

[437_24_LS_CB_RE1](#)

Job Reference

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Position

Junior Research Engineer for Epidemic Modeling (RE1)

Data de tancament

Dijous, 01 Agost, 2024

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Job title: Junior Research Engineer for Epidemic Modeling (RE1)

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 Life Sciences Department at the BSC integrates the independent research of senior scientists that work on various aspects of computational biology, ranging from bioinformatics for genomics to computational biochemistry and text mining. The Computational Biology group (<http://life.bsc.es/compbio>), led by ICREA professor Alfonso Valencia, is looking for a junior research engineer to work on a recently granted project to gather and integrate heterogeneous sources of data related to the COVID-19 outbreak and dynamics in

Spain. By combining information on cases per district and mobility data from different sources of information, the project aims to develop an open tool to generate periodic dashboards regarding the current health state of different geographic areas such as townships and hospital surrounding areas. To do so, a combination of network-based approaches will be applied to mine the data to discover potential risk zones. Furthermore, the developed information systems will also be used to calibrate different types of already available epidemic models. The models will be used to run short-term simulations of the evolution of the pandemic and to predict possible dynamic trajectories, including new outbreaks.

The successful candidate will join a dynamic research group within the Life Sciences department, which integrates independent senior scientists that work on various aspects of computational biology, ranging from bioinformatics for genomics and proteomics to computational biochemistry and text mining. The Researcher will work in a highly sophisticated HPC environment, have access to systems and computational infrastructures, and establish collaborations with experts in different areas.

Key Duties

- Data integration and API development.
- Develop methods to integrate and mine epidemic and mobility data to discover spreading patterns.
- Design and implement tools that facilitate access to the data as well as the automatic generation of summary dashboards.
- Implementation and calibration of epidemic models using optimization simulation approaches.
- Participate in writing scientific articles, blogs, and online media posts.
- Participate in internal group meetings and other scientific discussions.
- Implement a flexible Julia Package for simulating process epidemic processes on meta-populations using different mathematical frameworks (e.g. MMCA, ODEs).
- Extend the MMCA modeling framework to enable considering time-dependent mobility networks.

Requirements

- Education
 - Degree in Computer Science, Data analysis or related discipline.
 - Master in Complex Systems, Data analysis or Machine Learning.
 - Or equivalent professional experience
- Essential Knowledge and Professional Experience
 - Experience with software development and at least one of the following:
 - ? Experience in Python programming language;
 - ? Experience in web programming languages and frameworks (e.g., Javascript, HTML, CSS, Django/Flask);
 - ? Strong Background in mathematics
 - Experience in evolutionary optimization techniques (e.g. genetic algorithms).
 - Background on complex networks analysis
- Additional Knowledge and Professional Experience
 - Experience with Python data science tools (e.g., Pandas, Numpy, Jupyter Notebooks, Scikit-learn, Matplotlib/Seaborn) to obtain, curate, clean, analyze, and visualization of information;
 - Experience with Network Analysis tools (Networkx/igraph, Gephi, yEd).
 - Fluency in spoken and written English
- Competences

- Good communication and presentation skills.
- Ability to work both independently and within a team.

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: 01/08/2024

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](#)

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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