

# Practical PhD Requirements

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## Front page of “Fundamental Concepts in Programming Languages”

Warning:

This document is nothing more than what it says.

The notes it contains will probably not be  
intelligible until after hearing the lectures.

They are only intended to remind, not to instruct.

– Christopher Strachey, August 1967

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# Plan

- PhD studies
- How to teach
- How to write a paper
- How to referee a paper
- How to present a paper (time allowing)

3

# Plan

- PhD studies
- How to teach
- How to write a paper
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A hands-on approach.

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# PhD studies: a transmogrification

From studying known things...

5

# PhD studies: a transmogrification

From studying known things...

...to researching new things.

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## Fact: You will change

Your first research paper will mobilize  
all your intellectual resources.

It will be exhausting.

Yet by the end of your PhD studies  
you will have all your papers in mind.

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plus your entire domain of research.

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all your intellectual resources.

It will be exhausting.

Yet by the end of your PhD studies  
you will have all your papers in mind,  
plus your entire domain of research.

And you will make it.

PhD studies: a genuine mind expansion.

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## About this mind expansion

An expanded mind  
is precisely what is expected  
from someone with a PhD degree.

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## Things are different doing research

- A researcher is more on his/her own than a student.
- New results are presented differently than known ones: the issue is
  - not to “show that you know” as in an exam;
  - but to genuinely explain something new.

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Question: Where do ideas come from?

Answer: Partly from

where you are here and now.

So: Welcome and enjoy the challenging ride.

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## Think globally

Of course we are “not too bad here in Aarhus”  
but still:

- Every year, the U. of Edinburgh recruits  
50 new PhD students in CS/IT  
(i.e., more than in the whole of Denmark).
- Remember globalization.  
(cf. “The world is flat” by Thomas Friedman)

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## Act locally

Think positive:

Any good thing happening to anyone here  
is good for our environment  
and therefore also good for you.

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# What can you do for your environment?

Answer: Everything you can.

(Think of it as your ecology.)

So: publish your papers in the BRICS research series, notify our internal news of your publications and presentations outside, give first your talks at DAIMI before giving them outside, suggest speakers to be invited, etc.

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## Plan

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# Teaching

Or more precisely: TA'ing.

Challenge:

teaching **driving / flying / parachuting / etc.**  
is not as compelling as  
teaching **CS / IT.**

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## Common modern attitude to education

- “Freedom is to say no.”
- “It is only work if you have to do it.”  
– Calvin
- Fragmented knowledge  
and the ‘fire and forget’ syndrome.

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## Common modern attitude to education

- “Freedom is to say no.”
- “It is only work if you have to do it.”  
– Calvin
- Fragmented knowledge  
and the ‘fire and forget’ syndrome.

One cannot teach on an empty stomach  
but teaching on a full stomach is difficult too.

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## Converse attitude

- “Before giving every lecture,  
I remind myself that in all likelihood  
I am not the smartest person in the room.”  
– Jørgen Stegelmann  
(interview on Danmarks Radio)
- “You can learn all the math in the ‘verse,  
but take a boat in the air that you don’t love,  
she’ll shake you off  
just as sure as the turn of the worlds.”  
– Captain Malcom Reynolds (Serenity)

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## What is “good teaching”?

- Once upon a time in a BRICS retreat...
- Richard Feynman
- MPT at DAIMI

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## TA'ing

- Concur with the teacher (Saint Exupéry).
- Check whether the material is understood.
- Pedagogy: Aristotle.
- To teach is to repeat.  
 (“Enseigner c’est répéter.”)

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## Practical tips

- Outline a plan on the blackboard.
- Have plans B.
- Keep track of the students.

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## From teaching to researching

Research: often, not so much  
a look at new things  
than a new look at things.

- Susbcribing to a new newspaper in Bloomington, Indiana.
- Dubya's medical.
- Kristian Støvring and the RTA list.

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## A new look at things in Tintin

Allan Thomson to Captain Haddock:

“Do you sleep with your beard below  
or above the sheet?”

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## Psychological vs. ethical issues

Before the question: no deliberate choice.  
(Psychological: [involuntary](#).)

After the question: a deliberate choice.  
(Ethical: [voluntary](#).)

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The overall point of this talk  
(and of the BRICS retreats)

To go from a **psychological** state  
to an **ethical** state  
by raising our awareness.

“Tell them what you know.”

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## Plan

- PhD studies ✓
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# Writing

Goal of PhD studies:  
writing a PhD dissertation.

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## The bottom-up approach

Writing and publishing scientific papers.

30

A paper: the prime medium  
for reporting scientific results.

