Senior Engineer (Scientific Programmer)

University of Oslo

Oslo, Norway

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Applications are invited for a 3 year position as a Scientific Programmer (Senior Engineer, position code 1181) to be based at the Oslo Centre for Biostatistics and Epidemiology (OCBE), Department of Biostatistics, Institute of Basic Medical Sciences, Faculty of Medicine, University of Oslo (UiO), Norway.

This is an opportunity to join one of Europe's most active biostatistics groups at an exciting time. Currently, OCBE has eight tenured professors, four tenured associate professors, fifteen tenured researchers, post-doctoral fellows and PhD students, making up a group of about 60 scientists. OCBE is internationally recognized, with interests spanning a broad range of areas (including time-to-event models, data integration, causal inference, statistical genomics, Bayesian inference, informative missingness and measurement error models, epidemiological studies of lifestyle and chronic diseases, stochastic models for infectious diseases, high dimensional data and models), and numerous collaborations with leading bio-medical research groups nationally and internationally. OCBE has a leading role in the center for research-based innovation BigInsight, it hosts the ERC Advanced Grant of Professor Corander, and several further important projects in the areas of statistical methods for biobank, health survey and registry data, of causal inference and of mathematical models for personalized cancer therapy. OCBE is responsible for the bio-statistical teaching for the professional study in medicine, for the faculty's bachelor and master programs, and for the PhD training. OCBE also provides an extensive advisory service for bio-medical and clinical researchers at the University of Oslo and the Oslo University Hospital, often also an existing source of data and challenges for our discipline.

Currently OCBE has been expanding its research profile into computing and data intensive areas: researchers at OCBE are developing novel statistical methods, together with their implementation in efficient open-source statistical software. The IT Department at the Institute provides hardware and software maintenance. Computing clusters (including GPU nodes) are hosted by the IT Services for Research (USIT) at UiO, and are used by the researchers at OCBE on a daily basis. The efficient implementation of statistical algorithms, particularly for high-dimensional data, and the production and testing of software packages for dissemination to a wider audience, require specialist competence from an experienced scientific programmer. In this way, OCBE also aims to attain more stable and reproducible results.

More about the position

The appointment is a full-time position and is made for a period of three years. The scientific programmer will be involved in statistical computing projects across the different research themes at OCBE, according to demand.
and given priorities. The post holder will support these projects in several ways, from the direct implementation of efficient statistical algorithms, to optimizing existing prototype code and building R packages to be shared with other researchers. She/he will train researchers at OCBE on selected programming techniques and/or on a better use of high-performance computing (HPC) resources at USIT/UiO. Approximately 10% of her/his time will be devoted to duties in software support for teaching and advising activities.

Key responsibilities and work tasks of the post holder include:

- Implement statistical software, in collaboration with the OCBE researchers who developed the method, mostly using the R statistical computing language, but also Python or MatLab, as well as compiled languages, like C++. Purpose is particularly simulations, prediction, optimization (also within machine learning algorithms), numerical analysis of differential equations, high-dimensional linear algebra, etc.

- Liaise with USIT to stay up to date with computing infrastructure developments and help research groups at OCBE to identify computing needs and solutions. In particular:
  - Help with efficient use of USIT computing infrastructure (including cloud-based options).
  - Explore new developments in statistical HPC (including simulation with high-dimensional data), and in statistical software development and deployment (e.g., GPU programming), and make OCBE members aware of these, and other methods and tools (via internal seminars as well as other means).
  - Together with OCBE staff, anticipate and project future computing needs.

- Provide informal training on software development for OCBE staff, and help to keep everybody up to date on new developments in statistical computing. In particular:
  - Advise and train OCBE staff in efficient programming and use of HPC resources (e.g., multicore computing, batch scripting). Encourage good programming practices.
  - In accordance with the candidate’s expertise and interests, further tasks could include advising on the use of numerical libraries (e.g., for numerical analysis on multicore and GPU systems), and advanced statistical packages for Monte Carlo simulation (e.g., Stan).

- Provide software support for teaching and statistical advising activities at OCBE: put in place an efficient system for all OCBE researchers for sharing their codes, teaching and advising material (e.g., a GitHub OCBE account linked to the UiO GitHub services).

The post holder reports to OCBE director, and she/he is expected to support and interact with all OCBE members. Whenever prioritisation is required, the post holder will discuss priorities with OCBE director.

Qualification requirements

- **Essential:** MSc in statistics, data science, computer science, mathematics, or another field with a strong computing component. Interest in the broad area of biostatistics.

- Desirable: industry or academic experience in software development, ideally for statistics.

- **Essential:** Excellent knowledge of both R and Matlab/Octave/Scilab. Excellent knowledge of at least one compiled object oriented programming language, e.g. C++. Familiarity with software development concepts, with multitasking/parallel programming concepts, and with implementing algorithms in statistics, computer science and applied mathematics.
• Desirable: Experience in statistical programming, in particular Monte Carlo simulation and numerical optimization. Knowledge of concepts in Bayesian modelling and inference. Experience with GPU and MPI programming.

• **Essential**: proven skills in working independently to solve computational problems. Capability of being proactive when providing software development support, of actively seeking out opportunities to help and interact on algorithm implementation and software development.

• Desirable: proven ability to lead software development projects.

• **Essential**: ability to plan and manage tasks to a timetable.

• Desirable: demonstrable ability to plan ahead and to stick to the plan.

• **Essential**: experience in working collaboratively as a member of a team, interpersonal skills.

• Desirable: some experience in training others “on the job”.

Knowledge of the Norwegian language is not required, but a good command of English is mandatory.

**We offer**

• salary NOK 544 400 – 658 300 (pay grade 62 – 72) per annum depending on qualifications in a position as Scientific Programmer (Senior Engineer, position code 1181)

• annual paid leave for 5 weeks, plus public holidays

• attractive welfare benefits and a generous pension agreement, in addition to access to public health services through membership of the National Insurance Scheme

• a professionally stimulating working environment

Starting date: as soon as possible, to be agreed upon.

**How to apply**

The application must include:

• cover letter with statement of motivation

• CV (summarizing education, positions and academic work)

• copies of educational certificates (academic transcripts only)

• list of reference persons: 2-3 references (name, relation to candidate, e-mail and phone number)

The application with attachments must be delivered in our recruiting system. Interviews with the best qualified candidates will be arranged.

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