Research computing

About the position

This position is aimed at those who want to work at the intersection of information technology, research, and research methods, together with the Section for Research Services at the University of Oslo’s Center for IT (USIT). The main task of this position is to port code to accelerators and to implement new algorithms on accelerator hardware.

The Section for Research Infrastructure is located in the Department of IT in Research. USIT is responsible for the operations, development, and user support for IT solutions and services at the University of Oslo (UiO). USIT is one of Norway’s largest public IT environments with 200 employees. We work with a broad range of future oriented technologies across a large set of interesting problems. We emphasize giving employees challenging opportunities, providing the foundation for rich learning and personal development.

The division as a whole is responsible for tasks under the mandate of Uninett Sigma2, the organization for national collaboration for storage and High Performance Computing (HPC). Sigma2 is also the organization through which Norway participates in international projects on storage and computing. As such, the position has important deliveries at a national and international level, and consequently some traveling is expected.

The department collaborates with CERN in operating experiments as part of the Worldwide LHC Computing Grid (WLCG) and the Nordic Datagrid Facility (NDGF). In PRACE (Partnership for Advanced Computing in Europe) the department has responsibilities in HPC operations for the Nordic Tier-1 resources, for experimenting with new technologies for the future of HPC, and in prototyping of Exascale-ready software solutions. Similar activities are also pursued through our involvement with the European Open Science Cloud (EOSC) and the Nordic eInfrastructure Collaboration (NeIC). Locally at UiO, the division has responsibility for the Services for Sensitive Data (TSD) and its HPC cluster, Colossus. TSD is Norway’s largest special purpose eInfrastructure, primarily serving the needs of health researchers in Norway and European projects such as Tryggve2. UiO is also part of the Lumi consortium through Uninett Sigma2, Lumi is a pre-exascale HPC system in the EuroHPC setting, and Lumi will be an accelerator-dominated system.

More information:
USIT: https://www.usit.uio.no/
The Department of IT in Research: https://www.usit.uio.no/om/organisasjon/uav/itf/
The Section for Research Services: https://www.usit.uio.no/om/organisasjon/itf/itf/index.html

Work tasks

- Porting existing HPC codes (starting with those consuming most CPU hours in Norway) to accelerators (GPU, IPU, FPGA and other specialized hardware).
- Being part of the team that operates and maintains the national HPC and storage systems (FRAM (35 000 cores), Saga (10 000 cores), Betzy (172 000 cores), NIRD (11 PiB)).
- Involvement in collaborations such as PRACE, EuroHPC and NEIC projects.
- Taking part in the division’s HPC user support activities.
- Possible involvement in OpenStack, Kubernetes based computing, and object storage.
- Developing internal and external service documentation.
- Organizing and conducting training courses.

Qualification requirements

- Higher education, minimum Master’s level, PhD level encouraged - can be compensated for by documented relevant work experience.
- Deep knowledge of accelerator coding, code porting and optimization.
- Proficiency in C and/or C++ programming.
- Very high programming competence within relevant fields.
- Experience with the MPI communication standard in the context of accelerators.
- Deep experience with the Linux operating system.
- Experience with HPC, either as a user or an operator.
- Knowledge of Linux-based HPC systems and batch queuing systems.
- Experience with the operation and debugging of complex IT systems.
- Fluent English, both oral and written.

The following aspects will be considered in addition to the requirements:

- Knowledge of OpenMP in the EPI setting.
- Experience with CL, OpenCL, Cuda.
- Experience with GPU, FPGA, ASICs, IPU, new accelerators (EPI).
- Knowledge of NUMA.
- Experience with Python, Julia and Fortran.
- Knowledge on RDMA, RoCe.
- Experience with version controling.
- Knowledge of Infiniband, GenZ, OmniPath.
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Experience with modern communication libraries (UCX, libfabric)
Experience with coordination of developers
Good communication skills in both written and oral
Experience with giving courses

Personal skills
- Ability to work independently, to collaborate, coordinate with colleagues and motivate them
- Service oriented attitude

We offer
- The position is set as Senior Engineer (SKO 1181) with wage level between 68 (NOK 615 900) and 82 (NOK 860 300) depending on qualifications. It is noted that there are no known internal candidates.
- Attractive welfare benefits and a generous pension agreement, in addition to Oslo’s family-friendly environment with its rich opportunities for culture and outdoor activities

How to apply
The application must include:
- cover letter statement of motivation
- CV (summarizing education, positions and academic work)
- copies of educational certificates (academic transcripts only)
- documentation of english proficiency

The application with attachments must be delivered in our recruiting system.

Formal regulations
Interviews with the best qualified candidates will be arranged.

According to the Norwegian Freedom of Information Act (Offentleglova) information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure.

Contact information
For more information about the position contact the Director of the department Gard Thomassen at 93674926, gardot@usit.uio.no

About the University of Oslo
The University of Oslo is Norway’s oldest and highest ranked educational and research institution, with 28 000 students and 7000 employees. With its broad range of academic disciplines and internationally recognised research communities, UiO is an important contributor to society.

The University Center for Information Technology (USIT) provides infrastructure, IT services and IT solutions for both the University of Oslo and the higher education sector in Norway. USIT is one of the largest IT professional environments in Norway, with more than 200 permanent employees and with a turnover of more than 260 million NOK. We work with a wide range of exciting technical solutions based on future-oriented technology. USIT places great emphasis on providing its employees with challenging and educational tasks that provide excellent opportunities for professional development.

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