In computer science: the conjunction of

- something **conceptual** (and preferably **new**),
- something **sound**, and
- something **practical**

that is **relevant today** (read: IT).

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## Proportion

What is the ideal ratio  
between form and content?

Example: the Japanese 5th-generation project.

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## What is the form here?

- Written English.
- Presentational skills.

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## Written English

Do everything to improve your English skills:

- for yourself,
- for your colleagues,
- for your advisor,
- for your reviewers, and
- for your listeners or readers.

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## Every day

Make a deliberate effort  
at improving your English skills.

For example: no dubbing when watching a DVD;  
and if you wish to use subtitles,  
they should be in English.

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## Sources

- “The Elements of Style” by Strunk and White
- “On Cooper’s Prose” by Twain
- “Towards Clarity and Grace” by Williams
- “Lessons from a Lifetime of Writing” by Morrel
- etc.

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# Presentational skills

The rest of this talk.

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Incidentally, why publishing?

To be useful.

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## A side effect of publishing

Somehow, one becomes known.

- “You were Charles Consel’s student!”
- Zhe Yang
- Kristian Støvring (here)  
and Hugo Herbelin (at INRIA-Rocquencourt).

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## Sub-plan

1. The variety of papers.
2. Reading a paper.
3. Refereeing a paper and receiving a review.
4. Writing a paper.

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## The variety of papers

- Unpublished draft.
- White paper.
- Tech report.
- Workshop paper.
- Conference/symposium paper.
- Journal paper.
- Also: submitted / revised / final / extended.

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## The draft

Definition: the first shape assumed by a paper.

Use: for the author and  
for his immediate collaborators.

Quality control: the author(s).

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## A white paper

Definition: a complete draft on one's web page  
or a research proposal.

Use: advertising.

Quality control: the author(s).

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## The tech report

Definition: a draft readable by others.

Use: either as a time stamp  
(new draft with a new result),  
or for the record  
(old draft with lots of detail).

Quality control: maybe a few colleagues & students.

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## The workshop paper

Definition: a record to document a talk.

Use: communication among specialists.

Quality control: the program committee (if any).

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## The conference/symposium paper

Definition: a record documenting a talk.

Use: communication in a larger community.

Quality control: the program committee.

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## The journal paper

Definition: the author's final word  
on a particular topic.

Use: archival purposes.

Quality control: the journal reviewers.

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## The tech report (revisited)

Definition: extended version of a conference /  
journal paper.

Use: typically includes all the proofs  
(and bypasses the copyright restrictions...).

Quality control: the reviewers.

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## The draft (revisited)

Definition: an unpublished paper.

Use: like wine, a draft may improve with age.

Quality control: unspecified.

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## Plan

1. The variety of papers. ✓
2. Reading a paper.
3. Refereeing a paper and receiving a review.
4. Writing a paper.

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## Reading a paper

- Information acquisition and retrieval.
- Critical reading.

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## Information acquisition

In principle, a paper provides enough information for its reader to reproduce its contents:

- proof,
- experiment.

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# Information acquisition

Exercise: Think of the corresponding criterion  
for an overview / survey paper.

53

# Trust in the paper

Directly proportional to

- its advanced state: journal versions are more trustworthy than conference versions;
- its forum.

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## Information retrieval

It is a good idea to keep reading notes (minimally as annotations in one's bibfile).

NB. It is a bad sign never to re-read anything.

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## Critical reading

The three stages of reading (as one grows up):

1. the books say blah and thus it is true;
2. this book says blah;
3. the author wrote blah.

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# Examples

1. “Introduction to Data Bases”
2. “Advances in Data Bases”
3. “A new technique for query processing in object-oriented data bases”

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## More examples...

- “The  $\lambda$ -calculus with applications”
- “A  $\lambda$ -calculus for nameless dummies”  
(foreword by N. de Bruijn)
- etc.

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## Back on track

Here: paper, not book.

But one's critical sense should still apply.

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## On reading critically

Don't swallow the author's propaganda,  
accepting the paper as the author constructed it:

- disassemble it to identify its real thrust;
- appreciate;
- probe / question / stress;
- (if needed) reassemble: minimize / expand.

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# A concrete example

AT&T's "1-800-OPERATOR"

VS.

MCI's "1-800-OPERATER"

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## Scientific reading (ended)

In principle, a paper provides enough information for its reader to reproduce its contents:

- proof,
- experiment.

But does it?

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## What if

- What if you don't understand something in a paper?
- What if you think you found a bug in a paper?

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## Recommendation:

1. Consult people locally.
2. Send a very polite e-mail to the author (keeping in mind that you may well be wrong yourself).

Prudence: You don't just represent yourself.

