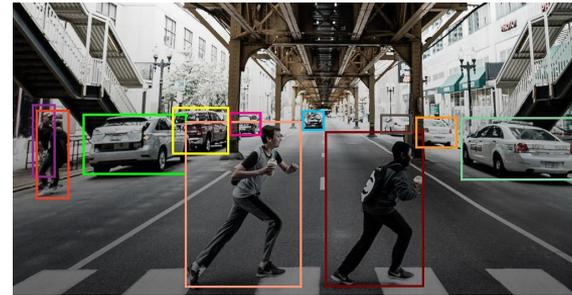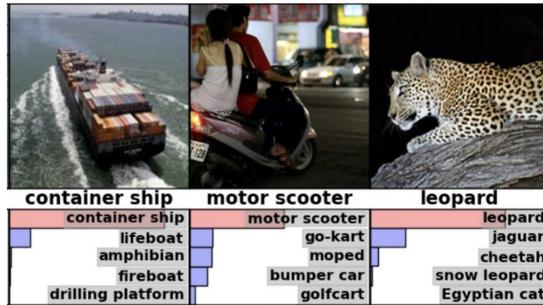# Seminar Vision Systems MA-INF 4208

04.02.2022
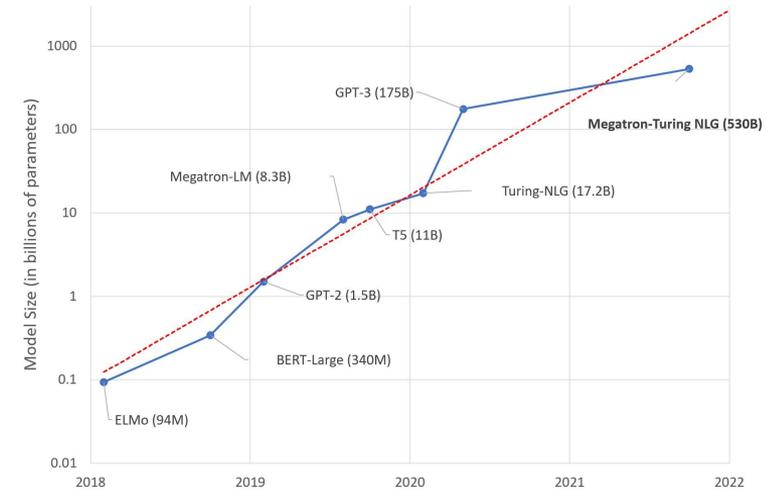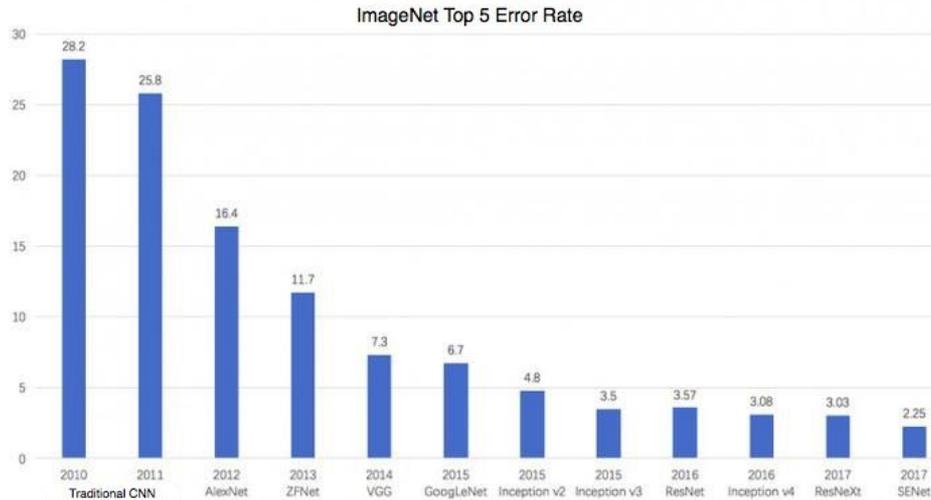
PROF. SVEN BEHNKE, ANGEL VILLAR-CORRALES

Contact: villar@ais.uni-bonn.de

The Age of Deep Learning

The Age of Deep Learning

The Age of Deep Learning
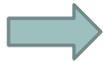
In this seminar...

