Presentation Skills
and
Scientific Writing

Sergej Sizov
Outline

Aim of the meeting

Part 1: Scientific writing
- Structure of the paper
- Paper organization
- Formatting and style issues
- Referencing, bibliographies, and getting online support

Part 2: Presentation skills
- Getting started
  - Getting down to work
  - Nervous at presenting
- How to structure your presentation
  - Help the audience to follow
  - Timing: finishing (in a hurry)
  - Answering questions
- The other side: asking questions, feedback, being the chairman
Scientific writing: major points

Important points:

Subject
Purpose
- to exchange the scientific knowledge
- to ask and answer specific questions

 Audience
- scientists and those interested in the subject
- a publisher or an editor
Writing: Structure of the Paper

**Front Matter**
- Title (fewest possible words that describe the contents)
- Author’s (co-authors) name and address
- Abstract (miniversion of the paper, no citations)
- Keywords

**Article Body**
- Introduction
- Related work
- Your main message: theoretical and experimental sections
- Results
- Discussion
- Conclusion and future work

**End Matter**
- Acknowledgment (technical help and financial assistance)
- References (at 52 journals were found 33 different styles for listing)
- Appendixes (optional)
The principle of the diamond

1. Introduction
2. Related Work
3. Your Message
   - Methods
   - Evaluation: methodology, results
   - Discussion
4. Conclusion and Future Work
5. References
Writing: Abstract & Introduction

Abstract:

- **Descriptive abstract**
  - or topical abstract, describes the contents but contains too little substance and detail
- **Informative abstract**
  - self-explanatory report on a scientific investigation (research objectives for conducting the investigation, the basic method used, and the results and significant conclusions) - 200 to 250 words
- **Extended abstract (some conference proceedings)**
- No references or citations

Introduction:

- call attention to the specific subject, define the problem
- provide background and present the results of other studies (literature review)
- list the structure of your research project and what you plan to present in your paper

Reading a scientific article isn’t the same as reading a detective story. We want to know from the start that the butler did it (Ratnoff, 1981)
Related Work:

- **Developing an outline**
  - chronological arrangement
  - comparison and contrast in contraversional theories

- **Creating a skeleton**
  - select a few documents and write about each
  - discern the main points of their contents
Writing: Your Message

Methods
- complete information of materials and methods used, conditions present, actions, experimental design, etc.
- this section usually has subheadings; when possible match those to be used in Results
- enough information must be given so that the experiments could be reproduced
- ask a colleague if he/she can follow the methodology

Results
- display of data with logical development showing how your findings satisfy your objectives
- where possible give illustrative examples and compare those with known results from literature
- use tables and figures
- “the fool collects facts; the wise man selects them” (J. W. Powell, 1888)

Discussion
- you discuss, you do not recapitulate the results
- show the relationship among observed facts
Writing: Conclusions and Future Work

Conclusions:
- start with most important conclusions
- state your conclusions as clearly as possible
- summarize your evidence for each conclusion
- end with a short summary/conclusion regarding the significance of your work

Future work:
- Identify most promising directions of further research
- Identify practical impact of presented ideas or methods
- Discuss further possible (but not yet considered) extensions to the proposed solution and their possible impact
- Identify relationships to other themes and impact of integration
- Identify promising technical aspects (scalability, robustness, comprehensive evaluation, etc.)
For a better credibility you have to review the literature and show that your contribution extends from a solid foundation of research.

Quality and quantity of the sources you have consulted will enhance your work.

You have made it possible for readers to retrace your steps.

Your references can be as valuable as your research methods and findings.

At least three citation styles (in-text citations) and 100 reference styles are commonly used.
Citations: some examples

Alphabet-number system

- **Examples in the text**
  - In 1986 Schmitt [10] developed a ....
  - With optimum design sensitivity [10] ...

- **References**

- list of references in author alphabetical order

Name-Year (Harvard) system

- **Examples in the text**
  - Schmitt (1986) developed a ....
  - With optimum design sensitivity (Schmidt, 1986) ...

- **References**

- list of references in author alphabetical order
Scientific writing: Ethics

- Avoid the dual publication
- Don’t use the work of others without appropriate attribution
- List only those co-authors who contributed substantially to the work
**Additional Sources**

**online portals**
DBLP, Google Scholar, SiteSeer search engines
ACM, IEEE portals
Scientific mailing lists (e.g. DBWorld, AK-KDList, SIG-IRList, WebIR, DDLBETAtag, etc.)