You represent **your adviser** and **your institution**.

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# The issue of one-upmanship

Standing on the shoulders of giants

vs.

standing on each other's feet.

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## Plan

1. The variety of papers. ✓
2. Reading a paper. ✓
3. Refereeing a paper and receiving a review.
4. Writing a paper.

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# Refereeing a paper

What: the cornerstone of quality control.

How: peer review.

Reference: Parberry's guide for new referees.

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# The actors in presence

- The author(s).
- The editor / program chairman.
- The reviewers.

68

## The point of refereeing a paper

Quality control by peer review.

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## The timeline for conferences

- A paper is submitted.
- It is allocated to PC members and often subcontracted to external reviewers.
- Reviews are collected.
- A decision is taken at the PC meeting.
- Reviews are sent to the author(s).

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## The timeline for journals

- A paper is submitted.
- It is allocated to external reviewers.
- Reviews are collected.
- An editorial decision is taken:  
accept / reject / revise.
- Reviews are sent to the author(s).

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## Conferences: one-way communication

- Would the paper help making the conference a success?
- If not accepted, try another conference.

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## Journal: two-way communication

- Is the paper in archival form?
- If not, revise it and try again.

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## The point of view of the author

The idea is to try to give all the information

**to help others to judge your contribution;**

not just

**the information that leads to judging it**

**in one particular direction or another.**

– Richard Feynman

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## The point of view of the reviewer

One never notices **what has been done**;  
one can only see **what remains to be done**.

– Marie Curie

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## Writing a review

Canonical reference: Parberry.

- Is it correct, worthwhile, readable, etc.?
- Which kind of paper is this:  
groundbreaking, improving, fixing,  
surveying, etc.?

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## The curse of novelty (flip side)

It's got to be new!  
It's got to be relevant!

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## The curse of novelty (flop side)

...but it's not new!

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# The curse of relevance

“In the late cretaceous”

Connie Willis

A must-read.

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## Some elements for a review

1. Convey your understanding of the paper with a summary.
2. Double up with an analysis.
3. Sum up with an assessment and a recommendation.
4. Add a list of remarks, if any.

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## Context of the review

- Be objective.
- Be fair.
- Don't delay.
- Be courteous.
- Remain confidential.

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## To summarize

- Reviews should be as comprehensive as possible.
- Reviews should be as courteous as possible.
- Reviews should be as selfless as possible.

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## The job of a program chairman

Assemble the best possible program  
(at the cost of rejecting good papers).

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## The job of a journal editor

Make the journal as good as possible.

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## The job of an author

To cooperate with the reviewing process.

85

## The job of a reviewer

To provide impulse in the reviewing process.

86

## Choosing reviewers

- Competence.
- Availability.
- Depth / breadth.

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## You, reviewer

- One among several others.
- Your anonymity.

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## Extracting reviews from reviewers

- It may take persistence.
- The more competent, the more busy.

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## Synthesizing the reviews

- Accept / revise / reject.
- Editors sometime moderate the reviewers, by coming back at them.
- Get back to the author(s).

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## Receiving a review

- Rod Burstall's take: a review is an offering.
- The Dilbert syndrome.

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## Receiving reviews

From my close observation of writers, they fall into two groups:

1. those who bleed copiously and **visibly** at any bad review, and
2. those who bleed copiously and **secretly** at any bad review.

– Isaac Asimov

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# Facts

Nobody likes a bad review.

Most reviews are critical.

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## Take a holistic approach

- Distinguish between your work and your ego.
- Identify the cause of the criticisms and fix it.
- Rearrange the rest of the paper to fit.
- Persist: “If you don’t fight for your ideas, nobody will.” – John Reynolds

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## Take a holistic approach

- Distinguish between your work and your ego.
- Identify the cause of the criticisms and fix it.
- Rearrange the rest of the paper to fit.
- Persist: “If you don’t fight for your ideas, nobody will.” – John Reynolds  
(Corollary: “and will take credit for it.”)

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## Together with the revision

- Comment the reviews pointwise:  
The reviewers will appreciate to see each of their points addressed upfront.
- Thank the reviewers for their time:  
They are actually your best allies.

96

## Sending the revision

- Expect an acknowledgment.
- Be prepared to be moderated.
- Think of pinging the editor after 3 months.

97

## Choose your editor wisely

- Rare are papers that don't need any help.
- An indifferent editor is rarely of help.

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## Reviews and the paranormal

Feynman's advice about the paranormal:  
keep track of pressentiments,  
for you only remember them selectively.

Here: keep track of both good and bad reviews,  
for you also only remember them selectively.

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## Good reviewing experiments

- The submission is speedily reviewed.
- It is accepted (with minor changes).

