How to Give a Good Research Talk

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Why Are We Here?

- For your work to have significant impact, it is essential that you can convey results to your community

- Your technical reputation depends on colleagues' reaction to your talk

- Remember, when on the job market this skill will be crucial in getting a research position in academics or industry

- Giving a good talk is a skill you can learn

- I will give you guidance and tips on giving a good talk

Goals of a Talk

- Meta-Goal:

  - keep audiences' interest (and attention)
  - convey technical material
  - communicate a key idea of work
  - provide intuition
  - convince audience to read your paper

- Non-Goals:

  - show people how smart you are
  - expect audience to understand most key details of your work

Outline

- Goals of a Talk

- Planning Stages

- Structuring Your Talk

- Transparency Preparation
  - The Do's
  - The Don'ts

- At the Talk
  - The Do's
  - The Don'ts

- Concluding Remarks

Planning Stages

- Know your audience:

  - What is their background?
    - general CS (or EE)
    - somewhat specialized audience
    - highly specialized audience

- If someone has spoken before you:

  - Look at paper/abstract of relevant talks that proceeded yours
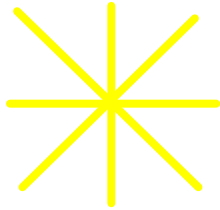 - Prepare to use context provided

Scheduling (if you can)

- If possible schedule your talk at 11:00
  - most people are awake
  - few have gone back to sleep
- Bad times to schedule talk:
  - after lunch since the audience is more likely to be sleepy
  - late afternoon since people will be running out of steam
- Best to have room that will be comfortably crowded

Structuring Your Talk

Use a top-down approach:

1. Introduction (define problem, present a "carrot", and put in context) + outline

2. Body (high level summary of key results)

3. Technicalities (more depth into a key result)

4. Conclusion (review key results and wrap up) + future work

The Introduction

- Define the Problem
  - minimize use of terminology
  - use pictures/examples/props if possible
- Motivate the audience (give a "carrot")
  - Why is problem important?
  - How does it fit into larger picture?
  - What are applications?
- Discuss related work
  - table useful (mention authors and dates)
- *Succinctly state contributions of your work*
- Provide a road-map (outline)

Concept Class of One-Dimensional Patterns

- The instance space $\mathcal{X}_n$ consists of all configurations of n points on the real line

- A concept is set of all configs. from $\mathcal{X}_n$ within unit distance under the <u>Hausdorff metric</u> of some "ideal" configuration of k points, where Hausdorff distance between configs. P and Q is

$$H(P,Q) = \max\left\{\max_{p\in P}\left\{\min_{q\in Q}\{d(p,q)\}\right\}, \max_{q\in Q}\left\{\min_{p\in P}\{d(p,q)\}\right\}\right\}$$
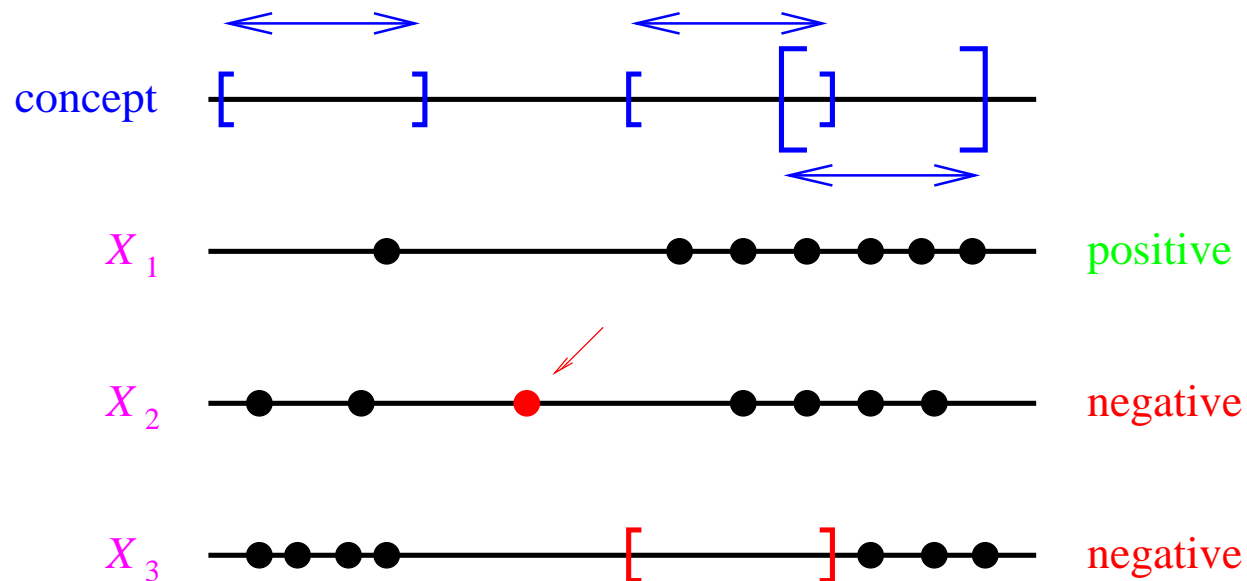
  and $d(p,q)$ is distance between p and q

