Machine Learning Lab Course

Organizational Meeting

Winter Term 2020/21

Team

- Prof. Dr. Stephan Günnemann

- Marin Bilos, Anna Kopetzki and Aleksei Kuvshinov

This is a practical course (Praktikum) for **Master** students!

Name of module: Large-Scale Machine Learning (IN2106, IN4192)

Website: www.daml.in.tum.de/ml-lab

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**.

   – Successful projects might even qualify for a subsequent master thesis.

3. Work on **large-scale problems** with the support of state-of-the-art **GPU computing resources.**

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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

        - Our seminars

    - self-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)

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Organization

- Groups of 3 students

- Each team will work on a different project

  – Groups can collaborate

- Students get access to our GPU compute servers

  – each of the servers has:

    – 4x NVIDIA GPU with 11GB RAM

    – 10-core CPU

    – 256 GB RAM

  – scale up your models and data!

Organization

- Weekly meetings (around 2 hours)

  - **online**

  - groups present every week

  - each group should briefly report their progress and next steps

- Regular documentation of your work on wiki

- Code on git

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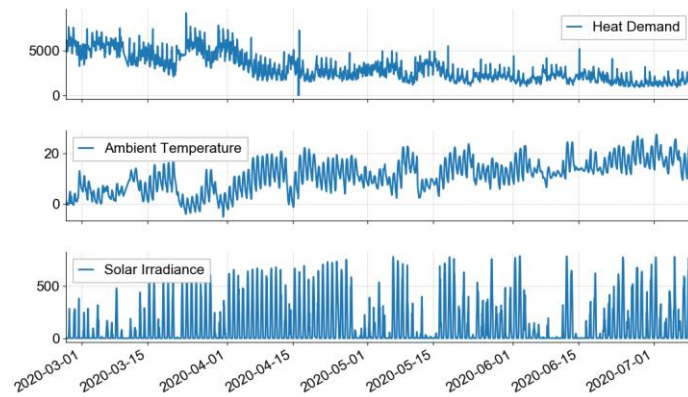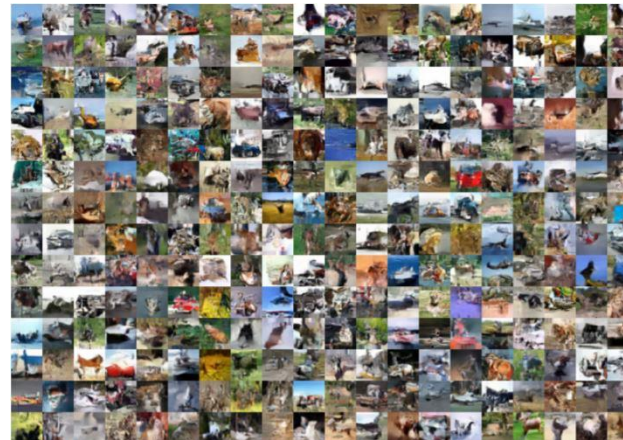
Projects – industrial and academic

Image generation with invertible networks

. . .

Registration via the matching system!

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

+ Fill out the application form!

https://docs.google.com/forms/d/e/1FAIpQLSdegvjZFYeZpeHld_XzR0PRVUxpl0kO1wI0uMRnsJfp6cyZ0A/viewform

- provide us with a list of your experiences with ML (courses, projects, etc.)
- please send us a short overview (bullet list, not a complete CV)

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Now! Presentations with current lab participants

- Adversarial Attacks on Images by Relighting
- Transfer Learning
- Robust Intermediate Representations
- Adversarial Examples for Emergency Vehicle Detection
- Predicting Environment Safety Using BMW Fleet Recording
- Image Analysis of Technical Documents to Identify Advanced Metadata
- Molecular Energy Prediction for Reactions and Simulation

Questions in chat and live after each presentation!