



# PRACE Workshop: OpenMP Programming Workshop @ LRZ

LRZ | 11-13 Feb 2020



# Evaluation



- Please fill out the PRACE online survey under

- <http://tinyurl.com/omp-survey>

- This helps us and PRACE to
  - increase the quality of the courses,
  - design the future training programme at LRZ and in Europe according to your needs and wishes,
  - get future funding for training events.

# PRACE Training



LRZ as part of the Gauss Centre for Supercomputing (GCS) and IT4Innovations belong to the 14 **PRACE Training Centres** that started in 2012-2017-2020:

- Barcelona Supercomputing Center (Spain)
- CINECA Consorzio Interuniversitario (Italy)
- CSC – IT Center for Science Ltd (Finland)
- EPCC at the University of Edinburgh (UK)
- Gauss Centre for Supercomputing (Germany)
- Maison de la Simulation (France)
- GRNET – Greek Research and Technology Network (Greece)
- ICHEC – Irish Centre for High-End Computing (Ireland)
- IT4I – National Supercomputing Center VSB Technical University of Ostrava (Czech Republic)
- SURFsara (The Netherlands)
- TU Wien – VSC Research Center (Austria)
- University ANTWERPEN – VSC & CÉCI (Belgium)
- University of Ljubljana – HPC Center Slovenia (Slovenia)
- Swedish National Infrastructure for Computing (SNIC) (Sweden)



**Mission:** Serve as **European hubs and key drivers of advanced high-quality training** for researchers working in the computational sciences.

<http://www.training.prace-ri.eu/>

# PRACE Courses @ LRZ



- **Introduction to hybrid programming in HPC**  
2-day, 1 HLRS & 1 RRZE lecturers & 2 VSC lecturers
- **Node-Level Performance Engineering**  
2 days, 2 RRZE lecturers
- **Advanced Topics in High Performance Computing**  
4-days, 3 LRZ + 2 RRZE lecturers
- **VI-HPS Tuning Workshop**  
5-days, 15 lecturers
- **HPC Code Optimisation Workshop**  
3 days, 2 LRZ + 1 Intel lecturer
- **OpenMP Programming Workshop**  
3-days, members of the OpenMP ARB, invited speakers
- **Advanced Fortran Topics**  
2 days, 2 LRZ lecturers
- **Deep Learning and GPU Programming Workshop**  
4 days, 4 LRZ NVIDIA certified lecturers, in collaboration with NVIDIA Deep Learning Institute (DLI)



# NVIDIA DLI Workshops @ LRZ



The **NVIDIA Deep Learning Institute (DLI) @ LRZ** offers hands-on training for developers, data scientists, and researchers looking to solve challenging problems with deep learning.

Topics:

- **Fundamentals of Deep Learning for Computer Vision**
- **Fundamentals of Deep Learning for Multiple Data Types**
- **Fundamentals of Deep Learning for Multi-GPUs**
- **Fundamentals of Accelerated Computing with CUDA C/C++**
- **Fundamentals of Accelerated Computing with OpenACC**

# NVIDIA DLI Workshops



## Upcoming NVIDIA DLI Courses (co-)organised by LRZ:

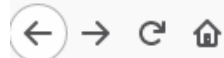


- **Accelerated Computing with CUDA C/C++ and OpenACC @ EuroHPC Summit Week Porto (Mar 2020)**
- **Deep Learning and Accelerated Computing workshop @ CSC Finland (Apr 2020)**
- **Deep Learning and GPU programming using OpenACC @ VSC Vienna (June 2020)**
- **Deep Learning and GPU programming using OpenACC @ HLRS Stuttgart (July 2020)**
- **PRACE Course: Deep Learning and GPU programming workshop @ LRZ (July 2020)**



## NVIDIA Certified University Ambassadors @ LRZ:

- Dr. Momme Allalen, Dr. Juan Durillo Barrionuevo, Dr. Volker Weinberg



## ATTEND UPCOMING WORKSHOPS

### PUBLIC WORKSHOPS

- › Fundamentals of Deep Learning for Computer Vision at Applied Machine Learning Days | **ECUBLENS, SWITZERLAND** | January 26
- › Fundamentals of Deep Learning for Computer Vision | **OSTRAVA, CZECH REPUBLIC** | February 4
- › Fundamentals of Accelerated Computing with OpenACC | **PORTO, PORTUGAL** | March 25
- › Fundamentals of Accelerated Computing with CUDA C/C++ | **PORTO, PORTUGAL** | March 25
- › Fundamentals of Accelerated Computing with CUDA Python | **LUXEMBOURG** | April 28

### FREE WORKSHOPS FOR ACADEMIA

These workshops are free and exclusive for verifiable academic students, staff and researchers.

- › Fundamentals of Deep Learning for Computer Vision at LRZ | **GARCHING, GERMANY** | January 20
- › Fundamentals of Deep Learning for Multiple Data Types at LRZ | **GARCHING, GERMANY** | January 21
- › Fundamentals of Deep Learning for Computer Vision | **OSTRAVA, CZECH REPUBLIC** | February 4
- › Fundamentals of Accelerated Computing with CUDA C/C++ | **OSTRAVA, CZECH REPUBLIC** | February 5
- › Fundamentals of Accelerated Computing with OpenACC | **OSTRAVA, CZECH REPUBLIC** | February 6
- › Deep Learning and GPU programming using OpenACC at VSC | **VIENNA, AUSTRIA** | June 3 -5

# Upcoming Courses at LRZ



## Programming with Fortran

Wednesday, February 26 - Friday, February 28, 2020, 09:00-18:00

## Parallel Programming of High Performance Systems

Monday, March 9 - Friday, March 13, 2020, 9:00-18:00

## Advanced Python at LRZ

Tuesday, March 10, 2020, 10:00 - 15:00

## Introduction to ANSYS Fluid Dynamics (CFX, Fluent) on LRZ HPC Systems

Monday, March 16 - Friday, March 20, 2020, 09:00-17:30

## Introduction to Semantic Patching of C programs with Coccinelle

Tuesday, March 24, 2020, 10:00 - 17:00

## PRACE Course: Introduction to hybrid programming in HPC

Monday, April 20 09:30 - Tuesday, April 21, 2020 16:30



# Further Information about HPC Training at LRZ



## Information about further courses

- by LRZ: <http://www.lrz.de/services/compute/courses/>
- by the Gauss Centre of Supercomputing (GCS): <http://www.gauss-centre.eu/training>
- by German Centres (collected by the Gauß-Allianz): <https://hpc-calendar.gauss-allianz.de/>
- by the Partnership for Advanced Computing in Europe (PRACE): <http://www.training.prace-ri.eu/>

## LRZ Aktuell Mailing List

- [aktuell@lists.lrz.de](mailto:aktuell@lists.lrz.de)
- Subscribe via <https://lists.lrz.de/mailman/listinfo/aktuell> to get regular information on events, courses, workshops, positions etc. at LRZ.



**Thank you!**  
**We hope to see you again in a future training event!**