

# Machine Learning Lab Course

## Organizational Meeting (IN2106, IN4192)

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Lecturer: Prof. Dr. Stephan Günnemann

Summer Term 22

- Prof. Dr. Stephan Günnemann
- Bertrand Charpentier, Nicholas Gao, Tom Wollschläger

This is a practical course (Praktikum) for **Master** students!  
*Name of module: Large-Scale Machine Learning (IN2106, IN4192)*

Website: [www.daml.in.tum.de/lehre/sommersemester-2022/large-scale-machine-learning](http://www.daml.in.tum.de/lehre/sommersemester-2022/large-scale-machine-learning)

## Why attend our ML lab course?

1. Opportunity to **implement and apply** state-of-the-art ML algorithms
2. Gain **hands-on experience** working on **real-world data**, solving **real-world tasks** by working on projects offered by our **industry partners** as well as academic projects  
→ Successful projects might even qualify for a subsequent master thesis
3. Work on **large-scale problems** with the support of our **GPU computing resources**



# Requirements

- Requirements for the lab course
  - **Strong programming skills:** Python, deep learning frameworks Pytorch/Tensorflow, etc.
  - Strong knowledge in data mining/machine learning
  - You should have passed relevant courses (the more, the better)
    - Machine Learning for Graphs and Sequential Data, Machine Learning, ...
    - see the application form
  - Motivation
- Additional selection criteria
  - Other **relevant** experience (projects in companies, experience as a HiWi)
  - You can send an overview of your experience to us (see end of slides)

- Groups of 3 students
- This term we offer 4 different projects
- Students get access to our GPU servers, each with
  - 4x NVIDIA GPU with 11GB RAM
  - 10-core CPU
  - 256 GB RAM→ Scale up your models and data!

- Bi-weekly meetings (around 2 hours)
  - Groups present every second week
  - Each group should briefly report their progress and next steps
- Regular documentation of your work on wiki
- Code on git (LRZ)

### BMW

#### **Reliable Predictions**

Using ultra-wideband measurements, the prediction whether the phone is inside or outside the car has to be robust for different environments and devices to ensure correct (un-)locking of the car.

### SIEMENS

#### **Classification in Quality Control**

To supervise the manufacturing process an image classification has to be trained on the real world data. This step is currently a part of a quality control pipeline and is used in the inspection processes.

### TUM-DAML

#### **Green & Cheap ML Models**

Evaluate machine learning models (layer types, training, inference) with respect to power consumption, ecological footprint and price instead of (only) standard metrics such as accuracy.

### TUM-DAML

#### **To be announced**

## Registration via the matching system!

Module name: Large-Scale Machine Learning (IN2106, IN4192)

+ **Fill out the application form (link on the webpage)!**

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large-scale-machine-learning](http://www.daml.in.tum.de/lehre/sommersemester-2022/large-scale-machine-learning)

**Deadline 15.02.2022**

- Provide us with your list of experience in ML (courses, projects, etc.)
- Please send us a **concise** overview (bullet list, not a complete CV)