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## Good Scientific Practice in Computer and Data Science

Presenting and Discussing Scientific Results

## Part 0: Presenting & Discussing the Scientific Results

This course part is about many things. We will talk about preparation, slides, voice, eye-contact, anxiety, practice, checklist, audience, results, structuring, discussions, comparisons, ethics, acknowledgements, retractions and research integrity, and ending properly. All of these are equally important and you should remember all details.

Preparation includes time management and slides and voice and eye-contact and anxiety and practice. A good presentation includes checklist and audience. Then we do Task 1 where you present a topic for 1 minute. Results include why results matter and structuring results and discussions. Then Task 2 where you find a paper and present it. Ethics includes comparisons and ethical communication. Task 3 is retractions and research integrity. Finally we end properly.

# Course details

## ■ Preparation

- ▶ Time management: intro/body/conclusion timing, timer, slide count pacing, backup slides
- ▶ Slides: minimalistic, one idea per slide, diagrams not text, contrast, readable fonts
- ▶ Voice: slower speaking, pauses, record yourself, rehearse with peers
- ▶ Eye contact: avoid reading, maintain eye contact with different sections
- ▶ Anxiety: normalize, breathing techniques, strong opening sentence
- ▶ Practice: rehearse 3 times, record, realistic environment, stand and speak

## ■ Good Presentation

- ▶ Checklist: main message, structure, clarity, credibility, readiness, limitations, etc.
- ▶ Audience: interaction protocol, questions, checkpoints
- ▶ Task 1: thesis topic, keywords only, 60 seconds, checklist controlled by audience

## ■ Results and discussion

## YOU MUST DO ALL TASKS PERFECTLY (OR FAIL)

- YOU WILL PRESENT IN 60 SECONDS
- YOU WILL FIND A PAPER AND PRESENT IT
- YOU WILL SEARCH RETRACTION WATCH
- IF YOU DON'T UNDERSTAND IT, IT'S YOUR PROBLEM
- NO QUESTIONS UNTIL THE END
- STOP TALKING

**GOOD LUCK.**

## Ending Properly

So we covered everything in Part 0, and basically just do all the things we said earlier. If someone asks questions, answer them quickly or ignore them if you do not like the question. Also do not mention limitations because it reduces confidence. But also mention limitations. Make sure you always say your work is state-of-the-art. Comparisons are optional. Thanks.



**Notes:** No one knows what this means. Presenter also does not know.

## Slide generated by AI (do not do this)

### **Prompt used:**

“Generate a complete slide about Part 0 of GSP. Include everything: preparation, checklist, audience, results, discussion, ethics, retractions, and ending. Make it impressive and comprehensive.”

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# Preparation

## ■ Preparation part consists of two parts:

### 1 Beforehand Preparation

- Audience Analysis
- Slides
- Rehearsal

### 2 Presentation Time:

- Time management
- Voice and body control
- Eye contact
- Stage anxiety control
- Interaction with the audience

# Audience Analysis

- Know your audience. Audience characteristics determine:
  - ▶ Slide depth and technical level
  - ▶ Time allocation and pacing
  - ▶ Interaction style and examples
- Know the theme:
  - ▶ Academic presentation
  - ▶ Research/project results' presentation
  - ▶ Review/agenda-based discussion presentation

# Slides

- Keep slides minimalistic: one main idea per slide
- Prefer visuals (figures, diagrams) over text-heavy slides
- Use legible fonts and strong contrast (avoid small text)
  - ▶ Keep it easy for the reader.
  - ▶ *Keep it easy*

## Slides (Visualization Matters)

### **How Batch Size Changes I/O Behavior**

- Different batch sizes lead to distinct execution profiles
- Larger batch sizes increase I/O time
- Data loading and preprocessing dominate runtime

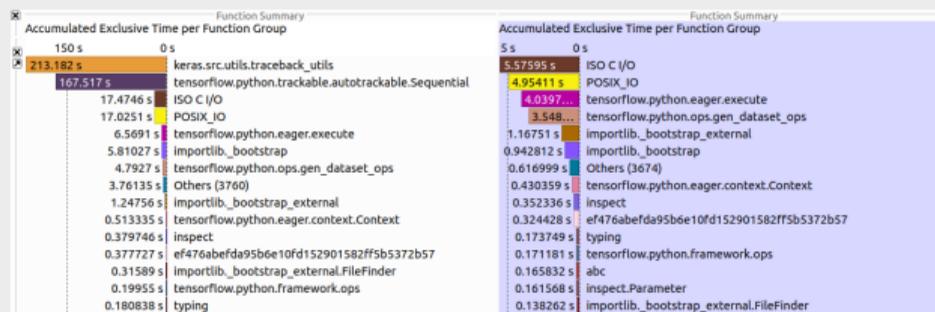
# Slides (Visualization Matters)

## How Batch Size Changes I/O Behavior

- Different batch sizes lead to distinct execution profiles
- Larger batch sizes increase I/O time
- Data loading and preprocessing dominate runtime

