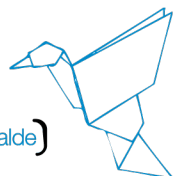


Research Technician in Cybersecurity

Job Offer	
Topics:	Cybersecurity, Machine Learning, Artificial Neural Networks, Convolutional Graph Neural Networks.
PI in charge:	José A. Lozano Jairo Rojas-Delgado
Salary and conditions:	<p>The gross annual salary of the Fellowship will be 18.000 - 26.000€.</p> <p>It will then be on your own responsibility to make your yearly income declaration at the Bizkaia Treasury Agency.</p> <p>There is a moving allowance for those researchers that come from a research institution outside the Basque Country from EUR 500 to EUR 1.000 gross.</p> <p><i>Free access to the Public Health System in Spain is provided to all employees.</i></p> <p><i>This contract will be funded by the project ELKARTEK Remedy.</i></p>
No Positions offered:	#1
Contract and offer:	1 year contract
Deadline:	30 November 2021 at 14:00 CET (UTC+1)
How to apply:	Applications must be submitted on-line at: http://www.bcamath.org/en/research/job

Scientific Profile Requested	
Requirements:	<ul style="list-style-type: none"> • Promising young researchers. • Applicants must have their Bachelor's or Master degree preferable in Physics, Mathematics, Computer Science, or related fields.
Skills and track-record:	<ul style="list-style-type: none"> • Good interpersonal skills. • 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 (papers) form.



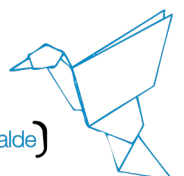
	<ul style="list-style-type: none"> • Ability to effectively communicate and present research ideas to researchers and stakeholders with different backgrounds. • Fluency in spoken and written English.
Scientific Profile:	<p>The preferred candidate will have:</p> <ul style="list-style-type: none"> • Basic background in machine learning and artificial intelligence, including but not limited to: statistical validation, artificial neural networks, graph neural networks. • Working skills using tools like TensorFlow and Keras. Comfortable with Python. • Basic knowledge of graph theory.

Application and Selection Process

Formal Requirements:	<p>The selected candidate must have applied before the application deadline online at the webpage http://www.bcamath.org/en/research/job</p> <p>The candidates that do not fulfil the mandatory requirements will not be evaluated with respect to their scientific profile. Additional documents could be requested during the evaluation process so as to check this fulfilment.</p>
Application:	<p>Required documents:</p> <ul style="list-style-type: none"> ▪ CV ▪ Letter of interest ▪ 2 recommendation letters (desirable)
Evaluation:	<p>Based on the provided application documents of each candidate, the evaluation committee will evaluate qualitatively: the adaption of the previous experience to the profile offered, previous projects managed, the letter of interest, and other merits; taking in account the alignment of these items to the job offered.</p>

Incorporation: **As soon as possible.**

Research topic description:	<p>The emergence of vast amounts of unlabeled, non-euclidean, data have motivated a relatively recent interest in the development of novel algorithms for learning from many different kinds of knowledge representations such as graphs, where the knowledge is represented in the form of vertices and edges between them. This kind of data appears frequently in the cybersecurity domain and especially in the detection of abnormal behaviour in computer networks. In the</p>
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	<p>cybersecurity area we may encounter graphs with a large number of vertices, nodes and complex dynamics. Therefore, novel and efficient algorithms for learning from graphs are of paramount importance.</p> <p>In the graph domain, there are several interesting tasks from a machine learning perspective, such as: node level prediction, edge level prediction or graph level prediction of some interesting properties. In addition, the data itself can provide more or less useful information depending on the application, for example: node level features, edge level features or graph level features. From a different perspective, we may have the transductive setting, in which the graphs in the data set share the same structure or the inductive setting in which the graph structure changes in time.</p> <p>We are interested in the development novel Graph Neural Network approaches to deal with complex networks (graphs with a large number of vertices and edges). Our goal is to be able to detect abnormal behavior in computer networks in order to provide security by design in a number of industrial applications.</p>
Keywords:	Cybersecurity, Artificial Neural Network, Graph Neural Network, Machine Learning.

