JSC News

JÜLICH Forschungszentrum | JÜLICH SUPERCOMPUTING CENTRE

Open Day at JSC

Forschungszentrum Jülich cordially invites the public to its Open Day event on Sunday, 7 July 2019. JSC will be open to visitors from 10:00 to 17:00 on the day, giving them the opportunity to view the supercomputers and watch presentations by our Earth system modellers. Special attractions will include the Virtual Reality game 'Carbon Capture', the smartphone game 'Be part of a super-computer', and the supercomputer simulator SuperResi. Young programmers can also learn their first programming steps with the 'Hamster in a labyrinth' exercise.

Our education team will be on hand to inform visitors about opportunities to train as a mathematical-technical software developer (MATSE) and also about bachelor's and master's courses in Applied Mathematics and Computer Science. Furthermore, one of the questions in the ever-popular research rally for children will be about JSC's supercomputers. For detailed information on the attrac-tions at JSC, see https://fz-juelich.de/ias/jsc/2019/tdn (in German).
We look forward to your visit!

Contact: Dr. Sabine Höfler-Thierfeldt, jsc@fz-juelich.de

JSC @ ISC 2019

The International Supercomputing Conference High Performance 2019 (ISC 2019) will take place on 16–20 June 2019 in Frankfurt am Main. JSC, together with its partners in the Gauss Centre for Supercomputing (GCS) – HLRS in Stuttgart and LRZ in Garching – will present its wide-ranging supercomputing activities at the GCS booth (B-1310) during the event.

JSC will showcase the first module of the modular super-computer JUWELS, a cluster component with more than 2500 compute nodes, each equipped with two Intel Xeon 24-core Skylake CPUs and 96 GiB of main memory. To provide easy access and integration for external users and workflow managers, JSC offers web access to its HPC infrastructure based on Jupyter. How this powerful access method works will be explained in a live demo for the EU project Rhinodiagnost. Furthermore, news on HPC tools

developed in-house, like LLview and Scalasca, will be presented. Flyers will inform about JSC's research and support activities, as well as the HPC infrastructure provided to national and international scientists.

JSC colleagues will co-organize the "International Work-shop on OpenPOWER for HPC 2019", and members of JSC will speak at the workshops "Scalable Data Analytics in Scientific Computing" and "Second Workshop of Large Scale Simulation/HPC and Artificial Intelligence". Further-more, JSC scientists will co-organize the tutorial "Hands-on Practical Hybrid Parallel Application Performance Engineering" and present the "HPC Tutorial: Applications, Systems, and Programming Models" on ISC STEM Student Day.

Additionally, members of JSC will give several presen-tations at the conference. JSC staff will also be on hand at the PRACE (B-1320) and JARA (B-1201) booths. Detailed information can be found at https://fz-juelich.de/ias/jsc/isc19.

Contact: Dr. Florian Janetzko, f.janetzko@fz-juelich.de

6th PRACE Implementation Phase Project

PRACE-6IP is the sixth in a series of implementation phase (IP) projects by the Partnership for Advanced Computing in Europe (PRACE). It is funded as part of the Horizon 2020 framework programme and was launched on 1 May 2019. Like its predecessors, PRACE-6IP is coordinated by Forschungszentrum Jülich. It has a budget of more than € 30 million and will run over a duration of 32 months with 30 partners. Over 220 researchers from 58 organizations – including PRACE partners and external institutions – in 26 countries will assist in further developing the PRACE Research Infrastructure and supporting PRACE users.

The PRACE-6IP kick-off meeting took place at the Faculty of Natural Sciences at Comenius University in Bratislava, Slovakia, on 28–29 May 2019, welcoming over 130 participants. The High-Level Support Teams (HLST) at the PRACE Tier-0 hosting sites were also invited and discussed the close collaboration in terms of user support

and code-enabling activities to be performed within PRACE-6IP. A new activity and main focus of PRACE-6IP is the preparation for Exascale computing by developing forward-looking software solutions for exploiting massively parallel systems. An initial selection process identified eight promising projects which will be supported with more than 900 person months of effort from PRACE-6IP.