- Acquire/improve ability to:
  - deal with scientific publications (e.g., papers)
  - write a scientific report
  - present a scientific topic to an audience
  - engage technical topics

  → Important skills for Master Thesis!

In this seminar

- Discuss trending topics in deep learning and computer vision

- We will cover the following topics
  - Self-Supervised Learning
  - Advances in Neural Network Architectures
  - Object-Centric Learning with Neural Networks

Paper List: https://www.ais.uni-bonn.de/WS2122/SeminarVision/PaperList.pdf
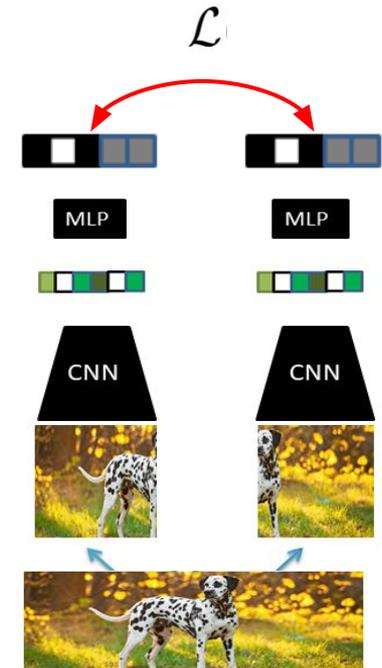
Self-Supervised Learning

- Subcategory of unsupervised learning

- Use pretext task to train in a supervised fashion

- Hot-topic in deep learning community
  - Comparable to supervised pretraining
  - No need for manual annotations

Advances in Neural Network Architectures

- Novel architectures and recent advances for computer vision
  - Transformer-based
  - CNNs
  - Hybrid Architectures
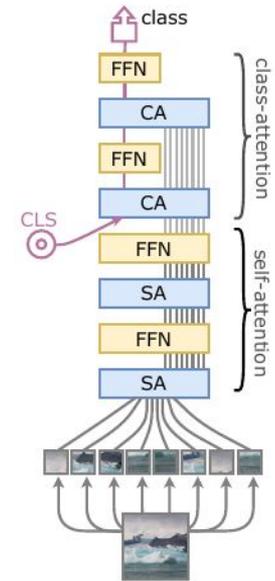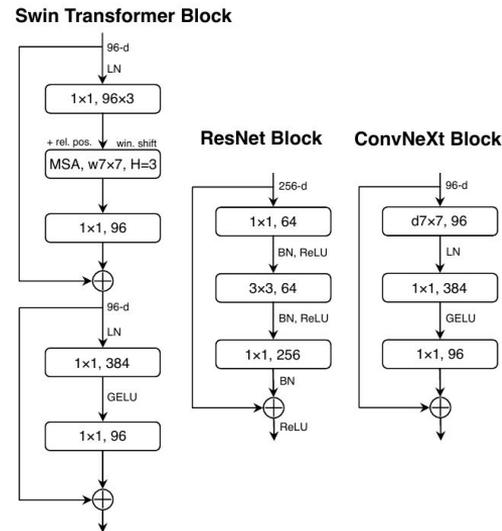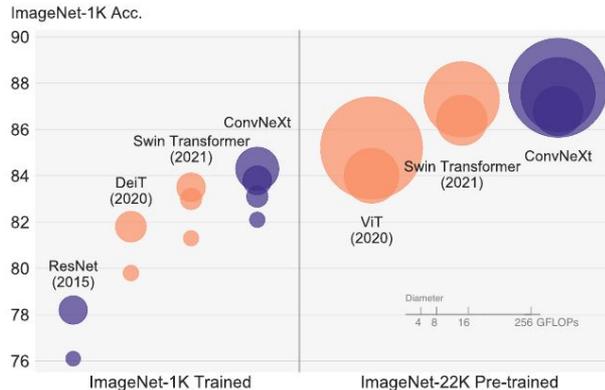
Object-Centric Learning