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## Good reviewing experiments

- The submission is speedily reviewed.
- It needs to be revised, but with very useful reviews.
- It is accepted.

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## Not so good experiments

- The submission needs a lot of pinging.
- The reviews are lousy.
- You give up.

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## Not so good experiments

- The submission needs a lot of pinging.
- The reviews are lousy.
- You persist.
- The revision needs a lot of pinging.
- etc.

103

## Yet reviews can be useful

Some reviewers are amazingly good,  
and they lead you to a better paper.

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## Why you should review

You expect reviews on your own work,  
don't you?

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## All in all

- Peer reviews: The means for quality control.
- We should all contribute to this quality control.
- We all try to survive it.

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# Plan

1. The variety of papers. ✓
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# Writing a paper

A paper is written for others to read:

- reviewers,
- yourself in the future, and
- people you don't know yet.

(Example: Zhe Yang.)

It should thus reflect  
all the concerns just mentioned:  
readability, clarity, etc.

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## On clarity of thought

Question: What's E.T. short for?

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## On clarity of thought

Question: What's E.T. short for?

Answer: 'cause it's got such little legs!

110

## On clarity of thought

Question: What's E.T. short for?

Answer: 'cause it's got such little legs!

Form matters.

Poor form hints at muddled thinking.

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## Slight digression

Why IT is more fun than CS  
(maybe)

112

## The thesis

IT is more fun than CS  
because one does such cooler things.  
(esp. if one is a fan of Star Trek)

113

## On the other hand

Mindlessness is still lethal.  
In fact, it is even easier to fall for it.

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# Case in point

Pervasive 2005

<http://www.pervasive.ifi.lmu.de/program.html>

Session 2: Activity and Context

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## The session (1/4)

Bathroom Activity Monitoring Based on Sound

Jianfeng Chen, Alvin Harvey Kam,  
Jianmin Zhang, Ning Liu, Louis Shue  
Institute for Infocomm Research, Singapore

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## The session (2/4)

Simultaneous Tracking and Activity Recognition  
(STAR)

Using Many Anonymous Binary Sensors

Daniel Wilson

Carnegie Mellon University, USA

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## The session (3/4)

Enhancing Semantic Spaces  
with Event-driven Context Interpretation

Joo Geok Tan, Daqing Zhang,

Xiaohang Wang, Heng Seng Cheng

Institute for Infocomm Research & School of

Computing/National University of

Singapore(NUS), Singapore

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## The session (4/4)

The Java Context Awareness Framework (JCAF)  
A Service Infrastructure  
and Programming Framework  
for Context-Aware Applications

Jakob Bardram  
University of Aarhus, Denmark

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The abstract, minus the last sentence

In this paper an automated bathroom activity monitoring system based on acoustics is described.

120

The abstract, minus the last sentence

In this paper an automated bathroom activity monitoring system based on acoustics is described. The system is designed to recognize and classify major activities occurring within a bathroom based on sound.

The abstract, minus the last sentence

In this paper an automated bathroom activity monitoring system based on acoustics is described. The system is designed to recognize and classify major activities occurring within a bathroom based on sound. Carefully designed HMM parameters using MFCC features are used for accurate and robust bathroom sound event classification.

## Abstract, minus last sentence (contd)

Experiments to validate the utility of the system were performed firstly in a constrained setting as a proof-of-concept and later in an actual trial involving real people using their bathroom in the normal course of their daily lives.

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## Abstract, minus last sentence (contd)

Experiments to validate the utility of the system were performed firstly in a constrained setting as a proof-of-concept and later in an actual trial involving real people using their bathroom in the normal course of their daily lives. Preliminary results are encouraging with the accuracy rate for most sound categories being above 84 percent.

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You know what?

I am speechless.

(“Hello happy proofreaders.”)

125

The last sentence of the abstract

We sincerely believe that the system contributes towards increased understanding of personal hygiene behavioral problems that significantly affect both informal care-giving and clinical care of dementia patients.

126

## The last sentence of the abstract

We sincerely believe that the system contributes towards increased understanding of personal hygiene behavioral problems that significantly affect both informal care-giving and clinical care of dementia patients.

This last sentence changes everything!  
(And I am no longer speechless.)

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## The reality

- A sub-optimally phrased title, and
- a sub-optimally written abstract.

Yet a potentially important work!

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## The reality

- A sub-optimally phrased title, and
- a sub-optimally written abstract.

Yet a potentially important work!

It is difficult to write a paper.

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## The story behind the paper

Courtesy of Jakob Bardram.

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# The story behind the paper

Courtesy of Jakob Bardram.

...back to business.

