Project title / Job position title:

**Data Science and Applied Statistics**

Research Project / Research Group Description.

**PhD position in Data Science.**

- **Objective:** The increase in data generation (Big data) and problem sizes has made indispensable the development of new statistical and machine learning methods and algorithms for knowledge extraction and optimization.
- **Description:** In the applied statistics field, the main topics of our research are semi-parametric regression, multidimensional smoothing, (Bayesian) hierarchical models, computational statistics...Regarding Machine learning, we work on supervised and unsupervised classification of massive data, probabilistic graphical models, time series, Bayesian optimization, etc. In optimization we pursue the developments of efficient metaheuristics methods.
- **Applications:** Massive data and optimization problems from financial to social media, marketing, medical domains (diagnosis and prognosis), genetics, environmental modelling, demography and biostatistics, logistics, scheduling and planning.

Specific research PhD project thesis (choose one of them):

- **Minimax supervised classification.** Advisors: S. Mazuelas. This project will develop new machine learning techniques based on the minimax risk approach instead of the conventional empirical risk minimization. Such approach can utilize weak and heterogeneous training.
- **Semi-parametric regression modelling for biomedical applications.** Advisors: DJ. Lee, MX. Rodriguez. Recently, there has been an avalanche of biomedical information collected. This requires a new paradigm about how data are generated, managed, analyzed and ultimately communicated. The aim of this project is devoted to develop new statistical methodology for biomedical applications using flexible semi-parametric regression to account for complexity.
- **Time Series Mining.** Advisor: JA Lozano. The goal of the thesis is to develop machine learning algorithms to deal with problems where data come in a streaming fashion and there is a temporal correlation between the data: time series streaming.
Job Position description.

BCAM is a world-class research center in the field of Applied Mathematics located in Bilbao (Spain). It obtained the Severo Ochoa Center of Excellence award in 2013 and 2018 given by the Spanish Ministry of Science, Innovation and Universities. BCAM is part of the ERCOM European Research Centers on Mathematics http://www.ercom.org networks. BCAM has endorsed the Charter & Code in 2008 and has been awarded the HR Excellence in research Logo in 2016.

The candidate will be part of the Data Science research area at BCAM.

The candidate must have solid knowledge and experience.

The research environment is international and open to national and international collaborations, the candidate must have willingness to team working and traveling.

Requirements:
- Master degree (preferable in Mathematics, Physics, Engineering or Computer Science).
- Applicants must have an excellent academic record.

Skills:
- Good communication and interpersonal skills.
- Ability to effectively communicate and present research ideas to researchers with different background (e.g., mathematicians and engineers as well as employs of forest service).
- Ability to clearly present and publish research outcomes in spoken (talks) and written (papers) form.
- Good command of spoken and written English.

Additionally, in terms of transferable & complementary skills, BCAM is carrying out the Action Plan within Human Resources Strategy for Researchers (HRS4R) BCAM action plan available here https://bit.ly/2MH1R9S; so, the fellow will benefit of this training program composed by: Leadership, Ethic and Research, Effective Communication/Teamwork, Gender Balance, Research Integrity, Citizenship Science, etc. The fellow will receive all the needed support from BCAM to be fully integrated in the group and in the center.
INPhINIT Offer, eligibility requirements, evaluation and selection process

Incoming: https://obrasociallacaixa.org/en/investigacion-y-becas/programa-de-becas-de-posgrado/inphinit/incoming

Retaining: https://obrasociallacaixa.org/en/investigacion-y-becas/programa-de-becas-de-posgrado/inphinit/retaining

How to Apply

1. Click in https://candidate.lacaixafellowships.org/login, Click in “New Users” – Please register your application and fill in all the personal data requested by the page for the creation of a new user.

2. Once you create the profile, you will receive a confirmation email and by clicking on the link you will be redirected to a page that tells you that your user is correctly completed.
3. Once you enter the platform with your user, the following screen will appear with some of your data and to choose the mode: Incoming or retaining:

4. Afterwards, you will be shown a page with all your data previously entered, and you will have to upload your passport, ID card and contact information:
5. After hitting the Save and Continue button, the following screen will appear in which you must enter the following data, choose the position you want and accept the 3 boxes below:
6. Below, on that same page, you choose the first option of the Physical sciences, Mathematics and Engineering Panel:
7. After giving to the button Save and Continue, fill in the Statement of purpose you give to Save and Continue:

8. From there, you will have to fill in the rest of the pages: Reference Letters, CV, Bachelor Studies, Other studies (if you have them), Academic records referring to higher studies relevant to the fellowship, Language required according to the programme terms and conditions, Language certificate, etc.

9. Once you have filled in all the fields you must click on FINISH and your application will be registered.