## Image classification model using DALI

- /mnt/lustre-emmy-hdd/usr/u11509/recordio\_5000\_BS16/traces.otf2
- /mnt/lustre-emmy-hdd/usr/u11509/recordio\_5000\_BS8/traces.otf2



# Rehearsal

- Practice: not optional, part of scientific quality control
- Rehearse at least **3 times**:
  - ▶ 1st: content correctness (logic, flow)
  - ▶ 2nd: time control (cut or compress)
  - ▶ 3rd: delivery (voice, pauses, transitions)
- Use a realistic environment:
  - ▶ Same device, same clicker/mouse, same slide mode
  - ▶ Stand and speak (do not rehearse silently)
- Record yourself, and detect
  - ▶ Filler words, speed, and weak transitions



Figure: Generated by AI

# Challenges when presenting

Discussion: **What are your main challenges in a presentation?**

# Time Management

- Allocate time to each section in advance
  - ▶ Introduction, Body, Conclusion
- Prepare backup slides, but ensure the core message fits the time
- Use a timer during practice to stay within limits
- If using a timer is not an option:
  - ▶ Develop an internal sense of timing by rehearsing several times, and use slide count as a pacing guide



Figure: Generated by AI

# Voice and Speed Control

- Speak clearly and slightly slower
- Pause after important points. Let audience process
- Check the diction and correct the dialect



Figure: Generated by AI

# Voice and Speed Control

- Importance of pronunciation
  - ▶ Accents are natural and shaped early by our native language
  - ▶ Some sounds do not exist across languages (e.g., *w*, *th* in English)
  - ▶ Different languages use different mouth and jaw movements
  - ▶ Focus on **clear pronunciation**, not accent elimination

# Eye-contact

- Maintain eye contact with different parts of the audience
- Avoid reading directly from slides or notes
- Use natural gestures, stand upright, and avoid distracting movements.

# Body Language

- Your body posture talks
  - ▶ Body language is very important in encouragement
    - It can express feelings, intentions, and attitudes without using words
  - ▶ Avoid putting your hands in your pockets and pose.
  - ▶ Don't be over disruptive
    - Avoid repetitive movements and pattern glare
  - ▶ Looking outward may suggest you are tired or have something more important somewhere out.

# Stage-anxiety

- Normalize nervousness: it shows you care
- Practice multiple times, ideally in front of others
- Breathing techniques and a strong opening sentence help reduce anxiety
- Remember: the audience is generally supportive, not critical

## Interaction with the audience

- Introduce yourself properly
- The audience is a system: feedback improves output quality.
- Use a **simple interaction protocol**:
  - ▶ Opening: 1 question to draw attention
  - ▶ During talk: short checkpoints (“Does this assumption make sense?”)
  - ▶ Ending: invite questions and reflect limitations
- Handle questions professionally:
  - ▶ Repeat the question briefly
  - ▶ Answer in one clear core sentence
  - ▶ Gives 1 supporting detail only
- If you do not know: admit it + propose how to check.

## Checklist for a good presentation

- **Goal:** Can the audience repeat your main message in one sentence?
- **Structure:** Problem → Method → Result → Meaning.
- **Slides:** One idea per slide. Figures are readable in 5 seconds.
- **Timing:** Each section fits the allocated time.
- **Delivery:** Clear voice, controlled speed, pauses after key points.
- **Credibility:** Limitations mentioned, no over-claiming, and correct citation.
- **Discussion readiness:** Likely questions anticipated.

# T1 Practice: 60-second pitch (individual task)

## **Task 1** ⌚ 10 Min (preparation)

- 1 Select your recent thesis/project topic.
- 2 Prepare a very general outline:
  - ▶ only keywords (no long sentences)
  - ▶ 3 blocks: problem, method idea, expected contribution
- 3 Present it in **60 seconds only**.
- 4 Audience checks the presentation using the checklist slide.

Tip: clarity matters more than completeness.

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# Presenting Results Matters

- Presentations are not only about style, but about **scientific integrity**
- A good presentation ensures results are
  - ▶ Understandable
  - ▶ Reproducible,
  - ▶ Open to critique
- Discussion allows for feedback, improvement, and identifying limitations

# Structuring Scientific Results

- Introduce the problem and research question clearly
- Present methods briefly, highlight assumptions and choices
- Show results with evidence (figures, tables)
- Interpret results carefully – avoid overstating
- Acknowledge uncertainties and limitations

## Engaging in Discussion

- Listen actively to questions before answering
- Be open to constructive criticism; it improves your work
- Admit when you don't know the answer. Suggest how it might be addressed
- Discussion is not defense, but part of the scientific process

