

PhD Research Fellowship in Methods for multicore programming at the Department of Computer and Information Science

A PhD research fellowship is offered in the Department of Computer and Information Science (IDI), Faculty of Information Technology, Mathematics and Electrical Engineering (IME) at the Norwegian University of Science and Technology (NTNU).

Multicore architectures and their associated software give many new opportunities to reduce the energy consumption of computers. Heat generation/power dissipation necessitates expensive cooling systems and is a serious and increasing problem in most IT systems. Furthermore, reduced energy consumption in IT equipment is a goal in all market segments (i.e. from sensor networks, via mobile phones, laptops, servers and up to compute clusters and supercomputers). Common for all these platforms is the widespread and increasing use of multicore technology. These new multicore solutions must balance the desire for low energy consumption against the need for high performance. Consequently, they are at the heart of the collective endeavor named “Green IT”.

In this research project, we will study the trade-off between low energy consumption and high performance. A crucial choice is the degree of parallelization, e.g. the distribution of the computations on one, a few or many processor-cores. The project includes evaluation of existing methods, techniques and tools for optimizing the metric performance/watt, as well as proposing and exploring new programming methods. System level simulations of both architecture and software will be used to evaluate the proposed techniques. Modern approaches such as design space exploration, autotuning and use of performance & energy counters is relevant. The research will be related to the activity in the research cluster “Programming model and OS” of EU-7FP HiPEAC2 NoE (Network of Excellence).

Relevant education as Master in Computer Science or equivalent is required. Applicants must satisfy the formal requirements for admission to the PhD studies at NTNU.

See <http://www.ime.ntnu.no/english/research/phd> for detailed information on the PhD programs administrated by IME.

PhD fellowships at NTNU are normally awarded for a total of 4 years with 25% of the time spent on specified work. This work is primarily teaching assistance at the bachelor’s and master’s degree levels. These duties are commonly distributed over the 4 years, with a larger proportion in the first two years.

The PhD fellow will be formally employed by and will reside at NTNU.

Further information on the fellowship may be obtained from Professor Lasse Natvig, mob. +47 906 44 580, e-mail lasse@idi.ntnu.no

See also <http://research.idi.ntnu.no/multicore/>

The appointment is at code 1378, salary level 45-68 in the national salary scheme, gross NOK 353.000-533.100 per annum, of which 2% is deducted for the State Pension scheme. Starting salary expected to be at level 45. The salary might be adjusted after negotiations with the employer to reflect the applicant's experience.

The national labour force must reflect the composition of the population to the greatest possible extent. It is therefore a major political objective to achieve a balance of age and gender and to recruit persons with an immigrant background.

NTNU wants to increase the proportion of women in its scientific posts. Immigrants and women are encouraged to apply.

The appointment will be made in accordance with current regulations with supplementary rules for research fellowship appointments in universities and polytechnics.

The application must contain information about education, exams and previous experience. Certified copies of certificates and documents must be attached. It is requested that research publications and other written material submitted for the evaluation of academic credentials, should be provided in three copies.

In case of co-authorship, the applicant should provide a brief, written statement explaining his/her own contribution.

The applicant should also submit a short presentation of the motivation for a PhD study, how the applicant sees his/her background suitable, and the applicant's view of challenges within the research area. In addition, the application must contain a research plan of five to ten pages.

Applications should be submitted to the Norwegian University of Science and Technology, Faculty of Information Technology, Mathematics and Electrical Engineering, NO-7491 Trondheim, Norway, or by e-mail to application@ime.ntnu.no

Applications should be marked IME-039-2009 Closing date: 2009-06-10

2009-04-27

L. Natvig