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## Organization

- Title / list of authors / abstract.
- Introduction / compelling example / related work / overview.
- Development.
- Conclusion (if any).
- Acknowledgments / references.

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## The title

- It should be informative.
- It should be concise.
- It should be catchy / memorable.
- It needs to be original.
- It does not need to be funny.

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## On the temptation of being funny

The messenger can hide the message.

Circus analogy: Do you want to be remembered

- as the clown (form), or
- as the trapeze artist (contents / achievement).

Besides, most funny titles do not convey concrete messages: they tend to be puns or insiders's jokes.

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## On the temptation of being sophisticated – or not

- “The eductive interpreter.”
- “Fuzzy maths”

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## The list of authors (1/2)

- Alphabetically ordered;
- ordered by “degrees of contribution”;
- student first, adviser second;
- etc.

Key: the message should be more important  
than [the order of] the messenger[s].

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## The list of authors (2/2)

Why don't you write a single-authored paper?

(Hey. A challenge. Could you do it?)

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## The abstract

- It should be brief.
- It should be as informative as possible.
- It should be updated last  
(to account for the contents of the paper).

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## The abstract (continued)

Fact:

Many more people will read your abstract  
than your paper  
(e.g., in a bibliographic data base).

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## Titles, abstracts, data bases, and search engines

Abstracts: the key to locate papers on the web.

Abstracts are stored textually, so they should  
NOT contain formulae, special symbols, or  
bibrefs. (Ditto for titles.)

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## A reminder

An abstract is not an ad:  
there is no need to repeat  
the name of your product.

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## The introduction should

- start with a bang;
- stop with an overview of the rest of the paper;
- mention the prerequisites of the paper; and
- clearly state the achievement of the paper.

A compelling example is always good,  
especially in a submission.

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## Starting with a bang

- “It was a dark and stormy night.”
- “The house had a slight German accent.”
- “He awoke—and wanted Mars.”
- “Whatever your gravity is when you get to the door, remember—the enemy’s gate is *down*.”

See also dissertation-opening sentences.

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## Eye catchers

- First words.
- Last words (of paragraph / section / chapter / thesis).
- Capitalization (in an abstract).

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## Pitfalls

- Exaggerating.
- Seeking effect for seeking effect:  
“This paper bridges a much needed gap.”  
(quoted by Neil Jones)
- Practicing Cooper’s prose (cf. Mark Twain).
- Misspelling (always use a spell checker!).

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## Standing on the shoulders of giants

Disparaging earlier work invites the reader to disparage your own work.

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Positivise – for example:

- the goal is blah, and it would be great to reach it;
- what has been done so far is remarkable, but it does not quite reach the goal;
- in this paper, we take one step further towards the goal.

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## Development

- Organized in sections.
- Should be progressive.
- Should be as complete as possible.
- Should be as concise and precise as possible.

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## Related work

- Mandatory.
- Situates the novelty and significance of your work.
- Where: either part of introduction, or part of conclusion, or stand-alone section (second or second to last).

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## Related work

Pitfalls: forgetting or mispresenting someone else's work.

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## Bibliographical references

Bibrefs should be used parenthetically, so that they do not interrupt one's reading.

Example: "...as seen in [2]." is awful, and so is  
"[KAZAM97] shows that..."

Better: "...as introduced by Church in his monograph on the  $\lambda$ -calculus [2]."

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## The conclusion

None in the mathematical tradition.

Minimally:

- recapitulates the problem and the contribution;
- assesses the significance of the contribution;
- suggests / outlines future work.

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## The pitfalls of one's future work

- Often presumptuous:  
“Writing a “future work” section of a paper is like a dog pissing on the trees at the boundary of its territory.” (John McCarthy, 1991)
- Often reveals the limits of the author's understanding.

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## The acknowledgments

- Minimally, there should be thanks to the anonymous reviewers.
- Rota's 8th lesson: your proof-readers will appreciate being mentioned.

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## The references

They **must** be impeccable:

- accurate (correct year, etc.);
- complete (page numbers, etc.).

Standard pitfall: misspellings in titles.

That was the form.  
Now for the content.

## Tips for writing a research paper

- In general, the contents should precede the paper. (But often, spelling things out in the paper tends to clarify its contents.)
- Top-down approach: goal and significance first.
- Bottom-up approach: results first.

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A rule of thumb:  
put in your paper what you (would) like to find  
in other's papers.

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## As time goes by

It sounds silly, but...

- remember to date your manuscripts, and
- remember to update your bibrefs (“This paper is superseded by ...”).

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## Proof-reading a paper

Form vs. content.

