How to Present a Paper in Theoretical Computer Science: A Speaker's Guide for Students

Ian Parberry

Department of Computer Science, University of North Texas, USA

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Presented by Kristian Torp

Introduction

- Often you need to present your own or others work
- Success in academia can be assisted by being a good speaker

Outline

Outline

Key Idea

Laying the foundation for giving a good talk!

- Focus on **the key idea** (ONE)!
- Skip what is standard or obvious (ask a colleague)
  - Naturally in the paper

Examples

- "We present an extension to JUnit that minimizes the effort in building test fixtures"
- "We present a graph-based model for generating realistic synthetic data. We discuss how the model is implemented. Finally, we look at a distributed version of the implementation."

Skip the Details

- Very important
  - To retain the attention of the audience
- Provide an overview of the key idea (and/or critical problems)
- At a conference the audience has not read your paper
- All details are in the paper ("go and read it")
  - Motivate the audience to read the paper

Examples

- Two optimized version of Intel assembler code plus number of CPU cycles to compute each
- Pseudo code okay (20 points font minimum)

Structure of Talk

- Split talk into distinct parts
- Make clear when a new part begins
- Guide the audience, make a transition statement

Examples

- Present the outline between parts
- Write the current part name in the header or footer of slide

Structure of a Talk

A general structure for a computer science talk

- Introduction (informal)
- Body (more formal, but abstract)
- Technicalities (details on the key parts of the paper)
- Conclusion (list key results and wrap up talk)

Introduction

First impression is important.

Sets the tone for the rest of the talk

- Audience ON or OFF

Content

- Define the problem (provide an intuition)
- Motivate the audience
  - Why is it a relevant problem?
  - Application of the key idea
  - Why is it non-trivial? (why did the paper get accepted?)
- Terminology
  - No Jargon
  - Avoid (too many) abbreviations
  - Example: test method, test case, and test suite

Introduction, cont.

Content (cont.)

- Related Work
  - Most recent (on conferences the previous years)
  - Most impact (seminal work in area)
  - Compare fair and directly
- Contribution of the paper
  - Why did the paper get accepted (elevator statement)
  - Must also be in the details in the paper
- Road map of talk
  - Short and specific

Body

The "meat" of your presentation.

Content

- Overview of major results
  - Example: major theorems, but not the proofs
  - Gradual introduction of technicalities
- Significance of results
  - Combine the introduction and the major results
  - Explain that the results can live up to what was stated in the introduction
- Sketch the proof of critical results

Technicalities

Most of the audience still follows your.

Experts may be bored.

Content

- Provide evidence that major results are correct
- Present a (one-and-only-one) key lemma
  - Important, non-trivial, and fast to present
  - Present lemma carefully (provide a structure)

Conclusion

Round off your talk nicely.

Content

- Clarity based on the three previous parts of the talk
- Open problems and future work
  - Good research always have many unanswered questions
- Indicate your are done
  - Example: Morten Olsen

Outline

Type of Audience

- Scientists: Introduction and body
  - Define the terms used in computer science
- Computer scientists: Introduction, body, and small part of technicalities
  - Be careful with the definitions
- Theoretical computer scientists: Introduction, body, technicalities, conclusion
- Experts: Body and technicalities

Advise

A well-prepared talk can go wrong!

- Use repetition
  - Introduction: "We will look at"
  - Body/technicalities: "Look at"
  - Conclusion: "We have looked at"
- Remind to not assume
  - "Standard" may not be the case, ask a colleague
  - Example: Test case, test fixture, set up and tear down
- Be on time
  - "quality of talk is almost always inversly proportional to the time that it over-runs." (page 7)
- Maintain eye contact
  - The session chair

Advise, cont.

- Control over voice and motion
  - Project energy without appearing hyperactive (page 7)
  - "Try not to remain rooted in one spot"
- Use plain English
  - Example: Pratice words you find hard to pronounce.
- Control nerves
  - All are nervous
  - Be well prepared
  - Go through the slides just before the talk
- Avoid speaking from a prepared text!

Outline

Advise

"Transparencies are an *adjunct* to your presentation"

- Know what hardware/software is available
- Right number of slides (1.5/2.0 minutes per slide)
- Right amount of text on slides (minimum 20 points font)
- Use colors efficiently
- Use figures and tables
- Beware of the microphone

Outline

Types of Questions

1. The genuine request for knowledge
   - What you will get at the exam!
2. The selfish question
   - Seldom
3. The malicious question

Two commonly used sentences.

- "I would like to continue our discussion off-line after the talk"
- "I don't know"
  - Example: split operator

Outline

Strong Points

- "Earlier version appeared in [2,3]" page 1.
- General structure of a talk plus variations depending on the audience.
- Uses general structure presented in Section 2 in remaining parts of the paper.
- Emphasis that introduction the most important (page 3).
- State the contribution made by your paper (page 3).
- Type of audience and where you can meet them.
- Many good and concrete practical suggestions
  - The microphone
  - Concrete suggestion on how to vary talk
  - How to prepare mentally for giving the talk

Weak Points

- Area theoretical computer science
- Use negation too much (state it positively instead)
  - "The author does not claim..." page 1
  - "Don't be afraid to be innovative." page 3
  - "Don't Over-run" page 7
- Parts of the paper is outdated
  - Overheads projectors replaced by beamers
  - From 1993 PowerPoint invented since
- Use a table to present related work page 3
- "All terms must be introduced early"
- "This contains the meat of your presentation" (page 3) jargon?
  - Uses French "sang froid", "de rigeur"
- Too few references
  - But it is not a technical paper
- Missing a conclusion/summary to wrap up the paper

Outline

Links

- Writing and Presenting Your Thesis or Dissertation
  - Various comments on writing and presenting a thesis
- How to Have a Bad Career in Research/Academia (PowerPoint)
  - by David Patterson
- Tips on Giving a Good Demo
  - On giving a demo of a software product
- How to Get a Paper Accepted at OOPSLA
  - Number of "big" names discuss how to publish in a very good conference
- How to Be a Good Graduate Student
  - More general
- Webster online
  - How to pronounce words

Thank you for your attention