Social Physics and Complexity

Research Fellow – Identifying and Predicting Emergency Admissions

Description
A call for applications for a Research Fellowship is open at Nova School of Business and Economics (NOVA SBE) under the Project Identifying and Predicting Emergency admissions DSAIPA/AI/0087/2018, funded by FCT, with the following conditions:

Main field: Computer Science, Artificial Intelligence, Data Science

Admission requirements: The Research Fellow (RF) candidate should have a MSc degree in computer science, informatics, mathematics, physics, engineering or a related field, and should have experience with data gathering, curation and analysis. Preference will be given to candidates with expertise in data management (SQL) and Python programming.

Work Plan: Emergency Care Units (ECUs) are medical facilities that deal with unplanned patient turnout, for a very large range of conditions, often urgent or acute, and frequently life-threatening. Therefore, ECUs need to find a difficult balance between having enough resources (human and others) to deal with an unexpected surge in patients, while reducing wasteful practices of sustaining more resources than required. Thus, timely information regarding possible variations in patient inflow is fundamental for proper planning and quality of service. But since a broad spectrum of reasons lead people to ECUs, hospital admissions vary significantly. From acute events, to lack of alternatives, or just out of concern, different reasons have different underlying dynamics, are guided by different factors, timings, and motivations. Thus, a combination of uncertainty and large variability, makes the problem of emergency forecasting a very complex challenge, with great impact on quality of care.

This project has three main goals:
1. Disease Identification: What brings people to ECUs?;
2. Emergency Now-casting: Can we now- and fore-cast ECU admissions in a useful way?
3. Decision-Making: Can our research aid in decision-making for public health, both in local (ECU) and national levels?

And will be developed in six main steps:
1) ECU admissions and dynamics;
2) Mining of the SPMS database for the medical-related dataset;
3) Creating a relevant non-medical related dataset;
4) Data curation, validation and handling;
5) Nowcasting and forecasting;
6) Dissemination and policy;

This is a very interdisciplinary project and the RF will be participating in tasks 1 to 4 and is expected to be part of other research activities, such as journal club discussions and group meetings.

Applicable Law and Regulations: Research Fellowship Holder Statute ("Estatuto do Bolseiro de Investigação Científica"), approved by Lei n.º 40/2004, de 18 de agosto, subsequently amended and republished by Decreto-Lei n.º 202/2012 de 27 de

agosto, updated in accordance with Decreto-Lei n.º 233/2012 e 29 de outubro, Lei n.º 12/2013, de 29 de janeiro, and with Decreto-Lei n.º 89/2013 de 9 de julho. Fellowship Regulations of Nova SBE, approved by FCT, I.P. by Despacho de 16 de abril de 2014 and Regulations for Studentships and Fellowships of the FCT, I.P..

Working place: The research will be conducted at NOVA SBE under the scientific supervision of Professor Joana Gonçalves de Sá and Doctor Lília Perfeito.

Duration of the Fellowship: The fellowship will have a duration of 6 months, with possibility of renewal (12 months, maximum), starting in the first semester of 2020. The fellowship will be awarded on an exclusive basis, as stated in Regulations for Studentships and Fellowships of FCT, I.P..

Monthly allowance: The fellowship monthly allowance is according to the table of monthly stipends available in the Regulations for Studentships and Fellowships of FCT, I.P. (http://www.fct.pt/apoios/bolsas/valores) and to the project approved budget.

Selection criteria: CV: 30%
Motivation letter: 20%
Interview: 50%

Selection Committee:
Joana Gonçalves de Sá – Chairwoman (Associate Professor, NOVA SBE)
Lília Perfeito – Effective member (Postdoctoral Researcher, NOVA SBE)
Simone Lackner – Effective member (Postdoctoral Researcher, NOVA SBE)
Qiwei Han – Substitute member (Invited Professor, NOVA SBE)
Leid Zejnilovic – Substitute member (Associate Professor, NOVA SBE)
Jorge Carneiro – Substitute member (Principal Investigator, Istituto Gulbenkian de Ciência)

Formal notification of results: All candidates will be notified by email.

Application period: The call is open until January 31st 2020.

Application procedure: Applications must be submitted by email to research.office@novasbe.pt, under the subject "Nova SBE/BIM/2019/29" – Emergencies, and must include the following documents (mandatory):
1. Motivation letter;
2. Detailed Curriculum Vitae;
3. Transcripts of diplomas or degrees with final grades and other documents demonstrating the candidate's suitability for the required profile;
4. Contacts of two references for the candidate