

HORIZON 2020
Marie Skłodowska-Curie Actions
VACANCIES
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by Ester Maria Loi

REF. N. 04_18

Job Description:

Job title: 1 Early Stage Researchers position in COMPUTER SCIENCE

Name of Organisation: Nikhef

Country: Netherlands

City: Amsterdam

Main research fields: Computer Science

Sub Research fields: Modelling tools, Financial data analysis

Application deadline: 12/06/2018 00:00 - Europe/Brussels

H2020/Marie Skłodowska-Curie Actions Eligibility criteria:

Mobility Rule:

At the time of recruitment, the researcher must not have resided or carried out his/her main activity (work, studies, etc.) in the country of their host organization for more than 12 months in the 3 years immediately prior to his/her recruitment. Short stays, such as holidays, are not taken into account.

Early-Stage Researchers:

ESR Candidates must be, at the time of recruitment by the host organization, in the first four years (full-time equivalent) of their research careers and have not yet been awarded a doctoral degree. This is measured from the date when they obtained the Master's degree that would formally entitle them to embark on a doctorate.

Required Education:

Master degree or equivalent in Computer Science

Language skills:

Required languages: English

Level: Good

Required research experiences:

On a Masters level, the candidates must have knowledge of statistics, model building, mathematics and strong coding abilities. The candidates must have the ability to give demonstrations to scientific and business audiences.

Application details:

Project title: INSIGHTS (International Training Network for Statistics in High Energy Physics and Society).

The INSIGHTS network is focused on the development and application of statistical methods for elementary particle physics, as carried out, for example, at research facilities such as the Large Hadron Collider at CERN, near Geneva. The supported researchers will develop and apply research

tools for physics from fields such as machine learning, software engineering, parametric modelling and Bayesian computation. An important component of the network involves knowledge exchange with areas outside particle physics, including finance, risk modelling, volcanology, and climate science. The INSIGHTS Consortium consists of partners from the UK the United Kingdom (Royal Holloway University of London, University of Edinburgh), Italy (PANGEA, University of Naples, INFN), the Netherlands (Nikhef), Germany (Max-Planck Institute), Switzerland (CERN), Sweden (Lund University) and Norway (University of Oslo).

Job description:

Since the financial crisis in 2008 strict regulatory requirements on data quality have been introduced by the European and national banks for the financial sector. While 100% data quality is the imposed target level, it is recognized that this is an unrealistic number from a practical perspective. Missing from a data analytics perspective, are scientific tools that treat residual data failures and mistakes as systematic uncertainties, and that propagate these systematic effects in the predictions coming from financial risk models. In other words tools that are able to quantify the accuracy and reliability of the predictions of models and algorithms under the assumption that the data is not 100% correct.

The ESR candidate will be enrolled in the PhD programme in the University of Amsterdam and carry out a thesis in High Energy Physics with the ATLAS Collaboration at the Large Hadron Collider (LHC) at CERN.

The PhD candidate will develop a simulation framework that allows simulation of (historic) data and systematic effects to test the robustness and reliability of algorithms and models. The framework should be able to autonomously identify and extract relevant correlations from any given dataset and simulate a dataset that reproduces these correlations. Furthermore, the framework should be able to generate distortions to these (simulated) datasets that reflect in various levels the impact of known and measured data quality issues. The distorted datasets are fed into risk models to study the robustness of an algorithm or model and to assess the impact of (systematic) uncertainties on financial risk models. It should also be possible to simulate alternative scenarios, i.e. (business) policies or decisions, within this framework. The goal being to identify the optimal scenario according to an arbitrary set of criteria from e.g. an economical or societal point of view.

Duration of job: 4 years. The initial employment period of 18 months is funded through Nikhefs participation in the INSIGHTS Marie Skłodowska-Curie programme. Periodic evaluations will be held after 9 and 14 months, and upon positive evaluation, the appointment will be extended at the Informatic institute of the University of Amsterdam to a total of 48 months

Status: Full time

Additional Requirements:

Knowledge of ABM-based simulations is considered as a pre.