INTRODUCTION TO THE PROGRAMMING AND USAGE OF THE SUPERCOMPUTING RESOURCES IN JÜLICH

ONLINE COURSE PROVIDED BY

JÜLICH SUPERCOMPUTING CENTRE

11.11.2024 I ILYA ZHUKOV, JOLANTA ZJUPA

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DISCLAIMER

This course offers the opportunity to attend lectures selectively, based on individual needs and knowledge levels. Participants are not required to attend all sessions as some may cover advanced or basic material. While flexibility is offered, it is important to assess personal needs and choose sessions accordingly, as attending lectures out of order may result in knowledge gaps.

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SCHEDULE MONDAY – NOVEMBER 11

Time	Session	Speaker
13:00 - 13:10	Welcome	I.Zhukov, J.Zjupa (JSC)
13:10 - 13:40	Introduction to JSC	Bernd Mohr (JSC)
13:40 - 14:20	HPC in a Nutshell	Ilya Zhukov (JSC)
14:20 - 14:40	Break	
14:40 - 15:20	User Portal and Job Monitoring	Jolanta Zjupa (JSC)
15:20 - 16:00	JSC Systems — JUWELS, JURECA & JUSUF	Damian Alvarez (JSC)
16:00 - 16:20	Break	
16:20 - 17:00	JUST: Jülich Storage Cluster	Stephan Graf (JSC)

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SCHEDULE TUESDAY – NOVEMBER 12

09:00 - 12:00	Hands-on I - Access, UNIX Shell Basics, Environment	
12:00 - 13:00	Lunch	
13:00 - 13:30	HPC Software - Modules, Libraries & Software	Ruth Partzsch (JSC)
13:30 - 14:20	Workload management with Slurm	Chrysovalantis Paschoulas (JSC)
14:20 - 14:40	Break	
14:40 - 15:25	JupyterLab - Supercomputing in your Browser	Jens Henrik Göbbert (JSC)
15:25 - 15:45	Break	
15:45 - 16:15	LLview: best practices (demo)	Filipe Guimaraes (JSC)
16:15 - 17:00	Uniform Resource Access, Data Access and Cloud Resources	Björn Hagemeier (JSC)

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SCHEDULE WEDNESDAY – NOVEMBER 13

09:00 - 11:30	Hands-on II - Software Modules, Custom Software, Accounting and Running Jobs	
11:30 - 12:00	Proper Pinning Prevents Pretty Poor Performance	Thorsten Hater (JSC)
12:00 - 13:00	Lunch	
13:00 - 14:00	Using GPU accelerators on JURECA and JUWELS	Andreas Herten (JSC)
14:00 - 14:30	Break	
14:30 - 15:30	Deep Learning on Supercomputers	Alexandre Strube (JSC)
15:30 - 15:50	Break	
15:50 - 17:00	HPC Software - Debuggers and Performance Analysis Tools	Michael Knobloch (JSC)

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SCHEDULE THURSDAY - NOVEMBER 14

09:00 - 11:00	Hands-on III - CPU Affinity, Using GPUs	
11:00 - 12:00	Remote Visualisation	Herwig Zilken (JSC)
12:00 - 13:00	Lunch	
13:00 - 14:00	Parallel Debuggers (demo)	Michael Knobloch (JSC)
14:00 - 14:20	Break	
14:20 - 15:20	JUWELS - Tuning and Tweaks	Heinrich Bockhorst (Intel)
15:20 - 15:40	Break	
15:40 - 16:20	ParTec Cluster Management	Patrick Küven (ParTec)
16:20 - 16:30	Wrap-up	I.Zhukov, J.Zjupa (JSC)

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ORGANISATIONAL INFORMATION

- For communication join our Slack chat
  http://go.fzj.de/slack_intro_1124
- **During** a talk you can ask questions either in the Zoom chat or the Slack chat *#general* channel.
- **After** a talk you can also ask questions verbally by turning on your microphone.
- For hands-on questions please use only the Slack chat *#hands-on* channel.
- Only screensharing will be recorded and published if allowed.
- Certificates will be based on attendance of the hands-on component.
- Slides and videos of selected talks are available after the course at
  https://www.fz-juelich.de/en/ias/jsc/news/events/training-courses/2024/supercomputing-2
- Slides and videos from the previous iteration are available at
  https://www.fz-juelich.de/en/ias/jsc/news/events/training-courses/2024/supercomputing-1

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HANDS-ON

- Hands-on is available at

    http://go.fzj.de/handson_intro_1124

- Follow three simple steps
  - Read the document and follow the instructions. Do it at your own pace. You can skip some exercises if you are already familiar with the content.
  - Ask questions in the *#hands-on* channel in Slack. If you need further assistance join a breakout room in Zoom and/or let us know in Slack.
  - Mark your participation in the *attendance list*. Do you have any questions regarding your own workflow? Talk to us!

CONTINUOUS EVALUATION

- Help us to improve the course by
  - Evaluating each day's talks
  - Evaluating the event in general
  - Giving feedback on what was good or bad and why

I WANT TO LEARN MORE

- Check upcoming training courses
    https://www.fz-juelich.de/en/ias/jsc/education/training-courses
    - Advanced Parallel Programming with MPI and OpenMP (02-05.12.2024)
    - Bringing Deep Learning Workloads to JSC supercomputers (03-04.12.2024)
    - Introduction to parallel programming with MPI (17-19.03.2025)
    - Parallel programming with OpenMP (20-21.03.2025)
    - GPU Programming Part 1: Foundations (31.03-04.04.2025)
    - Interactive High-Performance Computing with JupyterLab (30.04.2025)

    - and many more …

- Social media
    - X: @fzj_jsc, @fzj_jscuser
    - Mastodon: @fzj_jsc@social.fz-juelich.de

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