**major conferences in the topic**
(see DBLP bibliography for full detail, http://www.informatik.uni-trier.de/~ley/db/)
e.g. SIGIR, ECIR, CIKM, TREC, WWW, KDD, ICDM, ICML, ECML, ...

**feel free to contact..**

a) lecturer
b) authors of publications
c) members of online communities and mailing lists
Formatting issues

Software and styles

- LaTeX vs. WinWord – several pro’s and contra’s
- **Style is the way you communicate the content to the audience**
- Style, bibliography formatting and the size of an article are usually prescribed by conference/journal. There are soft guidelines for diploma/master thesis, dissertations, etc.

- Using appropriate sharing format
- Anonymization

The most effective combustion method is an atmospheric fluidized bed

- high removal capability
- low capital cost—able to use in existing equipment
- high operating cost
- ability to use different grades of coal
Scientific writing: Bibliography


- http://www.writing.eng.vt.edu/
What is a successful presentation for you?

When have you seen a really good presentation?
Why do you think that presentation was good?

Can you establish other criteria from presentations you have seen?

A present
Aim of the meeting

Every now and then you will have to give a presentation

Learn:
- How to use rhetoric skills and how to present scientific information at a conference or seminar
- What you shouldn’t do
- Get a feeling for timing
Getting started

You want to present your work to an audience in X

Define your audience
  - expert; non-expert; mixed

Define your time
  - fixed time limit: seems long, but usually too short

Define your environment
  - accommodate - in a strange room - to the equipment (beamer, microphone, board)
  - have back-ups (power supply, memory stick, CD, handouts, board, ...)

Define your design
  - logo, name of the institute, colour, layout, structure, ...
Accept that you are probably going to be nervous

**Find your own solution(s):**
- Something to drink
- Deep breathing
- Go for a walk
  - ⇒ fresh air
- ...

**The only effective remedy:** Accept it. Have strategies!
Know your slides:
- try to present your talk to friends etc. before presenting it at a conference
- don’t finish preparation one minute before your talk starts

Think about your equipment:
- notebook: hotkey for external monitor, beamer resolution, beamer, disable screen saver, remote control, presenter/mouse, laser pointer, power supply+adapter, light (where is the dimmer? off/on?)
- overhead projector (where is the switch?), pointer, board, pen ...

The most effective strategy: Know the first minute of your talk – your introductory material / your first slide(s)- off by heart
Strategies when nervous (2)

Show your *title / first* slide

- eye contact to (or neck region of) audience, greet, title, your name, where you work, smile
  
  ⇒ audience turns towards your slide and doesn’t focus on you

Show your *second* slide: overview of your presentation

- give informative overview

- don’t: Overview
  - Introduction
  - Details
  - Conclusion
  - References

Continue with your presentation/slides
Strategies when nervous (3)

**Voice**: Don’t worry if it is cracking or squeaking
* Try to speak clear and slowly, loud enough

**Blushing**: Ignore
* the audience is watching your slides!

**If reading**: Format your notes for easy path finding

Try to **look at the audience** as much as possible
* You are the expert, observe them

**Give presentations** as often as possible

Be aware of what people will do when they are **nervous**
* Find out what you do -> work on it
Using notes (1)

Brief notes?

Cards?

An annotated full script?

**Font**: large enough, easily readable while under pressure / in dim light?

**If you lose your place**: can you readily find your way back into your notes while under pressure?

**If you need a full script**: can you use an annotated script with keywords?

| keywords | This is your text / the paper you submitted to a conference. Now you are invited to give a talk. You are very nervous and you don’t know what to do against it. You think that you could use your paper and read it out. However, your friend says that this is not a good idea. You decide to use your paper anyway, because what you want to say is written in the text. You highlight some bits and pieces in the text and you add a column, so that you have a margin on the left. Into this margin you write down some keywords. With the help of the keyword and the text you can find your way through your presentation and if necessary you can read out bits of the text. |
| margin with keywords | Font: large enough, easily readable while under pressure / in dim light? If you lose your place: can you readily find your way back into your notes while under pressure? If you need a full script: can you use an annotated script with keywords? |
Using notes (2)

Mistakes when you read:
Voice can become monotonous and dull
No enthusiasm: audience is bored
Stance: rigid
  - better don’t read out too long, but move a bit (while reading)
Audience: feel out of contact
Losing your place in the script after looking up
  - better use cards

Structure your presentation and know your structure
don’t excuse yourself!

