JSC Guest Student Programme on Scientific Computing 2013

As one of Europe's leading HPC centres, Jülich Supercomputing Centre (JSC) provides HPC expertise for computational scientists at German and European universities, research institutions, and in industry. To fulfill this mission, JSC hosts training activities and educational programmes for scientific computing on a regular basis. One of these is the Guest Student Programme (GSP) with a duration of ten weeks each summer.

The participants receive extensive training on cutting edge hardware as well as HPC-related software and algorithms. The acquired theoretical skills are turned into hands-on knowledge during supervised work on contemporary and challenging scientific projects. For many students, the programme has been the foundation for a career in HPC and the basis of fruitful long-term collaborations with their advisors. Some students also return to JSC as PhD candidates with focus on highly parallel applications.

Since the start of the GSP in 2000, a total of 146 students had the opportunity to join scientists from JSC and other institutes at Forschungszentrum Jülich. Now in it's 14th year, the GSP is more attractive to students around the world than ever. Over 50 candidates from 19 countries applied, covering a wide range of disciplines, including but not limited to mathematics, physics, chemistry, computer science, engineering, biomedicine and earth science. From this field of strong competitors thirteen students were invited to attend the programme.

This year's GSP took place from August 5th – October 11th. It was supported by CECAM (Centre Européen de Calcul Atomique et Moléculaire) and sponsored within the IBM University programme.

It started with a ten days course on parallel programming up to advanced level, covering several techniques, ranging from the usage of MPI on distributed-memory cluster systems to GPGPU programming with CUDA and OpenCL as well as OpenMP. Equipped with the required knowledge the participants were ready to focus on scientific part of the GSP. The range of scientific projects was as diverse as the user community on the hosted supercomputers covering atmospheric science, fluid and molecular dynamics, particle-in-cell methods and safety research, as well as fundamental research in elementary particle physics and mathematical algorithms. The main platforms for code development and simulation were the multi-purpose cluster JUROPA, the GPU system JUDGE and the leadership Blue Gene/Q system JUQUEEN.

During the concluding two-day colloquium, the participants presented their accomplishments to domain experts and guests. The gained experiences were shared amongst the students, contributing to prolific discussions. Finally, as preparation for a future scientific career, the students summarized their contribution as an article.

Next year's GSP will start on August 4, 2014. It will be officially announced in January 2014 and is open to students from natural sciences, engineering, computer science and mathematics, who have already received the Bachelor but not yet the Master degree. The application deadline is April 25, 2014. Additional information, as well as the proceedings of the previous years, is available online at www.fz-juelich.de/jsc/gsp.

• Ivo Kabadshow
• Sven Strohmer

Jülich Supercomputing Centre (JSC)

Activities