- Unsupervised learning of object representations with structured models:
  - Unsupervised segmentation
  - Object synthesis and scene completion
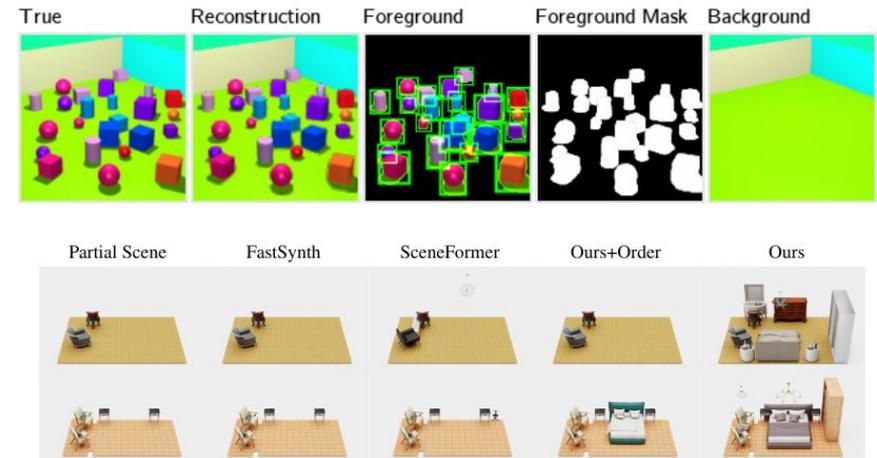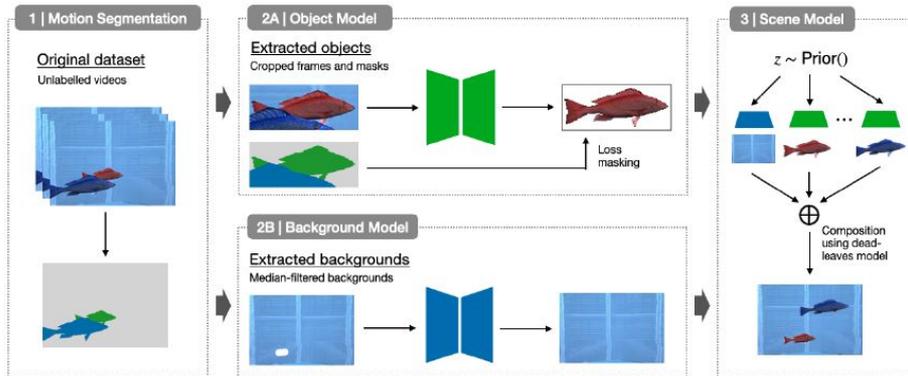
Select your topic

- Use the Doodle to select a paper to review
  - Link on Seminar Website
  - First come first serve

- Send me an email at villar@ais.uni-bonn.de
  - Your name
  - Matricule number
  - Your selected topic

- Register in BASIS

Deliverables

- Presentation: Thursday 31.03.2022
  - 30 min presentation
  - 15 min discussion

- Report: Thursday 07.04.2022
  - LaTeX template
  - 8-12 pages
  - Brief but readable and informative
  - BibTex citations

➡ Arrange a meeting with me ≈2 weeks before the presentation to check the preliminary materials for the presentation and report.

Report

- Well structured:
  - Abstract
  - Introduction, methods, results, conclusion, ...
  - Tables and figures
  - Correct citations

- Your own scientific opinion:
  - What are the weak points of the paper?
  - What is missing?
  - Are comparisons fair and believable?
  - Possible future steps?

<p style="text-align:center; color:red;">We don't want a copy of the paper!</p>

Grading

- 50%: Presentation
  - Quality of the presentation slides
  - Presentation skills
  - Ability to answer questions

- 50%: Report
  - Overall quality of the report
  - Critical thinking and own discussion
  - Understanding of the concept

Slot Assignment Selection

- Six slots for students
  - Assigned at random

Questions?