… using notes
… graph not nice
… spelling errors
… etc.
The major fault with many presentations is:

The structure of the material doesn’t harmonize with the visual aids or the way you deliver it.

Common mistakes:
- Unstructured facts
- No obvious framework
- The audience becomes disoriented
Structure: Help for the audience to follow

If space, within the presentation:
(whole set of printouts)

or use handouts:

- if your presentation is complex and/or
- cross-reading or returning to an older information is useful –
  - but not necessary for your presentation
- if a beamer-, or board-presentation, etc. is not possible or
  - can’t be seen very well by the audience

Handouts

- are an alternative for central information spots or additions
- should contain important facts supporting your presentation
- should not consist of too much lose paper
Structure (2)

Be very selective. You can’t include everything:
Structure material as a diamond of detail:

1. Title slide

2. Introductory overview slide
   brief summary: place your work in context, give the big picture; why don’t put results in here? **Tell them what you are going to do**

3. Place work in context
   good summary of methods, results and conclusion

4. The detail
   then/here give detail; **tell them**

5. Concluding overview slide
   of what your work means:
   Your conclusions and further directions. **Tell them what you’ve told them**
Structure (3)

Slides for the basic structure

Title slide
Overview slide
Detail
Conclusion slide
Title of your presentation

Your name

Where you work

- Institute, university, cooperation partners, working group, …

Other material

- Logo(s), etc.
Structure: Overview slide

Immediately after title slide

-- or --

After a (short, expressive) intro/motivation part

Gives overview of your presentation:

- WHY you are doing this work (Context)
- HOW you did it (Methods)
- WHAT you discovered (Results)
- *Possibly*: WHAT you concluded (Conclusions)
Try to start with the known
Move to the unknown
State the question(s)
  - KISS :: keep it short and simple
  - Clearly separate minor questions from the main question – usually in a separate sentence
  - Make sure the question(s) follow(s) logically
Very briefly, state how you set out to answer the question(s)
Make clear: newness, importance
“When you have to come to the end of the introductory overview slide, the audience should know why the research was prepared and carried out.”

Huth, E.: How to Write and Publish Papers in the Medical Science

“If the problem is not stated in a reasonable, understandable way, the audience will have no interests in your solution.”

Day, R.: How to write and publish a scientific paper
Examples: Overview

Don’t:

- Overview
- Introduction
- Structure
- Details
- Conclusion
- References

Better:

Aim of the meeting
Getting started
- Getting down to work
- Nervous at presenting
- Strategies when nervous
- Using notes

How to structure your presentation
- Help the audience to follow
- Dealing with details
- Appearance, style, voice
- Starting, body language, pointer, pausing + interruption
- Timing: finishing (in a hurry)
- Answering questions
- Visual aids

Action list
Have a clear framework

Make sure that your visual aids show clearly where you are in the scheme of the talk

Use headers at top of slides

Results (1)
- It is good to hear about presentation skills

Results (2)
- It is better to practice with feedback
Call it Conclusions

What your work means:
- Conclusions you draw from your work
- No new material

What you would most like the audience to remember
- Conclude by briefly restating the answer
- Establish newness/importance

_Possibly_: Future directions of the work
Yes, your appearance influences your presentation

Know the audience:
- Standing in front of a hacker convention in an Armani suit can harm your presentation

Giving a presentation for some company business people in shorts can be worse

Better (a bit) over- than underdressed
Use spoken language, not written language:

“To do this, we raised the temperature…”

NOT: “In order to achieve this, the temperature was raised…”

Don’t use rough language or dialect

(if your audience doesn’t expect and want you to do so)

Don’t be afraid of using I and We

Use simple clear words

but include the correct professional vocabulary

Try to pronounce as clearly as possible
Don’t read out subheadings:

“Objectives. The objectives were…”

Verbal hints are important:

“This is important because…”
“This is interesting because…”
⇒ wakes the audience up
Almost everybody is able to speak
Speak: loudly, clearly and deliberately
Modulation of your voice can help you to structure your presentation and keep your audience awake
Find out your verbal tics:

“basically, you know, sort of, like, uuumm, aaeehh, ...”

