NTNU

Kunnskap for en bedre verden

Jobbnorge ID: 254148
Deadline: 1/14/2024
Website: http://www.ntnu.no
Scope: Fulltime
Duration: Temporary

The Department of Computer Science has a vacancy for a

PhD Candidate in Computer Architecture

This is NTNU
NTNU is a broad-based university with a technical-scientific profile and a focus in professional education. The university is located in three cities with headquarters in Trondheim.

At NTNU, 9,000 employees and 43,000 students work to create knowledge for a better world.

You will find more information about working at NTNU and the application process here.

Video: https://youtu.be/Xt-yHCN5QS0

About the job
For a position as a PhD Candidate, the goal is a completed doctoral education up to an obtained doctoral degree.

We have a vacant PhD position at the Department of Computer Science (IDI) with a research focus on computer architecture. The computing landscape is shifting from the traditional desktop computing to mobile-cloud computing model. In this new model, datacenters have emerged as the workhorses that do all the heavy-duty computations and serve as the backbone of mobile services. A modern datacenter draws multi mega-watts of power and costs over $100 million to deploy. However, the processors deployed in datacenters remain highly under-utilized due to a large mismatch in application characteristics and processor microarchitecture.

The objective of this PhD project is to specialize server processor architectures to match application characteristics. Datacenter applications are characterized by massive instruction footprints that frequently stall the core front-end. This project will investigate low overhead instruction delivery mechanisms to mitigate this front-end bottleneck. Datacenter applications offer very limited instruction- and memory-level parallelism which causes core back-end to burn energy on instructions without much performance gain. This project will investigate allocating expensive resources only to performance critical instructions while executing the rest cheaply.

Your immediate leader is the group leader of Computing.

Duties of the position
- Conducting high quality research.
- Take lead role in writing research papers.
- Comply with the PhD training program of the faculty.
- Establish close cooperation with the other PhD students within the Computer Architecture Lab.

Required selection criteria
- You must have a professionally relevant background with a master's degree in computer science, computer engineering, electronics engineering or equivalent.
- Your education must correspond to a five-year Norwegian degree program, where 120 credits are obtained at master's level.
- You must have a strong academic background from your previous studies and an average grade from the master's degree program, or equivalent education, which is equal to B or better compared with NTNU's grading scale. If you do not have letter grades from previous studies, you must have an equally good academic basis. If you have a weaker grade background, you may be assessed if you can document that you are particularly suitable for a PhD education.
- Master's students can apply, but the master's degree must be obtained and documented by August 2024.
- You must meet the requirements for admission to the faculty's doctoral program.

The appointment is to be made in accordance with Regulations on terms of employment for positions such as postdoctoral fellow, Phd candidate, research assistant and specialist candidate and Regulations concerning the degrees of Philosophiae Doctor (PhD) and Philosodophiae Doctor (PhD) in artistic research national guidelines for appointment as PhD, post doctor and research assistant

Preferred selection criteria

- Strong programming skills in C/C++.
- Good understanding of computer architecture.
- Experience with simulator-based evaluation of computer architectures.
- Experience with software development and optimization.
- Excellent English written and oral communication skills.

Personal characteristics

- Passion for uncovering new knowledge and communicating it to others.
- Demonstrated ability to work independently as well as collaboratively.
- Demonstrated ability to quickly acquire knowledge in new topics.

Emphasis will be placed on personal and interpersonal qualities.

We offer

- exciting and stimulating tasks in a strong international academic environment
- an open and inclusive work environment with dedicated colleagues
- favourable terms in the Norwegian Public Service Pension Fund
- employee benefits

Salary and conditions

As a PhD candidate (code 1017) you are normally paid from gross NOK 532 200 per annum before tax, depending on qualifications and seniority. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is three years without teaching duties or four years with teaching duties assigned by the department.

Appointment to a PhD position requires that you are admitted to the PhD programme in Computer Science within three months of employment, and that you participate in an organized PhD programme during the employment period.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. Candidates who by assessment of the application and attachment are seen to conflict with the criteria in the latter law will be prohibited from recruitment to NTNU.

After the appointment you must assume that there may be changes in the area of work.

The position is subject to external funding.

It is a prerequisite you can be present at and accessible to the institution daily.

About the application

The application and supporting documentation to be used as the basis for the assessment must be in English.

Publications and other scientific work must follow the application. Please note that your application will be considered based solely on information submitted by the application deadline. You must therefore ensure that your application clearly demonstrates how your skills and experience fulfil the criteria specified above.

The application must include:

- A short (1-2 page) cover letter describing your motivation to apply for this position, suitability for this position, relevant qualifications, and research interests.
- CV and certificates.
- Transcripts and diplomas for bachelor's and master's degrees.
- Name and contact information of three references.
- If you have publications or other relevant research work

If all, or parts, of your education has been taken abroad, we also ask you to attach documentation of the scope and quality of your entire education, both bachelor's and master's education, in addition to other higher education. Description of the documentation required can be found here. If you already have a statement from NOKUT, please attach this as well.

We will take joint work into account. If it is difficult to identify your efforts in the joint work, you must enclose a short description of your participation.

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal and interpersonal qualities. Motivation, ambitions, and potential will also count in the assessment of the candidates.

NTNU is committed to following evaluation criteria for research quality according to The San Francisco Declaration on Research Assessment - DORA.

General information

Working at NTNU

NTNU believes that inclusion and diversity is our strength. We want to recruit people with different competencies, educational backgrounds, life experiences and perspectives to contribute to solving our social responsibilities within education and research. We will facilitate for our employees' needs.

NTNU is working actively to increase the number of women employed in scientific positions and has a number of resources to [promote equality.](#)

The city of Trondheim is a modern European city with a rich cultural scene. Trondheim is the innovation capital of Norway with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

As an employee at NTNU, you must at all times adhere to the changes that the development in the subject entails and the organizational changes that are adopted.

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you want to reserve yourself from entry on the public applicant list, this must be justified. Assessment will be made in accordance with [current legislation](#). You will be notified if the reservation is not accepted.

If you have any questions about the position, please contact Associate Professor Rakesh Kumar, telephone +47-45558617, email rakesh.kumar@ntnu.no. If you have any questions about the recruitment process, please contact HR, e-mail: hr@idi.ntnu.no .

If you think this looks interesting and in line with your qualifications, please submit your application electronically via jobbnorge.no with your CV, diplomas and certificates attached. Applications submitted elsewhere will not be considered. Upon request, you must be able to obtain certified copies of your documentation.

Application deadline: 14.01.24

NTNU - knowledge for a better world

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The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Department of Computer Science

We are the leading academic IT environment in Norway, and offer a wide range of theoretical and applied IT programmes of study at all levels. Our subject areas include hardware, algorithms, visual computing, AI, databases, software engineering, information systems, learning technology, HCI, CSCW, IT operations and applied data processing. The Department has groups in both Trondheim and Gjøvik. The [Department of Computer Science](#) is one of seven departments in the [Faculty of Information Technology and Electrical Engineering](#) .

Additional information

Place of service:
Høgskoleringen 1 7491 Trondheim (Trondheim Municipality)