

# Data Driven Engineering II

## Advanced Topics

**Data-driven** methods are changing the way we visualize, model, interpret and control complex systems. The landscape is diverse: developments in the measurement and modeling of multiphase flows and turbulence, product design, molecular engineering, energy systems and management, diagnosis/prognosis, process control are just a glimpse of what is on the horizon.

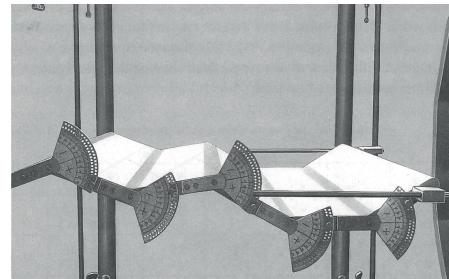
In this course, we will dive into the details of the most recent applications in data driven engineering within the scope of **machine learning** (ML). Building upon the skills developed in the “Data Driven Engineering 1: Machine Learning for Dynamical Systems” course, you will learn about complex model architectures through different “themes”, with the objective of providing a deeper background and capability to navigate through the recent developments in the field.

The lecture includes weekly software sessions in **TensorFlow** for hands-on experience and is integrated with **group projects**. The groups will be assigned open-ended research problems with scientific mentors at the beginning of the semester. The progress will be monitored via project sessions throughout the semester. The finalized work will be presented at the end of the semester and published in the lecture repository.



Leonardo da Vinci  
1452-1519

Flow Simulation with GNS  
Gonzales et al., 2020



Rechenberg's experiment, Berlin  
1964



Interested?