- Form:
  - what the reader sees  
(or doesn't, cf. “The Da Vinci Code”);
  - translated work.
- Content: what the writer sees.

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## A subjective perception of one's writing style

- One tends to like one's writing style.  
(Example: Harry Mairson's uncle.)
- One is blind to one's flaws.

161

## Proof-reading each other

- What: an investment.
- How: with consideration.
- Be prepared to be misunderstood.  
(Example: Claus Brabrand's movie.)

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## A key resource

“How to have your abstract rejected”

Mary-Claire van Leunen and Richard Lipton

on par with Norman Ramsey’s

“Maxims for Malfeasant Speakers”

163

## Conferences

Watch out for the theme of the conference.

Watch out for the program committee.

Watch out for what needs to be submitted:

- an extended abstract;
- a full version.

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## Classification (Parberry)

- Breakthrough.
- Ground breaking.
- Progress.
- Tinkering.
- Debugging.
- Survey.

Help the reviewer to make up his mind.

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## Methodological pitfall

Avoid core dumps.

- The paper should be focused on what it achieves.
- Tangents should be eliminated.

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## Motivational pitfalls

Ambitious: “Let’s write a paper for LICS.”

Opportunistic: “I’ve got to beef up my CV.”

Jealous: “I want more papers than X.”

Competitive: “I want to show that X’s papers are insignificant.”

Meteorological (esp. in Denmark): “Hmmm...  
Hawaii...”

167

## Beyond publishing

Hirsch’s index.

168

# Plan

1. The variety of papers. ✓
2. Reading a paper. ✓
3. Refereeing a paper and receiving a review. ✓
4. Writing a paper. ✓
5. Presenting a paper.

169

# The point

You have to give a talk:

- scientific (seminar, retreat, or conference);
- interview (post-doc, job);
- other (oral exam / PhD defense, teaching, administrative meeting, lunch / dinner).

170

## Commonalities

You are the speaker.

You have an audience

You want to transmit an information.

You use a medium:

- your voice;
- your body language;
- a black/white/active board;
- slides (possibly computerized).

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## Specifics

The information is **new** to the audience:

- scientific talk;
- teaching;
- administrative meeting.

The information is **known** to the audience:

- oral exam.

172

## Information and meta-information

Interview talk: you want to express that

- you are well-rounded, and
- you have potential.

173

## Why giving a good talk?

- To do justice to your topic.
- To not waste your audience's brain cycles.

174

## Before the talk: what to say

Assumption: you have a message.

- A thesis.
- A refutation.
- A theorem or a corollary.
- An idea.
- A report (implementation, benchmarks).
- A tutorial.

175

## The content of the talk

- Think backwards: what do you want people to remember from your talk?
- Don't say everything.
- Simplify.

Rumour: people can only remember 5 new things from a talk.

176

## Rules of thumb

Of course rules are made to be broken,  
but still: be aware of

- which message you want to send, and
- what you want your audience to remember.

Make at least one point comprehensively.

177

## Before the talk: how to say it

Use all the help you can round up, e.g., slides.

Alternatives include:

- passive demo (film);
- interactive demo (always risky).

178

## What is the point of a slide?

It supports and guides your talk.

Try to cooperate with your slides!

179

## Writing slides

Non-goal: don't start editing or writing the slides upfront.

Danger:

- atomic and linear view;
- irrelevant formatting concerns.

180

## Active goal: the comic strip

Assemble your future slides on a hand-drawn comic strip:

- it gives an overview (1 to 2 pages);
- you can't write too much on each slide.

Question: how many slides per minute?

181

## Active means: the plan

Planning is not like playing Lego. It reflects your understanding, and thus it evolves with time.

You should not plan your talk in the same **chronological** order as you carried out your research.

182

You probably chose a **logical** plan for the paper; choose a **pedagogical** plan for the presentation (i.e., one adapted to the audience, the duration of the talk, etc.).

183

## Before the talk

Try to immerse yourself  
in what you are going to say  
(e.g., by giving the talk to yourself).

184

## Final preparation step

Contact the session chairperson.

Agree about

- the length of the talk, and
- the signals (5', 1', stop).

185

## Right before the talk

Do:

- Be comfortably dressed.
- Breathe deeply.

Don't:

- Drink a carbonated beverage.

186

## During the talk

Plan:

- You (the speaker).
- Handling the slides.
- What can go wrong.

187

## Conducting the talk

- Straighten up.
- Face the audience.
- Smile. Express that you are happy to be here.
- Dare to speak slowly and loudly.

Accept that in the end, by giving a talk,  
you express who you are.

188

## How to say it

- Speak slowly and loudly.
- Speak for the others (not for yourself).
- Don't force your voice:
  - lower for males (to inspire confidence);
  - higher for females (to inspire mercy).