Don’t:

- speed up
- be quieter than usual (non-native speakers)
- become monotonous
- think your voice is cracking and wobbling

⇒ usually it is not, don’t worry about it.
Presenting: Body language (1)

- Be yourself!
- Channel for information you don’t want to give?
- Cultural context: not every culture interprets every signal the same way (e.g. Japan, Tibet..)
- Stand steadily and look clear, try to smile -> friendly
  - don’t walk up and down
  - don’t crouch over the laptop
  - don’t grip something with your head down
- Eye contact
  - Avoiding eye contact -> insecurity, subordination
  - Direct eye contact -> aggressive
- Avoid rigid / over-extravagant gesture
Hands – a problem?

- Don’t cross your arms
  -> wish for isolation, signal: I don’t want to be here
- In pocket -> not interested
- On hips or hooking the thumbs into waistband or pocket
  -> aggressive
- Fiddling with a pen, or with something in your pocket, your hair
  -> worse: making noise with clicking a pen or something
Duke of Edinburgh position

Angle hands in front of waist
(excellent for voice)

Let your hands dangle;
underline with hands your explanations
Presenting: Pointer

You can use a pointer!

- But *sometimes better*: animation / highlighting.

Don’t:

- turn your back to the audience
- point with finger: your line of sight is different from the audience’s
- point, but don’t know where your pointer points to / don’t point and turn away and the pointer goes all over the place
- block view of part of the audience
- move the pointer too fast
- shake the pointer
If you lose your place or have to pause, say nothing:

- Control your body language, find your place again

Interruption beyond your control, say

“*I’ll repeat that...*”

or continue without hesitation

**A pause for the speaker seems longer than for the audience**

Pause because of thinking: look at someone in audience; not at ceiling or floor

Interruption = question(s)
Presenting: Finishing the Presentation

Be professional:
- Put up your concluding slide and BRIEFLY describe your conclusions
- Then just slightly nod your head and say “Thank you”
  ⇒ job of the chair to ask for questions
- Don’t fluster

Common mistakes:
- Nervous -> body language
  “Well, that’s all I’ve got to say, really”
  “That’s it – so – um – thank you.”
  “I’d like to thank you for your kind attention in listening to this talk. ” (too artificial)
Presenting: Finishing in a hurry (1)

- Don’t fluster
- Smoothly finish the sentence you are saying
- Say something like
  “I’m sorry I don’t have time to give you the details here. But I’d be pleased to talk to anybody afterwards.”
- Put up your conclusion slide
- Say
  “And so, in conclusion, …”
- If time is very short
  put up Conclusions slide for audience to read
How to reach your Conclusions slide smoothly:

- Copy your Conclusions slide so that it appears twice:
  1. In its normal position
  2. In the final position in your PPP series

- Hit *End* key to move to final slide in PPP:
Presenting: Answering questions (1)

Work out possible questions beforehand

Have extra set of slides / use board, etc.
Presenting: Answering questions (2)

If necessary use board and available tools

(not only for answering questions !)

Good addition for some explanations or notes

- prepare it, before starting: pen, chalk, clean board, etc.?
- try to have a concept
  ⇒ it’s difficult to talk while writing
- don’t swap the slides too often -> confuses audience
- prepare (carefully)
  ⇒ can everybody read everything?
Make sure that you understand the question correctly.
If not:

- Ask for further clarification
  - Still don’t understand
    ⇒ ask chairman
    ⇒ s/he is responsible for a smooth overall course
- Repeat question if you think audience hasn’t heard it
- Be honest: Don’t avoid saying you don’t know the answer.
  Say:

  "I don’t have the answer to that,
  but could get it for you by tomorrow
  because further research is necessary"

(or similar)
Presenting: Visual aids (1)

Main points of what you are saying MUST APPEAR in abbreviated form on the screen

- No long, complete sentences
- Not too much on one slide:

Common mistakes:

- Visual aids are not confirming what the speaker is saying
- Don’t project general points on screen and talk about the detail
Visual Ads (2)

- Audience must be able to read the text and see the diagrams clearly
  - If you work on Excel graphs, don’t use it 1:1
- Uncluttered layout
  - don’t overdo background, colours, animation, etc.
- Proof-read for spelling
- Use presentation software intelligently
Don’t go extreme with animation functions
  Don’t go extreme with animation functions
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  Don’t go extreme with animation functions
Don’t go extreme with animation functions
  Don’t go extreme with animation functions
Don’t go extreme with animation functions
  Don’t go extreme with animation functions
Don’t go extreme with animation functions
Don’t overdo with clip arts:
Can you read this? 60pts
Can you read this? 40 pts
Can you read this? 32 pts (heading)
Can you read this? 28 pts
Can you read this? 24 pts (ppp)
Can you read this? 20 pts (tab)
Can you read this? 18 pts
Can you read this? 16 pts
Can you read this? 14 pts
Can you read this? 12 pts
Can you read this? 10 pts
Can you read this? 8 pts
What looks good on a monitor may be poor when projected with a beamer

e.g. Excel tables:
I ate a whole chicken, you nothing. According to statistics we both ate half of the chicken, so why are you hungry?

