432_24_LS_CB_RE2

Job Reference

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Position

Data scientist in AI-Driven Predictive Modelling for Urban Health (RE2)

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Diumenge, 01 Setembre, 2024
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About BSC

The Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC-CNS) is the leading supercomputing center in Spain. It houses MareNostrum, one of the most powerful supercomputers in Europe, was a founding and hosting member of the former European HPC infrastructure PRACE (Partnership for Advanced Computing in Europe), and is now hosting entity for EuroHPC JU, the Joint Undertaking that leads large-scale investments and HPC provision in Europe. The mission of BSC is to research, develop and manage information technologies in order to facilitate scientific progress. BSC combines HPC service provision and R&D into both computer and computational science (life, earth and engineering sciences) under one roof, and currently has over 1000 staff from 60 countries.

Look at the BSC experience:
[BSC-CNS YouTube Channel](#)
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We are particularly interested for this role in the strengths and lived experiences of women and underrepresented groups to help us avoid perpetuating biases and oversights in science and IT research. In instances of equal merit, the incorporation of the under-represented sex will be favoured.

Context And Mission

The Computational Biology Group, led by ICREA professor Alfonso Valencia, is looking for a senior data scientist or postdoctoral researcher to join a scientific project developed in collaboration with a pharmaceutical company focused on data examination, modelling and forecasting applied to the epidemiology.

Despite advances in medical treatment and public health interventions, Chronic Obstructive Pulmonary Disease (COPD) and asthma continue to impose a substantial burden on people, healthcare systems, and society as a whole. In Catalonia, as in many other regions, these respiratory diseases contribute to diminished quality of life for affected individuals and increased healthcare utilisation with an economic cost associated with medical care and lost productivity. Developing an accurate and reliable predictor of COPD and asthma peaks holds significant implications for public health policy, clinical practice, and disease management strategies in Catalonia and beyond. A predictor that forecasts when the peaks of COPD and asthma will occur could help to prepare the healthcare system and plan the supply of required drugs, in advance, the attentions to vulnerable populations while reducing economic impact.

The Computational Biology Group (http://life.bsc.es/compbio), within the Life Sciences Department at the BSC, is involved in multiple projects covering precision medicine, systems biology, network science, and epidemiology. In previous projects, we have designed and implemented a geographical information system (GIS) and a computational framework to evaluate and report on the dynamics of COVID-19 in Spain. The COVID-19 Flow-Maps platform integrates heterogeneous sources of geo-referenced data, including daily reported COVID-19 cases, mobile phone mobility data, and socio-economic indicators. It has been used to monitor the pandemic at a national level and detect potential risk zones.
More recently, we have extended this platform to study urban health by integrating data from electronic health records and spatio-temporal data on air-quality levels for different pollutants, together with novel population mobility indicators. On top of this information system, we are developing interactive data dashboards and predictive models to support decision -making in urban and health planning.

We are seeking a highly motivated and skilled data scientist to join our team. The successful candidate will contribute to a cutting-edge project aimed at predicting Chronic Obstructive Pulmonary Disease (COPD) and asthma incidences. This project will leverage environmental data, retrospective case data, and data on population mobility. The researcher will utilize advanced AI, deep learning techniques, and time series assessments to develop robust predictive models.

The person joining the team will be responsible for developing a predictive model for COPD and asthma peaks in Catalonia using a multidimensional approach that incorporates electronic health record (EHR) data, air quality data, pollen data, population mobility data, and other relevant sources. By leveraging advanced data analytics and machine learning techniques, the study seeks to enhance our understanding of the complex interplay between environmental factors, population dynamics, and respiratory health outcomes. The person will work in collaboration with scientific staff from the BSC and the company, in a highly sophisticated High-Performance Computing (HPC) environment, with access to state-of-the-art systems and computational infrastructures.

Key Duties

- Exploratory geospatial analysis of environmental data, time series of healthcare data, and mobility data
- Perform time series analysis to identify trends and patterns in the data
- Develop predictive models of COPD and asthma peak season using AI/ML approaches
- Collaborate with interdisciplinary teams, including epidemiologists, data scientists, and public health experts
- Prepare and present progress reports and relevant research findings at scientific conferences and in peer-reviewed journals

Requirements

- Education
  - PhD in Data Science, Computer Science, Epidemiology, Statistics, or equivalent demonstrated experience.

- Essential Knowledge and Professional Experience
  - Data wrangling skills, especially with geospatial data
  - Strong programming skills in languages such as Python, R, Julia, etc.
  - Previous experiences in at least one of the following: AI and deep learning techniques or time series assessments and predictive modelling.
  - Excellent examination and problem-solving skills.
  - Ability to work unaided and as part of a multidisciplinary team.

- Additional Knowledge and Professional Experience
  - Experience with environmental health data and public health research.
  - Familiarity with big data technologies and data management platforms.
  - Experience with machine learning frameworks such as TensorFlow, PyTorch, or similar.
  - Previous experience with GIS and spatial assessment tools.
  - Good written and verbal communication skills.

- Competences
  - Ability to work unaided and in a team to complete tasks on schedule.
  - Ability to work under set deadlines.

Conditions

- The position will be located at BSC within the Life Sciences Department
- We offer a full-time contract (37.5h/week), a good working environment, a highly stimulating environment with state-of-the-art infrastructure, flexible working hours, extensive training plan, restaurant tickets, private health insurance, support to the relocation procedures
- Duration: Open-ended contract due to technical and scientific activities linked to the project and budget duration
- Holidays: 23 paid vacation days plus 24th and 31st of December per our collective agreement
- Salary: we offer a competitive salary commensurate with the qualifications and experience of the candidate and according to the cost of living in Barcelona
- Starting date: Asap

Applications procedure and process

All applications must be made through BSC website and contain:

- A full CV in English including contact details
- A Cover Letter with a statement of interest in English, including two contacts for further references - Applications without this document will not be considered

In accordance with the OTM-R principles, a gender-balanced recruitment panel is formed for every vacancy at the beginning of the process. After reviewing the content of the applications, the panel will start the interviews, with at least one technical and one administrative interview. A profile questionnaire as well as a technical exercise may be required during the process.

The panel will make a final decision and all candidates who had contacts with them will receive a feedback with details on the acceptance or rejection of their profile.

At BSC we are seeking continuous improvement in our recruitment processes, for any suggestions or feedback/complaints about our Recruitment Processes, please contact recruitment [at] bsc [dot] es.

For more information follow this link

Deadline

The vacancy will remain open until a suitable candidate has been hired. Applications will be regularly reviewed and potential candidates will be contacted.

OTM-R principles for selection processes

BSC-CNS is committed to the principles of the Code of Conduct for the Recruitment of Researchers of the European Commission and the Open, Transparent and Merit-based Recruitment principles (OTM-R). This is applied for any potential candidate in all our processes, for example by creating gender-balanced recruitment panels and recognizing career breaks etc.
BSC-CNS is an equal opportunity employer committed to diversity and inclusion. We are pleased to consider all qualified applicants for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability or any other basis protected by applicable state or local law.
For more information follow this link
This position is reserved for candidates who meet the requirements and have the legal status of disabled persons with a degree of disability equal to or greater than 33%. In case there are no applicants with disabilities that meet the requirements, the rest of the candidates without declared disability will be evaluated.
Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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