

# → Agenda NHR4CES training

## MACHINE LEARNING IN COMBUSTION

### Wednesday, Dec 14, 2022

2.00 pm — **Welcome** DR. T. GRENGA/RWTH AACHEN UNIVERSITY

2.05 pm — **Introduction to machine learning:**  
Artificial and convolutional neural networks  
MR. L. NISTA/RWTH AACHEN UNIVERSITY

3.30 pm — **Coffee break**

3.45 pm — **Hands-on session:**  
• linear regression and rain prediction via ANN  
• a digit classifier using CNN  
MR. L. NISTA/RWTH AACHEN UNIVERSITY

5.15 pm — **Coffee break**

5.30 pm — **Special topic:**  
Multi-node multi-GPU training: theory and applications  
MR. L. NISTA/RWTH AACHEN UNIVERSITY

6.30 pm — **End of day 1**

### Thursday, Dec 15, 2022

2.00 pm — **Welcome** DR. F. FERRARO/TU DARMSTADT

2.05 pm — **Machine learning for combustion modeling:**  
Flamelet representation through ANN  
DR. F. FERRARO/TU DARMSTADT

2.45 pm — **Machine learning for combustion modeling:**  
Generative adversarial network for combustion closure modeling  
DR. T. GRENGA/RWTH AACHEN UNIVERSITY

3.30 pm — **Coffee break**

3.45 pm — **Hands-on session:**  
• Exporting a machine learning model from python to C++  
MR. J. KARPOWSKI/TU DARMSTADT

5.15 pm — **Coffee break**

5.30 pm — **Special topic:**  
Machine learning in OpenFOAM  
DR. T. MARIC/TU DARMSTADT & DR. A. WEINER/TU BRAUNSCHWEIG

6.30 pm — **End of day 2**

**ADDITIONAL INFORMATION:**  
you must have the access to Google  
Colab for the hands-on sessions.