Seminar
Current Works in Computer Vision

About this seminar

Paper assignments

How to give a good presentation

Good scientific behavior

About this course

- What do you learn in this course? (worth 4 ECTS)
  - Reading and understanding current research papers
  - Exploring the literature
  - Giving a good oral presentation
  - Asking questions
  - Discussing a research work or a research problem
  - Latest stuff in computer vision (particularly deep learning)

- Requirements:
  - First experience in giving a presentation (e.g. Proseminar)
  - Recommended: at least one image processing course (e.g. Kursvorlesung)
  - Scientific interest in the field

- Your duties:
  1. Read all the presented research papers and answer some questions
  2. Dig into one particular research paper and present it in the class
  3. Take part in a lively discussion about each paper

1. Written summary of each paper

- Goal: make sure that everyone has read the paper
- We will ask some general questions about the paper
- You give some concise answers in a written summary
- Length: less than half a page
- Must be sent to the advisor responsible for this paper at least one day before the talk
- Bad summaries will be rejected
- 20% missing/late summaries or rejections at maximum or you won’t pass

2. Your particular paper

- Choose one paper that you will present
- Read this paper **and understand it**
- Usually requires reading (or cross-reading) several other papers
- All papers are current research papers from last conferences
  → they assume that you know the background
  → you are responsible for finding additional information
- Prepare the outline of your talk as a written document (~2 pages)
  - What you will present and in which order
  - Make sure you present the background as well!
  - What tools could be beneficial to make your audience understand better (images, videos, demos)
  - Document must be submitted **at least 2 weeks before your presentation**
  - Meeting with your advisor

2. Your particular paper (continued)

- Prepare the slides of your talk
  - Fill your developed structure with actual slides
  - Make sure your talk will be comprehensible
  - Make sure you understand what you are talking about (otherwise skip details)
  - Prepare some text what you will say in each slide
  - Make sure you will stay within the time limit (35-40 minutes)
  - Submit your slides **at least one week before your talk**
  - Meeting with your advisor
- Make changes to your slides (as discussed with your advisor)
- Practice your talk (really!)
- Present
- Submit your final slides and get feedback from your advisor

3. Discussion

- This seminar is designed to be scientifically interesting
  - Selected papers that have been published within the last few months
  - Open discussion about the paper

- What‘s to be discussed (examples):
  - What is still unclear? (might not be the fault of the presenter but the paper)
  - Is this paper a valuable contribution? Why? Why not?
  - What are the shortcomings of the approach?
  - Which successive work could make sense?

Available papers

1. 3D model reconstruction from single images
2. 3D up-convolutional networks
3. Data dependent network initialization
4. Efficient ConvNet architectures
5. Deep reinforcement learning
6. Unsupervised feature learning
7. Video prediction
8. Dataset for object and action recognition

- Be fair: only take a paper if you really take the course!
- Fill in your preferences
- Additional blockseminar by Prof. Ronneberger
- Presentation dates will be fixed after we assigned the papers

Giving a good presentation

Communication is hard work.

The work can be done either on the side of the sender or on the side of the receiver.

Giving a good presentation

- Why it is important:
  - You will have to present all the time in the future (academia and industry)
  - Quality of your presentation decisive for achieving your goals:
    - Can I convince them to fund my favorite project
    - …to give me the additional resources I need
    - …to build upon my scientific work
    - …to give me the job

- What is important:
  - The key message(s) should be transported to everybody
  - Your audience must understand!
  - Your arguments should be convincing

- How do we achieve this…

Rule number 1: have a good structure

- Present coarse-to-fine
- First the background and the main message must be clear
  - What is the problem?
  - What is the solution?
  - What is the difference to previous works?
- Go only into detail step by step
- Never lose the audience
- Have a clear thread
  - Transitions are critical: will the audience be able to follow your thoughts?
  - If there are natural breaks, clearly mark them as such
  - Don’t forget a concise conclusion/summary; end with “Thank you”
- Choose meaningful titles on all your slides

“I can explain everything.”

Rule number 2: present in pictures

- Slides with a lot of text are hard to follow
- Try to remove as much text as possible, use images instead
- Have many examples

Image Processing

Ambiguities resolved by context

- Ambiguities appear because the resolution in images is not good enough to distinguish small objects.
- To resolve ambiguities, the context in an image is very important.
- The context can increase the probability that the structure is indeed a certain object.
- This can of course be wrong, but by optimizing the global context of all structures in a scene, the overall scene interpretation is usually correct.
- It is much better than independent decisions purely based on the insufficient data.
- This should not be confused with replacing the data by prior assumptions if there is enough data to do the job.