- If P is any configuration of points on $\mathcal{R}$, then concept corresponding to P is $C_P = \{X \in \mathcal{X}_n : H(P,X) \leq 1\}$

- X is a <u>positive example</u> of C_P if $X \in C_P$ and is a <u>negative example</u> otherwise

- The concept class of one-dimensional patterns is

$$\mathcal{C}_{k,n} = \{C_P : P \text{ is a configuration of } \leq k \text{ points from } \mathcal{R}\}$$

Concept Class of One-Dimensional Patterns

- Each concept c is a set of fixed-width intervals on real line

- Each example X is a set of points on real line

The Body

- Abstract the key results
  - focus on a central, exciting concept
- Explain significance of your work
- Sketch methodology of key ideas
  - keep it high-level emphasizing structure
  - use pictures/diagrams if possible
  - provide intuition (helpful when someone later reads your paper)
  - gloss over technical details

The Technicalities

- Take key result (or part of it) and go into some depth

- Guide audience through difficult ideas

  - give overview
  - state result
  - show an example
  - review

- It is this portion of your talk that typically grows when you give a 50 minute talk

The Conclusion

- Provide a coherent synopsis

- Review key contributions and why they are important

- Discuss open problems/future work

- Indicate your talk is over. (For example, "Thank you. Are there any questions?")

- Be ready to answer questions

  - If there are points you glossed over that you expect the audience may be interested in, you may want to prepare some transparencies (just in case)

Transparency Preparation - Do's

- Decide what you want to say and say less!

- Allow an average of 1.5 - 2 minutes for each transparency

- Use Repetition

   - "Tell them what you're going to tell them. Tell them. Then tell them what you told them."

   - Realize that 20% of your audience at any given time is thinking about something else

- Use Pictures/Diagrams whenever you can

Transparency Prep - Do's (cont)

- Use a large font (at least 20 pt)

- Make neat/orderly transparencies
  - use computer-generated slides

- Use overlays

- Use color (in a meaningful way)

- You need not use full sentences

- Number your transparencies in case you drop them

- Write reminders, key phrases and such on paper between transparencies or on frames

Transparency Prep - Do's (cont)

- Check your spelling
- If you use a transparency more than once duplicate it
- PRACTICE!
  - give a practice for your colleagues
  - be ready to redo all your transparencies
  - practice again
  - be sure that all your material projects on the screen
  - make sure it does not take too much time

Transparency Preparation - Don'ts

- Overload transparencies

- Intend to use too many transparencies

- Put some detail on the slide that you do not want to talk about

- Get bogged down in details

- Try to give a core dump

- Half cover slides (this draws attention to the COVERED part - the fashion industry has exploited this for years)

Transparency Prep - Don'ts (cont)

- Show complex equations

- Show code (even LISP/Scheme)

- Have a transparency that introduces a point that you are unsure of (unless you want to give the audience a chance to attack you)

- Present last minute results (they are probably wrong)

- Have transparencies that you are not using mixed in with the rest

- Write messy, write too small, misspell words

At the Talk - Do's

- If you expect the audience to take notes provide copies of your transparencies (this is rarely the case in a conference or colloquium/job talk situation)

- Dress appropriately - this shows respect for your audience

- Have eccentricity (but not too extreme)

    - make it fun/easy for people to remember you

    - extreme eccentricity is bad for younger people

At the Talk - Do's (cont)

- Be *EXCITED* about your work!

- Remind Don't Assume
    If you assume a standard result provide
    the audience with a brief *reminder*

- **Talk with Sufficient Volume**

- Make Eye Contact and "read" audience
    - change victims
- Be With the Audience
    Walk toward and away from the people
    as well as left and right to break down
    implicit barrier

At the Talk - Do's (cont)

- Point to the screen, not transparency

- Bring props

- Ask real and rhetorical questions to keep
  audience engaged

- Deflect obstructionists
  tell them you'd like to talk to them after
  the talk (about the interesting point
  made) because the point is a detail,
  tangential, has a long answer, you need to
  think about it, ...

- End on Time!

At the Talk - Don'ts

- Talk too softly, mumble, or speak in a monotone voice, use "um", "ah", ...

- Read your transparencies

- Focus attention on the screen - you'll end up talking to the screen vs. the audience

- Stand so that you block the projection

- Mention a detail/point you don't want to talk about

- Darken the room (unless necessary to see) since it entices audience to sleep

- Babble on when you have nothing to say

- Over-run your time

Concluding Remarks

- Follow the guidelines provided here

- Take every opportunity you can to give talks (and thus get practice and feedback)

- Remember that the guidelines for structuring your talk must be adapted to each specific talk

- Preparing a good talk takes time, do not expect to throw it together last minute

- Practice for colleagues to get feedback

- AND ... you will give better talks and reap all the rewards that follow