



From March 6-10, JSC hosted the first GPU Hackathon of 2017. In this series of events, people come together for a full week to enable scientific applications for GPUs, optimize the performance and parallelise to many GPUs. Intensive mentoring allows application developers to make significant progress on using this promising exascale technology efficiently.

GPU hackathons are a series of events organized by Fernanda Foertter from Oak Ridge National Laboratory [1]. They are hosted by different sites in Europe and the USA. During five days, teams of 3-5 application developers are mentored full-time by two experts. The event is organized such that participants can fully concentrate on their applications. Many of the

experts come from relevant vendors as NVIDIA and PGI as well as from supercomputing centers. The participants thus can expect to have access to most advanced hardware architectures like the nodes of JSC's JURECA cluster that are accelerated by K80 GPUs and the even more advanced OpenPOWER cluster JURON with its NVLink attached P100 GPUs.

All teams made best use of the available time. After spending nine hours at JSC, many continued hacking after returning to their hotels in Jülich. Every day, each team had to present their status and report on challenges during a scrum session. The slides have been made publicly available [2]. At the end of these sessions, new tasks were assigned to the teams. The ability



All participants and mentors that joined the GPU Hackathon at Jülich Supercomputing Centre.

to flexibly provide additional training sessions depending on the needs of the participants are another important part of the concept.

Teams that want to join a GPU hackathon have to submit an application. The applications are reviewed by an international panel. For the Hackathon in Jülich, more good applications were submitted than could be accepted. After making additional efforts in recruiting more mentors, ten teams coming from all over the world were accepted. The applications covered a broad range of science including brain research, lattice QCD, materials science and fluid dynamics. While some teams came with an already mature GPU application and used the event for more in-depth tuning, other teams came without any prior GPU knowledge and worked on their very first steps into realm of GPUs.

When the Hackathon concluded on Friday with final presentations of all teams, everyone found the time well-spent and praised the intense working atmosphere. The closeness to the experts from science (CSCS, JSC, HZDR/MPI-CBG, RWTH) and industry (IBM, NVIDIA, PGI) was held in high regard. By Friday afternoon, over 1,000 jobs were submitted to JURECA and JURON. Four more Hackathons took place throughout 2017. We recommend all interested developers to watch for the announcement of more hackathons to come in 2018.

References

- [1] **Hackatons:**
<https://www.olcf.ornl.gov/training-event/2017-gpu-hackathons/>.
- [2] **INDICO:**
<http://indico-jsc.fz-juelich.de/e/Eurohack17>

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