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Image Processing

Ambiguities resolved by context

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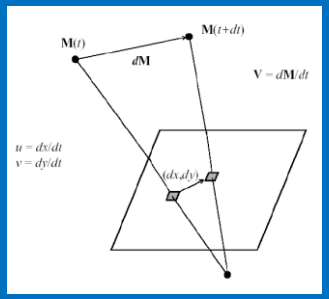
Rule number 3: Have readable slides

- Can you read this text?
- Also from the back? Remember, the contrast and resolution of your laptop is usually much better than that of the projector
- Sometimes the font size is too tiny



- Sans-serif fonts are easier to read from the back than serif-fonts

Also still quite common is yellow text on white ground

You see this even more often in graphs

Mak sure their are no typos in you slides; it’s so unprofessional und unnecessary

Size up figures to use the whole area of the slide. A slide does not need a frame.

Rule number 4: practice

- Prepare the text that you want to say, do not try to improvise!
- Speak your talk loudly without reading your prepared text (multiple times)
- Always getting stuck at the same point?
  → change this point
- Watch your timing
  - Slowly read the text you prepared (loudly)
    → good estimate of your timing
  - Practice until you stay within your time limit
- Control your voice
  - Do not speak too fast
  - Emphasize words or parts of sentences with your voice
  - Speak loud enough
  - Use silence to emphasize things

"O.K., step away from the laptop and hold up your end of the conversation."

Rule number 5: control your technical equipment

- Prepare and test your equipment early before the talk (if possible)

- Checklist:
  - Does your laptop work properly with the projector?
  - Do you have the right adapter?
  - Do all videos show properly?
  - Internet connection switched off?
  - Desktop free of too personal items?
  - Enough battery or laptop plugged in?

- Do not use the laser pointer as a weapon

"For God's sake, Edwards. Put the laser pointer away."

Rule number 6: stand open towards the audience

- Keep eye contact with your audience; don't turn your back
- But do not wonder what they might think of your presentation! (now it's too late)
- Breathe normally
- Be authentic
- Answering questions:
  - First listen to the whole question carefully; don't interrupt
  - Think about how you can best answer this question before you answer it
  - Give short and precise answers

Rule number 7: learn from the mistakes of others

- You cannot follow someone's talk?
- You are totally bored?
- You are irritated by a certain behavior of the presenter?

→ Analyze what the presenter is doing wrong
→ Make sure you do not make the same mistakes

Good scientific behavior

1. Never present other people's work as your own
   - Never copy-paste
     (even critical when copying from your own work → self-plagiarism)
   - Cite the original author whenever one could think it was your work
     (e.g. illustrations, ideas, code)
   - Clearly mention the material you used for your work
     (e.g. code, data, papers; if unpublished material, ask before you use it)
   - Say explicitly what is your contribution

2. Never report false scientific results
   - Do not fake data to get the results you want (of course!)
   - Avoid situations that could easily lead to false results
     - Document what you did
     - Make sure comparisons are fair
     - Double check if there is a mistake particularly when results are surprisingly good

- This holds for this seminar, but also for reports, theses, papers, grant proposals, interviews, personal communication

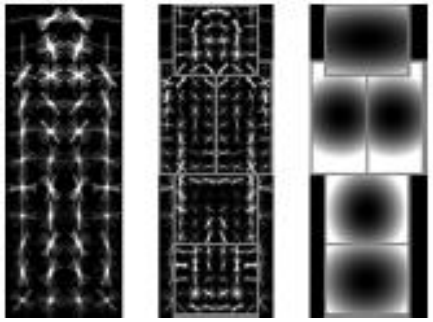
Examples

- If you quote from some other work, use quotation marks:

  In their original work [12], Wang and Adelson say:
  “It may ultimately be possible to encode images using “high-level” machine vision concepts such as 3-D object recognition, but it will be many years before such techniques can be applied to arbitrary images.”

- Mention other people who contributed to your thesis and clarify who contributed what:

  The results reported in this section have been obtained in a joint project with Jochen Talberg. While he had the main idea and wrote all the code, I was responsible for the robotics experiments.



Source: Felzenszwalb et al.

  In our implementation we built upon the source code provided by Werlberger et al. [13].

Consequences of bad scientific behavior

- If you cheat as a student, your exam will be marked as “failed”
- In severe cases, you can get exmatriculated!
- You can get sued for copyright violations
- You can lose your academic degrees even years after your misbehavior
- You can lose the right to submit grant proposals
- You can lose your job and your reputation

➔ Never cheat on purpose and avoid any mistakes or misinterpretations