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**Bhat Keelanje Srinivas, Pavan**

Zurich, August 30, 2024

**Confirmation of participation**

We hereby confirm that **Pavan Bhat Keelanje Srinivas** has fully attended 2 days of the six-day online course

## Parallel Programming with MPI / OpenMP

from August 21 to 30, 2024 at **ETH Zurich**, namely days 1-2.

The whole course contained lectures and practical exercises of 36 hours (breaks excluded) on the following topics:

### Shared Memory Parallelization with OpenMP (Aug. 21/22)

**Course block 1 – day 1/6** (6.0h)
- Overview
- Execution Model
- Worksharing Directives
- Data Environment
- Pitfalls

**Course block 1 – day 2/6** (6.0h)
- Verifying an OpenMP Parallelization with the Intel Inspector XE
- Heat Example
- OpenMP-4.0 / 4.5 / 5.0 Extensions
- Taskloops

### Introduction to MPI (Aug. 26/27)

**Course block 2 – day 3/6** (6.25h)
- Overview
- Process model and language bindings
- Messages and point-to-point communication
- Nonblocking communication

**Course block 2 – day 4/6** (6.25h)
- Collective communication
- Error handling
- Virtual topologies
- Derived datatypes
- Heat example with MPI

### Intermediate & Advanced Methods in MPI (Aug. 29/30)

**Course block 3 – day 5/6** (6.0h)
- Groups & Communicators, Environment management
- Virtual topologies, cont.
- Derived datatypes, cont.
- Advanced topics on collective communication
- Short tour through other MPI features
- The new Fortran Module mpi_f08 (Fortran users only)

**Course block 3 – day 6/6** (5.5h)
- One-sided communication
- Shared memory one-sided communication
- Best practices

The lectures and exercises were taught by Dr. Rolf Rabenseifner, High-Performance Computing Center Stuttgart (HLRS), and member of the MPI forum.

Dr. Rolf Rabenseifner
Course instructor

Dr. Thomas Wüst
Organizer