates
- March 15th 2023: closing date
- April, 2023: hearings of preselected candidates

Telecom Paris's [1] machine learning, statistics and signal processing group (a.k.a S²A group) [2], within the laboratoire de traitement et communication de l'information (LTCI) [4], is inviting applications for a tenure track faculty position at the *Associate Professor* level (Maitre de Conferences) in *Numerical optimization for frugal artificial intelligence*.

Scientific context

Recent advances in computing and widespread access to massive digital information are leading to an unprecedented deployment of optimization algorithms in many domains (e.g. health\medicine, (cyber-) security, intelligent transport, predictive maintenance, etc.). Most of the algorithmic approaches developed over the last decade have mainly aimed to solve scaling issues, so as to be able to exploit Big Data in an exhaustive way. The objective of the future researcher will be to develop numerical optimization in the service of the mathematics of frugal artificial intelligence. This can be attained by sparse models or online algorithms but also by studying the interplay between artificial intelligence models and the optimization algorithms used to solve them. Moreover, the optimization of neural networks is a central problem for the community and requires to set up various ways of reducing the computation time or memory footprint.

Main missions

The recruit will be expected to:

Research activities
- Develop groundbreaking research in the field of numerical optimization and frugal artificial intelligence. This includes the design of numerical optimization algorithms, stochastic optimization and artificial intelligence models that are efficiently using data or computing resources. Other expertise of interest include Monte Carlo methods, optimal transport, sequential learning, active learning, sketching methods, non-differentiable functions and statistical learning theory.

• Develop both academic and industrial collaborations on the same topic, including collaborative activities with other Telecom Paris research departments and teams, and research contracts with industrial players
• Set up research grants and take part in national and international collaborative research projects

Teaching activities
• Participate in teaching activities at Telecom Paris and its partner academic institutions (as part of joint Master programs), especially in machine learning and Data science, including life-long training programs (e.g. the local Data Scientist certificate)

Impact
• Publish high quality research work in leading journals and conferences
• Be an active member of the research community (serving in scientific committees and boards, organizing seminars, workshops, special sessions...)

Candidate profile

As a minimum requirement, the successful candidate will have:

• A PhD degree
• A track record of research and publication in one or more of the following areas: numerical optimization, stochastic optimization, frugal artificial intelligence
• Experience in teaching
• Good command of English

The ideal candidate will also (optionally) have:
• Experience in temporal data analysis problems (sequence prediction, multivariate time series, probabilistic graphical models, recurrent neural networks...)

NOTE:
The candidate does *not* need to speak French to apply, just to be willing to learn the language (teaching will be mostly given in English)

Other skills expected include:
• Capacity to work in a team and develop good relationships with colleagues and peers
• Good writing and pedagogical skills

More about the position
• Place of work: Palaiseau (Paris outskirts)
• This position is supported by the Hi! Paris center of IP Paris [5]. A central goal of Hi! Paris is to provide long-term incentives to promote research and teaching in the area of AI and Data Analytics for Science, Business and Society. To this end, Hi! Paris has created a fellowship program, which provides funding for recruited researchers at HEC Paris and IP Paris. Recruited professors will receive an hiring

package with some flexibility in the allocation of the budget between research, scientific events organization, and funding of PhD students. The recruited professors, who will benefit from a reduced teaching duty, are expected to contribute to (i) the scientific life of the center, (ii) teaching in relevant fields for the center, and (iii) supervise Ph.D students.

 How to apply
Applications are to be sent by e-mail to: recrutement@telecom-paris.fr

The application should include:
• A complete and detailed curriculum vitae
• A letter of motivation
• A document detailing past activities of the candidate in teaching and research: the two types of activities will be described with the same level of detail and rigor.
• The texts of the main publications
• The names and addresses of two referees
• A short teaching project and a research project (maximum 3 pages)

Contacts :
Olivier Fercoq (Professor in the S²A group) olivier.fercoq@telecom-paris.fr
Pascal Bianchi (Professor in the S²A group) pascal.bianchi@telecom-paris.fr
Florence d'Alché-Buc (Head of IDS department) florence.dalche@telecom-paris.fr

[1] https://www.telecom-paris.fr/
[2] https://www.telecom-paris.fr/fr/recherche/laboratoires/laboratoire-traitement-et-communication-de-linformation-ltci/les-equipes-de-recherche/signal-statistique-et-apprentissage-s2a
[3] https://www.telecom-paris.fr/fr/lecole/departements-enseignement-recherche/image-donnees-signal
[4] https://www.telecom-paris.fr/fr/recherche/laboratoires/laboratoire-traitement-et-communication-de-linformation-ltci
[5] https://www.hi-paris.fr/