basque center for applied mathematics

EXCELENCIA SEVERO OCHOA

IC2026_07_01 BCAM International Call

Research technician in Smart Wearables in Elite Sports

Job Offer	
Topics:	**The Basque Center for Applied Mathematics is hiring a Research Technician to join the PrediSense and SWEATHEART projects: Field research & data science for the automatic detection of cardiorespiratory parameters during high-intensity exercise This position offers a unique blend of field research in elite sports and advanced data science, providing an exceptional opportunity to combine applied fieldwork with mathematical and algorithmic modeling. The contract has an initial duration of one year, with a starting date as soon as possible (ideally in September), and the researcher will work under the supervision of Dr. Elisabetta de Giovanni. For candidates currently enrolled in a Master's program, this project is highly suitable to be developed into and presented as their final Master's Thesis.** Project Background and objetives: Continuous monitoring of biosignals via wearable sensors has quickly expanded in the medical and wellness fields. While automatic vital parameter detection is highly accurate at rest, high-intensity exercise, such as in team sports, introduces sudden physiological changes that compromise the robustness of standard algorithms. In this context, the PrediSense and SWEATHEART projects at BCAM (funded by Spanish and European calls) aim to develop energy-efficient models and algorithms for continuous monitoring of exercise-induced cardiorespiratory effects in elite athletes. In this context, we propose a work to automate the detection of key cardiorespiratory parameters, which are essential for coaches and sports scientists to assess fitness levels, personalize training intensities, and effectively track athlete progress. Traditionally, these parameters are identified manually by experts analyzing gas exchange measurements obtained during maximal exercise testing. This process, reliant on expert judgment and experience, can be inherently subjective and cumbersome due to the complex equipment and analysis required. Thus, the work seeks to develop automatic methods for determining the cardiorespiratory parameters directly from biomedical

	signals captured by smart wearable devices during real-world high-intensity physical activities. The successful candidate will join a season-long scientific study in collaboration with Bilbao Kirolak (the municipal sports organization of Bilbao) involving six elite teams spanning rugby, basketball, and football (comprising 3 male and 3 female teams). The role involves taking an active part in the organization, planning, setup, and execution of field-based data collection during regular training sessions using advanced wearable biomedical devices, alongside coordinating monthly effort tests within a controlled laboratory environment to systematically track athlete progress. The candidate will be responsible for processing the collected physiological data, with the first objective to clean and standardize the data to construct a robust, publishable dataset. Furthermore, the candidate will develop and implement algorithms to automatically detect cardiorespiratory parameters, ultimately contributing to personalized prediction models. This opportunity is ideally suited for young graduates passionate about the Sports Science and Data Analytics sectors who are eager to embark on a rigorous research career at BCAM. Candidates who meet these criteria and wish to contribute to a cutting-edge, multidisciplinary team are highly encouraged to submit their application.
PI in charge:	**Dr. Elisabetta de Giovanni**
Salary and conditions:	**The gross annual salary of the Fellowship will be 20.663€- 29.075€**
Contract and offer:	**1 year**
Deadline:	**15/09/2026 14:00 CET**
How to apply:	Applications must be submitted on-line at: https://joboffers.bcamath.org

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Scientific Profile Requested	
Requirements:	• Promising young researchers • Bachelor's or Master's Degree (completed or near completion) in Biomedical Engineering or related fields (e.g. Applied Mathematics, Computer Science)
Skills and track-record:	• Curiosity about real-world experimentation and fieldwork. • Basic to intermediate biosignal processing and programming skills (Python, Matlab). • Basic knowledge of data science and biomedical devices.

Application and Selection Process	
Formal Requirements:	The selected candidate must have applied before the application deadline online at the webpage: https://joboffers.bcamath.org The candidates that do not fulfil the mandatory requirements will not be evaluated with respect to their scientific profile.
Application:	Required documents: • CV • Letter of interest in English describing which topics the candidate is interested in researching. • 2 recommendation letters • Academic record: including undergraduate and master-level courses attended and grades and scientific results achieved, and research statement • is NOT required (leave blank in application form).
Evaluation:	Based on the provided application documents of each candidate, the evaluation committee will evaluate qualitatively: the adaption of the previous training and career to the profile offered, the recommendation letters, the main results achieved (papers, proceedings, etc.), the statement of past and proposed future research and other merits; taking in account the alignment of these items to the topic offered.

Incorporation:	***As soon as possible.***

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