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## How to say it (ended)

- Be balanced: don't let your tone
  - fall down (it sounds sad and depressed);
  - jump up (nobody is strangling you).

Don't be afraid: you are one among many other speakers, and nobody is going to eat you.

190

## A historical precedent

July 1909:

Louis Blériot crosses the English channel  
by plane.

191

## A historical precedent

July 1909:

Louis Blériot crosses the English channel  
by plane.

“No, I wasn’t worrying about the waves below.  
I was watching my engine.”

192

## Conducting the talk: the opening

Very first thing: put the front slide.

Second thing: get installed (microphone, etc.).

Third thing: try your voice (see next slide).

Fourth thing: start the talk proper (e.g., with a slide entitled “Introduction” or better “Motivation”).

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## Trying your voice

At a conference:

- avoid “Can everybody hear me?”;
- “This is joint work with XXX.” is good;
- “This work was carried out at BRICS.” is excellent. 😊

194

At a seminar:

- thank your host;
- if you are happy to be here, say so.

195

## Starting the talk

- What are your credentials?
- Captatio benevolentiae.
- Common points with your audience.

196

## The talk proper

Use a roadmap (an annotated plan of the talk).

Be intelligible.

Be articulate. If appropriate, remember to say:

- “There is more detail in the paper.”
- “Copies of the slides are available at the exit.”
- “Are there any questions?”

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## Specifics: giving a talk at a conference

Setting: short and limited time (20-25mn).

- You want people to read your paper.
- For those who have read your paper you want them to appreciate one specific thing.
- If your paper has several points, you can only make one of them.

198

## Specifics: giving a talk at a seminar

Setting: longer but limited time (45-60mn).

- Warning: your ASSUMPTIONS, not your contribution, can be questioned.
- The risk increases:
  - for an interview talk; and
  - at top places (MIT, CMU, Bell Labs).

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## Giving a talk at a seminar (ended)

- Recommendations:
  - be well-prepared,
  - be very clear about your goal, and
  - don't hesitate to say "this is not the point", or even "just give me a chance" (and then grab it).

200

## Giving a talk at a seminar + discussion

Setting: 45-60mn, followed by 1 or 2 hours of discussion.

Examples:

- ENS Paris (Patrick Cousot);
- Northeastern University (Mitchell Wand).

201

Recommendations:

- be very well prepared, and
- be ready both to have fun and to learn new things.

202

## Conducting the talk: the ending

- Announce the ending (e.g., with a slide entitled “Conclusion”).
- Summarize the background (and thus the significance of your work).
- Summarize the achievements (especially at your PhD defense).
- Open perspectives (future work).

203

## Conducting the talk: the ending (ended)

And

- either say “thank you; are there any questions?”,
- or say “thank you” and let the chairperson take over.

204

## Message vs. messenger

What is the finality of your talk:

- that the message went through? or
- that it was you who delivered it?

205

## Don't

overestimate your audience:

you probably have spent more time thinking about your problem than most people here;

underestimate your audience:

there is always the risk that a world specialist is here.

206

## Don't

underestimate yourself: you come from BRICS  
and you are well-prepared;

overestimate yourself: prepare your talk well.

207

## Beware of

starting the talk by cracking a joke:  
it is distracting.

(On the other hand, a humorous sentence can  
wake up the audience or focus it on what you  
want to say.)

208

## Try to avoid (1/3)

Long visual pauses (especially on a blank screen).

Ripping the glued paper off the slides (do it beforehand).

Slides displayed too quickly.

209

## Try to avoid (2/3)

Correcting slides on the fly.

Making self-comments.

Putting your hand on your mouth while speaking (even if it feels so good).

Hum, ah, er..., mmmmhh, etc.

210

## Try to avoid (3/3)

Overdoing anything:

- colors,
- fonts,
- background,
- animations,
- etc.

211

## Running out of slides

This is not a disaster. Short talks are appreciated.

What to do:

- conclude unhurriedly and summarize the main point of the talk (don't repeat the talk, though);
- say “thank you; are there any questions?”.

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What not to do:

- make a personal comment (“hum, I am running out of time again” or some such; it looks bad).

213

## Running out of time

Golden rule: you should conclude properly.

What to do:

- finish your current point as quickly as possible;
- say “for the rest, you should read the paper; let me jump to the conclusion”; and
- put on the conclusion slide and conclude properly.

214

## Right after the talk

Plan:

- Handling questions.
- And if there are no questions?

215

## Handling questions

The golden rule still applies: *ALWAYS* repeat the question — it gives you time to identify its nature.