Furthermore, the project is designed to build on and seamlessly continue PRACE's previous successes. These include coordinating and enhancing the operation of multi-tier HPC systems and services; continuing advanced training and expanding the network of PRACE Training Centres; promoting take-up by industry and new communities, including special offers for SMEs; and collaborating with the ETP4HPC, the EU-funded HPC Centres of Excellence, and other European and international organizations and projects, e.g. CERN and SKA, on future architectures, training, application support, and policies. The project will continue to organize well-known events such as PRACEdays, Summer of HPC, or the International HPC Summer School in order to promote and support innovative scientific approaches in modelling, simulation, and data analysis.

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High-Performance Computing for Neuroscience: Hands-on Introduction to Supercomputing Usage, Tools and Applications

Neuroscience research has become increasingly interdisciplinary in recent years. New imaging technologies deliver ultra-high-resolution images, while new simulator technology enables scientists to simulate larger and more detailed neural networks. It is no longer viable to analyse such data or run such simulations solely on a user's office computer: clusters, supercomputers, and good data management strategies have become indispensable.

The Education Programme within the Human Brain Project (HBP) offers innovative learning packages, both online and with on-site events, for early-career researchers working in and across the fields of neuroscience, information and communications technology, and medicine. JSC's SimLab Neuroscience is organizing an HBP Education Workshop that will give students a comprehensive introduction to HPC-based research and thus lay the foundation for them to advance the state of the art in their fields. This event will take place at JSC on 9–11 July.

The workshop will teach students the basics of supercomputing needed to use HPC systems for (neuroscience) research. This includes, on the one hand, introductory lectures with hands-on sessions about scientific computing in Python as well as an introduction to the usage of HPC systems and (big) data management. On the other hand, the students will receive hands-on training in tools and applications that can be used on both a supercomputer and the user's local computer, for instance the simulators NEST and Arbor, as well as visualization tools that can handle large imaging or simulation data as generated on a supercomputer. The students will also learn how to obtain access to the Fenix Infrastructure for their research projects. The tools and applications presented are developed as part of the HBP's High Performance Analytics and Computing (HPAC) Platform. The introductory lectures will enable the students to make efficient use of the other HBP Platforms, too, in particular the Neuroinformatics, Brain Simulation, and Neurorobotics Platforms, all of which use the HPAC Platform as a back-end.
For more information, please visit
https://fz-juelich.de/ias/jsc/events/3rd-hbp-curriculum.

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ON4OFF Project – Artificial Intelligence to Support Regional Retailers

The ON4OFF project, funded by the state of North Rhine-Westphalia (NRW), wants to create smarter links between brick-and-mortar retailers and their online offerings, and thus make the regional retail sector more competitive with online shops. The plan is to make this possible through the use of artificial intelligence intertwined with a systematic use of adaptive case management algorithms developed by the University of Duisburg-Essen. JSC, together with Adesso AG, is responsible for the development of machine learning algorithms that will improve customers' shopping experience in the retail sector.

Although JSC develops a wide range of machine learning algorithms for science and engineering applications, many of them can also be slightly modified and thus used in retail applications. The ON4OFF project will take advantage of JSC's modular supercomputing approach to gain customer insights faster. It will also enable a new culture of data sharing between retailers and consumers, and a smooth transition of data flows between online and offline customer data and shopping processes. Project partner Parfümerie Pieper will implement the concepts in its flagship stores, while the overall project will work on broadening concepts for application in other commercial sectors. Over the next three years, the project will receive some € 2.1 million in funding from NRW's Ministry of Economic Affairs, Innovation, Digitalisation and Energy and the European Regional Development Fund (ERDF). The project partners will contribute another € 1.2 million. Further details, including a list of project partners, can be found on the webpage https://www.on-4-off.de.

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Events

Open Day at JSC
Date: 7 July 2019, 10:00-17:00
Venue: Jülich Supercomputing Centre
https://fz-juelich.de/ias/jsc/2019/tdn

Introduction to parallel programming with MPI and OpenMP
Instructors: Benedikt Steinbusch, Thomas Breuer, JSC
Date: 12-16 August 2019, 09:00-16:30
Venue: Jülich Supercomputing Centre, Computer Lab 1
https://fz-juelich.de/ias/jsc/2019/mpi-intro-2