What is nice in a table might be strange in a diagram. A diagram:

- must be easy understandable
- needs a precise title / heading, units and values
  - don’t write exact amount, etc. (who wants to see 1,355768634569321)
  - abbreviate (January = Jan)
- should not have more than 7 columns
- should not have more than 4 lines
- should not have more than 6 circles, sorted clockwise + according to size
- should be sorted according to bar chart value
- should be explained / underlined by arrows, etc.

Nothing can lie better than statistics, and you can manipulate it...
Colors: be careful. Use simple, beamer/printer-aware colors. Test them!

**Red, red, red**
energy, control, danger, correction

**Blue, blue, blue, blue, blue**
distance, transparency, cold, noble, royal

**Green, green, green, green**
nature, security, confidence, young

**Pink, pink, lilac, lilac, lilac?**
female, soft, small

**Yellow, yellow, yellow, yellow**
optimism, gold, +black=danger, +blue=fresh

**Brown, brown, brown, brown**
distance, transparency, cold

**Orange, orange, orange**
active, energy, buddhism, dutch

**Grey, grey, grey, grey, grey, grey**
elegant, high-tech

**Purple, purple, purple**
extravagant, lesbian, +gold=luxury

**Brown, brown, brown**
unappealing, +green=beer,bitter
Presenting: Visual aids: Mistakes

- Leaving something on the screen long after you have finished talking about it
- Nothing on the screen while talking / explaining
- Overdoing striptease system
- Leaving the audience to navigate their way through a complicated figure
  - “You can see from angle alpha…”: BUT: Complex ray diagram
- Pointing on result etc. without naming it
  - “And this we found out.”: What if the audience writes something down and is not watching the screen in this moment?
- Looking too much at screen -> eye-contact
Referencing: Purpose

References relate your work to the body of existing knowledge

Give them:

- to show the work that has given rise to your work
- to justify – or contradict – something contentious
- to show gaps that exist in what is known
The other side

- speaker
- chairman
- audience
The chairman is in charge of controls

- objectiveness
- efficiency
- time
  - of speaker
  - of whole event
The other side: to be the chair(wo)man (2)

It is the job of the chairman:

- To stand in front at the beginning and at the questions’ session. Be competent / confident (no hands in pockets)
- To introduce the speaker, the topic / title (+ where s/he works, etc.)
- That the talk and questions session go smoothly
  - To ask questions him/herself (important if there are no questions)
  - To admit to the floor (one questions after the other)
- To clarify incomprehensible (even inaudible) questions
- To summarize (if necessary)
- To conclude the talk and thank the speaker and audience / continue with next speaker
The other side: ask questions

Always ask questions and give comments:
- To clarify what you did not understand
- To recommend something
- To add new / unknown / important material
- To give another viewpoint
- ...

If you don’t have questions at all, ask anyway about:
- Why is this work / research important
- How about costs / real time / etc.
- Future work / direction (if not stated before)
- ...

Feedback is important

- because it is like the applause for the actor on stage
- because you learn from your own mistakes
- always give feedback
- (unfortunately: no feedback culture)

‘Who plays up to me is my enemy,
who blames me is my teacher.’
The other side: feedback (2)

How to give feedback:

Start with the positive / good things (on the talk, etc.)
Move on to the things the presenter could have done better
  - Don’t say: This and that was very bad / idiotic / stupid
  - But: You could improve here...; it wasn’t too bad, but you could do better if...

Put your criticism in a positive way! Always praise, but make (necessary) improvements clear!
Presentation skills: Further reading

- Fraser, J.: How to Publish in Biomedicine; Oxon 1997
- Day, R.: How to write and publish a scientific paper; 1998
- Huth, E.: How to Write and Publish Papers in the Medical Science; 1990

- http://www.writing.eng.vt.edu/
Thank-you slide