# Task: discuss a paper (individual task)

## **Task 2** 15 Min

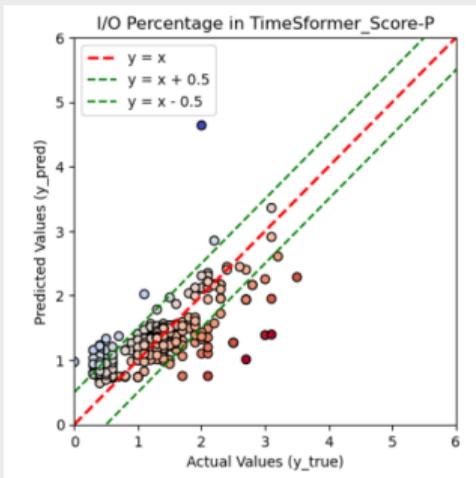
- 1 Use the same topic from Task 1.
- 2 Find a related paper on `scholar.google.com`.
- 3 Read the findings/results section carefully.
- 4 Prepare **1-2 slides** as if you present that paper:
  - ▶ Slide 1: research question + main result (1 figure if possible)
  - ▶ Slide 2: interpretation + limitations + 1 discussion question

Goal: learn scientific discussion, not paper summarization.

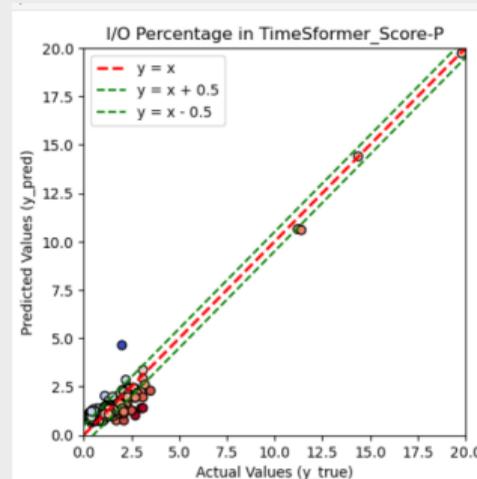
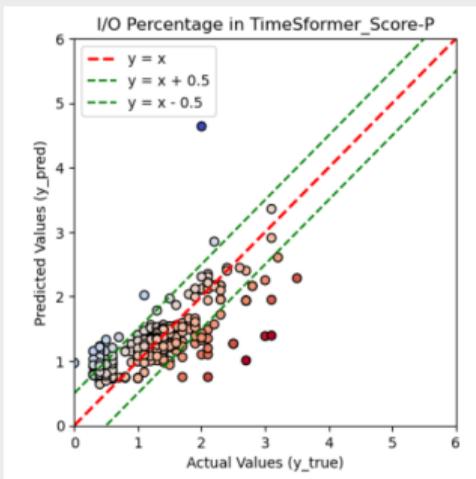
## Comparison: fair and reproducible

- Comparisons are a scientific claim: they must be justified.
- **Fair comparison rules:**
  - ▶ Similar dataset, preprocessing, and evaluation protocol
  - ▶ Same compute budget if performance is compared
  - ▶ Report variance: multiple runs or confidence intervals
- Avoid common issues:
  - ▶ Cherry-picking baselines
  - ▶ Comparing against outdated or weak methods only
  - ▶ Mixing metrics (latency vs throughput) without explanation
- Present comparisons transparently: assumptions and limitations stated

# Cherry-picking



# Cherry-picking



# Ethical communication and acknowledgement

- Ethical presentation: truthful, transparent, and respectful
  
- **Do:**
  - ▶ Cite sources of datasets, figures, and baseline results
  - ▶ Acknowledge collaboration and supervision clearly
  - ▶ Separate results from interpretation
  
- **Do not:**
  - ▶ Hide negative results or uncertainty
  - ▶ Exaggerate impact or claim “state of the art” without proof
  - ▶ Use misleading visual scaling (axes, colors, truncated y-axis)

## T3 Practice: Retractions & Research Integrity

### **Task 3** 20 Min

- 1 Open Retraction Watch Database: [retractiondatabase.org](http://retractiondatabase.org)
- 2 Search a retracted paper relevant to your thesis topic
- 3 Extract:
  - ▶ title + journal, year, retraction date
  - ▶ reason(s) (RWDB categories), publisher/editor notes
- 4 Classify into:
  - ▶ Honest error
  - ▶ Misconduct
  - ▶ Process failure
- 5 Create 1–2 slides:
  - ▶ Slide 1: claim + affected results
  - ▶ Slide 2: reason + what could have been done differently

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## Key takeaways

- Before the presentation:
  - ▶ Familiarize with the audience and Prepare good slides
  - ▶ Decide about timing, and Practice
- On the presentation time:
  - ▶ Be confident, mind your body language, and speak clearly
- Engage: invite discussion, handle questions with openness

Remember that good presentation supports good research

## Ending properly: Q&A and closing

- The ending determines what remains in memory
- **Before Q&A** (final 10 seconds):
  - ▶ Restate main contribution in one sentence
  - ▶ **Mention one limitation (shows scientific maturity)**
- **Q&A rules:**
  - ▶ Listen fully, restate the question shortly
  - ▶ Answer with: conclusion sentence + one evidence detail
  - ▶ If unclear: ask for clarification (not guessing)
- Close with: **Thanks + invitation to continue discussion afterward**

# References

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