- Technical question: give a technical answer.
- Friendly question: use it to make your point even better.
- Challenging question: be upfront.

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## Example question #1

**Q.** Wouldn't it have been simpler to use co-induction?

**A, Version 1:** The question is: "Wouldn't it have been simpler to use co-induction?"

That's a very good point. No. I tried, and it is actually simpler to use induction.

217

**A, Version 2:** The question is: "Wouldn't it have been simpler to use co-induction?"

That's a very good point. Perhaps. That's worth looking into.

218

## Example question #2

**Q.** Wasn't this known already?

**A.** The question is: "Wasn't this known already?"

To the best of my knowledge, no, it was not known already.

219

## Example question #3

**Q.** Isn't your main theorem a corollary of Erdős's theorem?

**A.** The question is: "Isn't my main theorem a corollary of Erdős's theorem?"

Good question. Which theorem do you have in mind?

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## Example question #4

**Q.** Isn't this a particular case of Linear Logic?

**A.** The question is: "Isn't this a particular case of Linear Logic?"

That's a very good question. Which part do you have in mind: the part about having no contraction and no weakening, or the part about being resource-conscious?



## Example question #5

**Q.** Blah blah blah. Blah blah. Blah blah blah blah blah. Blah blah blah blah blah blah blah blah blah. Blah blah blah blah blah?

**A.** The question I believe is "Blah blah?"

...(and then for an appropriate answer)...

## Example question #6

**Q.** I don't like your approach at all.  
(Blah blah blah.)

**A.** I am sorry. What was your question?

223

## Example question #7

**Q.** More than a question,  
I want to make a comment. Blah blah blah.

**A.** Thank you very much.

224

## Do

Make sure that  
all the terms of the question are defined.

When you speak, be careful with idioms  
when you are not a native speaker.

225

## Don't

Don't use slang, especially if English is not your  
native language: it means something else than  
what you think it means (cf. "Inconceivable!").

If the question is "What is X?",  
don't say: "X, it's when ..."  
It reveals muddled thinking.

At an oral exam, don't say  
"I knew you would ask this question."

226

## Example question #8

**Prof. Lebowski:** What is your contribution exactly?

**Ans. (not):** (see next slide)

227

I ran the benchmark exactly as per – look, man, I’ve got certain information, all right? Certain things have come to light, and – y’know, has it ever occurred to you, that, instead of, uh, y’know, running around, uh, uh, blaming me, y’know, given the nature of all this new thing, y’know, i-i-i-i-this could be a-a-a-a lot more, uh, uh, uh, uh, uh, complex, I mean, it’s not just, it might not be just such a simple... uh, y’know?

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## And if there are no questions?

- If you have a computer demo, now is a good point to remind the audience of it.
- Say “thank you” again, and pack up your slides.
- (seen at TLCA’01)  
“Good! Let me show you a couple more slides, then.”

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## On honest answers

Example: Hari Seldon’s question  
after a scientific talk.

230

## On honest answers

Example: Hari Seldon's question  
after a scientific talk.

And incidentally, about, e.g., plagiarism,  
remember that **one's virtue is only put  
to the test when one encounters temptation.**

231

## After the talk

Plan:

- At the session break.
- At the next meal.
- After hours.
- After the conference.

232

## At the session break

Make yourself visible,  
and be ready for more questions.

233

## At the next meal

Don't make lunch or dinner plans.

Be available for discussions.

234

## After hours

Be available for discussions.

235

## After the conference

Promptly acknowledge good receipt of any e-mail.

Always check with your co-authors before answering in earnest.

236

## Receiving a talk

Be prepared:

- Read the proceedings the evening before.
- Go and talk shop with the authors: they came here for that.

237

## Tips for graduate students at a conference

Don't hope too much to find someone important who will listen to you.

But professors love to talk, so go ahead and ask them about their research. (Theorem: even if they are busy, professors will tell you about their research.)

238

## Corollary:

A tip for Indian students  
applying to internships

Personalize your application letters!

239

## Sanity check

Keep notes about

- who is who,
- who you talked to,
- what you said, and
- what you were told.

240

## As a session chairperson

Meet all the speakers prior to your session.

Agree with them about the signals (5', 1', stop).

Make sure the speaker sees your signals (in the worst case, get up and walk to the side of the screen).

Act as a moderator for the questions.

Be kind and have a question ready in case there are no questions, especially if the speaker is young.

Keep your session on time, esp. if there are parallel tracks.

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## Conclusion

Again, these are just guidelines:

suit them to your needs.

In any case, do what I said, not what I did here:

- do write a comic strip before your talk;
- do remember to breathe during your talk; and
- do repeat each question after your talk.

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