

# Certificate

**Amit Sadhu**

has successfully passed the final examination of the course

## Data Analysis with HPC

held at the High-Performance Computing Center Stuttgart (HLRS) on October 17, 2025. The participant has successfully demonstrated the ability to apply the acquired skills independently by attending 50 hours of lectures and exercises covering the following topics:

### Introduction to Data Analysis and AI with HPC

- Introduction to Data Analysis and AI with HPC
- AI Ethics and Responsible AI
- Exploratory Data Analysis (EDA)
- Exercise: Working with Jupyter Notebook and EDA on the HPC Cluster

### Machine Learning, Deep Learning & Big Data

- Introduction to Machine Learning
- Introduction to Neural Networks
- Deep Learning Architectures and PyTorch
- Big Data Architectures and Frameworks
- Exercise: CNN with PyTorch on the HPC Cluster

### Emerging HPC and AI Trends

- Deep Learning Essentials 2.0
- Emerging Trends & Capstone
- Exercise: Data Analysis with Large Language Models (LLMs)

### Pre-processing, Feature Engineering, and Machine Learning

- Pre-processing, feature engineering
- Regression algorithms in supervised learning
- Classification algorithms in supervised learning
- Application of Apache Spark via an interactive batch job and Jupyter Notebooks

The lecturers and trainers were Dr.-Ing. Lorenzo Zanon and Junghwa Lee (HLRS, University of Stuttgart).

Stuttgart, November 12, 2025



Dr.-Ing. Lorenzo Zanon  
Head of Department

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