Computer Vision

Goal: Inferring the properties of the world from one or more images

- Photographs
- Video Sequences
- Medical images
- Microscopy data

→ **Image Understanding**

Challenges

Vision involves dealing with:

- Noisy images
- Many-to-one mapping
- Aperture problem

→ Requires:

- Assumptions about the world
- Statistical and physics-based models
- Training data

True image understanding seems to require a great deal of thinking. We are not quite there yet.

Opportunities

Cameras are becoming ever more prevalent and Deep networks have immensely boosted the performance of Computer Vision algorithms:

- Tremendous potential for applications.
- A window on the way the mind works.
- But limited understanding of why things work.

➡ Still much work to be done !!!!

➡ Lots of jobs in Switzerland and elsewhere.

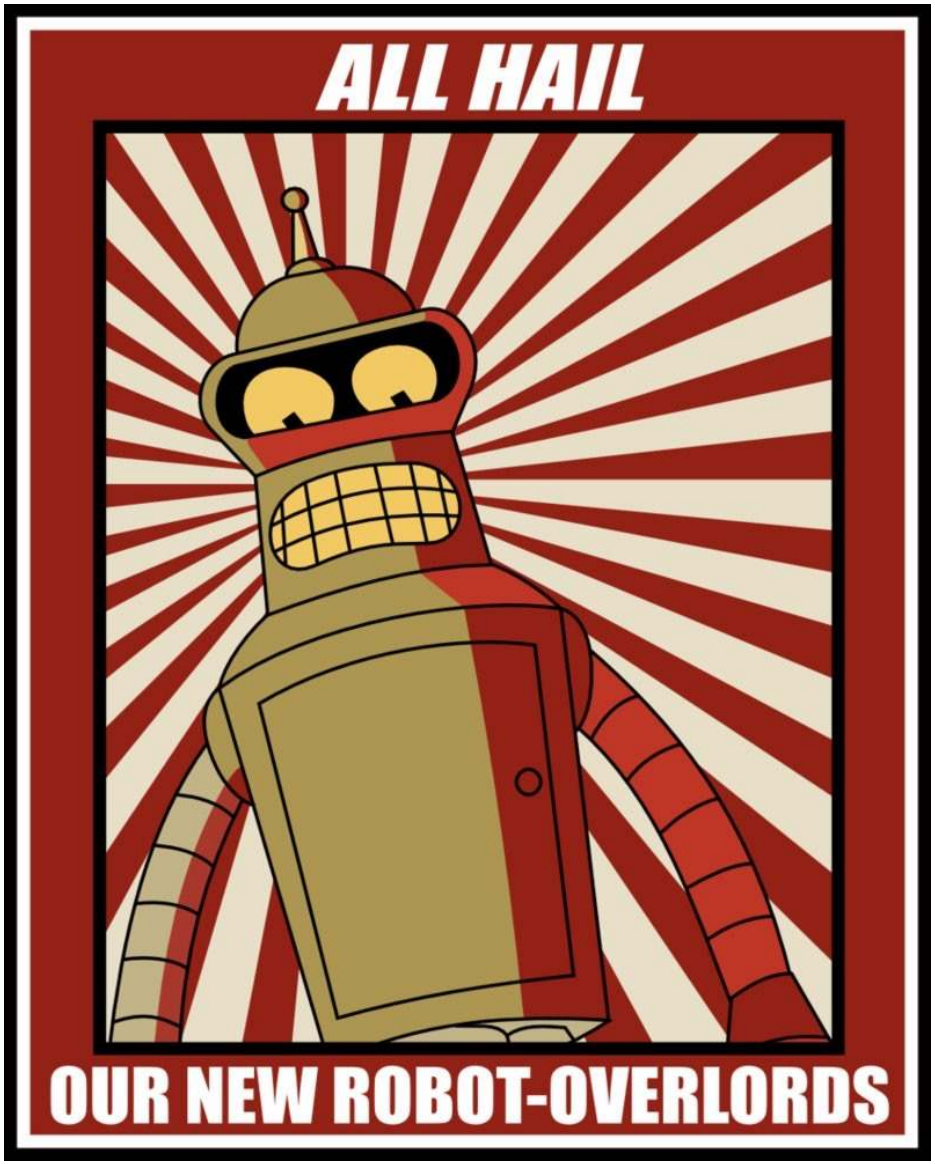
Course Outline

Introduction:
- Definition
- Human vision
- Image formation

Extracting features:
- Contours
- Texture
- Regions

Shape recovery:
- From one image
- Using additional images

Deep Learning Revolution



or

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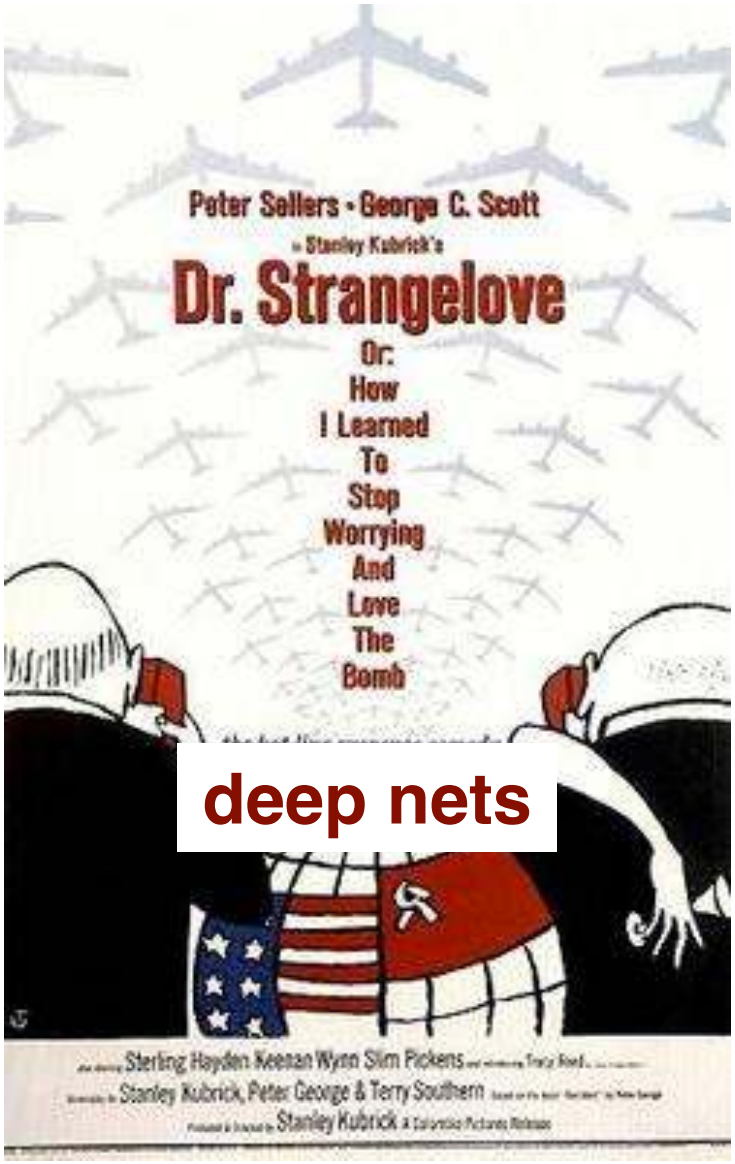

Final Exam

Tuesday 20.06.2023 from 09h15 to 10h45 (CE1, CE1515)

- One sheet of hand-written notes is allowed.
- No other documents or electronic devices.