

## Company Description

The Basque Center for Applied Mathematics - BCAM is an international research centre in the field of Applied Mathematics that was founded in 2008 by the Basque Government, the UVP/EHU and Ikerbasque. It also has the support of the Provincial Council of Bizkaia and Innobasque. It has a staff of more than 90 researchers of 25 nationalities working in various areas, from data science to mathematical modelling, and has twice been accredited as a centre of excellence "Severo Ochoa" by the State Research Agency, a distinction awarded to the best research institutions in the world in their field. [www.bcamath.org](http://www.bcamath.org)

## Information

 Deadline: 2019-09-13  
 Category: Academia  
 Province: Bizkaia

 Country: Basque Country  
 City: Bilbao

## Company

BCAM



## Main functions, requisites & benefits

### Main functions

Applications are invited for a postdoctoral position within the Simulation of Wave Propagation group at BCAM. The project, entitled "Deep Learning Based Inversion with Energy Applications", deals with Solving inverse problems in computational mechanics using deep learning algorithms with applications to geophysics. More info: <http://www.bcamath.org/en/research/job/postdoctoral-fellowship-in-simulation-of-wave-propagation> The preferred candidate will work in one of the following research areas (depending upon the candidate's scientific profile): Research Area 1 (RA1): Development of Deep Learning Algorithms for Real-Time Inversion. The postdoctoral fellow working on RA1 will be trained on solving inverse problems using Deep Neural Networks (DNNs). Specifically, he/she will improve an existing encoder-decoder Deep Convolutional Neural Network (DCNN) by adding residual blocks with a boosting strategy. The implementation will be based on TensorFlow 2.0. The results will be applied geophysical problems. Research Area 2 (RA2): Development of Finite Element Methods for generating a training database for Deep Learning algorithms. The postdoctoral fellow working on RA2 will explore various numerical methods such as Proper Generalized Decomposition (PGD), Fourier based strategies, multiscale methods, and Finite Element Methods. Then, starting from our existing in-house finite element simulators, the objective is to develop a numerical method that solves one million two-dimensional (2D) forward problems in eight hours on a computer equipped with four quad-core CPUs.

### Requisites

- Applicants must have their PhD preferable in Applied Mathematics, Engineering, Computer Sciences, or related fields. • Good interpersonal skills.
- A proven track record in quality research, as evidenced by research publications in top scientific journals and conferences.
- Demonstrated ability to work independently and as part of a collaborative research team. • Ability to present and publish research outcomes in spoken (talks) and written (articles) form.
- Ability to effectively communicate and present research ideas to researchers and stakeholders with different backgrounds.
- Fluency in spoken and written English.

### Benefits

The gross annual salary of the Fellowship will be 28.000 - 32.000€. There is a moving allowance for those researchers that come from a research institution outside the Basque Country from EUR 1.000 to EUR 2.000 gross.