CSCE 496/896 Lecture 10: 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
- 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

- Goals:
  - Keep audience's 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
- Will focus on giving conference presentation or job talk
  - Other scenarios (e.g., teaching) have different contexts, goals, and approaches

Outline

- Goals of a talk
- Planning stages
- Structuring your talk
- Slide preparation
  - What to do
  - What to avoid
- At the talk
  - What to do
  - What to avoid
- Concluding remarks

Planning Stages

- Know your audience:
  - What is their background?
    - General CS (or math, or EE)
    - Somewhat specialized audience
    - Highly specialized audience
- If someone has spoken before you:
  - Look at paper/abstract of relevant talks that preceeded yours
  - Prepare to use context provided

Scheduling (if you can)

- If possible, schedule your talk at 10:00
  - Most people are awake
  - Few have gone back to sleep
- Bad times to schedule talk:
  - Right before lunch since the audience is thinking about food
  - 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", put in context, and give outline **at end of introduction**
  2. **Body:** high-level summary of key results
  3. **Technicalities:** more depth into a key result
  4. **Conclusion:** review key results, wrap up, give 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) **at the end of the introduction**

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 **Hausdorff metric** of some "ideal" configuration of k points, where Hausdorff distance between configs. P and Q is

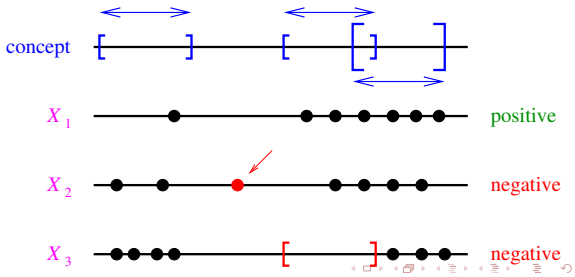
$$H(P,Q) = \max\left\{\max_{p\in P}\left\{\min_{q\in Q}\{d(p,q)\}\right\}, \max_{q\in Q}\left\{\min_{p\in P}\{d(p,q)\}\right\}\right\}$$

  and $d(p,q)$ is distance between p and q
- If P is any configuration of points on $\mathbb{R}$, then concept corresponding to P is $C_P = \{X \in \mathcal{X}_n : H(P,X) \le 1\}$
- X is a **positive example** of C_P if $X \in C_P$ and is a **negative example** otherwise
- Concept class of one-dimensional patterns is

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

Concept Class of One-Dimensional Patterns

- A concept c is set of fixed-width intervals on real line
- A example X is set of points on real line
- Example X is positive if and only if:
  1. Each of X's points lies in an interval from c
  2. Each interval of c contains a point from X



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 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 think will interest the audience, you may want to prepare some slides (just in case)

Slide Preparation—Do

- Decide what you want to say and say less!
- Allow an average of 1.5–2 minutes for each slide
  - Exact amount of time determined by practice
- 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

Slide Prep—Do (cont’d)

- Use a large font (at least 20 pt)
- Make neat/orderly slides
- Use overlays or other “scaffolding”
- Use color/animation (in a meaningful way; not just to attract attention)
- You need not use full sentences
- Number your slides
- Write reminders, key phrases, etc. on paper or in PowerPoint’s notes

Slide Prep—Do (cont’d)

- Check your spelling
- If you use a slide more than once, duplicate it
- **PRACTICE!**
  - Give a practice for your colleagues, advisor, friends, pets, etc.
  - Be ready to redo all your slides
  - Practice again
  - Be sure that all your material projects on the screen and contrast is good
  - Make sure it does not take too much time
    - **Beware PowerPoint’s timer!**

Slide Preparation—Don’t

- Overload slides
- Intend to use too many slides
- 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

Slide Preparation—Don’t (cont’d)

- Show complex equations
- Show complex code (even pseudocode)
- Have a slide 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 slides that you are not using mixed in with the rest
- Write messy, write (or use a font that is) too small, misspell words

At the Talk—Do

- If you expect the audience to take notes, provide copies of your slides
  - Rarely the case at a conference or colloquium/job talk
- 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 (cont'd)

- Be EXCITED about your work!
- Remind; don't assume
  - If you assume a standard result, provide the audience with a brief **reminder**
    - The **Ignorant Audience Law**: someone important in the audience always knows less than you think everyone should know, even if you take the Ignorant Audience Law into account
- **Talk with Sufficient Volume**
- Make eye contact and "read" the 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 (cont'd)

- Point to the screen, not slide/computer monitor
  - Use a pointer, not hand/pen
- Bring props, if appropriate
- 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, etc.
- End on time!

At the Talk—Don't

- Talk too softly, mumble, or speak in a monotone voice, use "um", "ah", ...
- Read your slides
- 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
- State a definition or other important concept without also printing it on the slide
- Darken the room (unless necessary to see) since it entices audience to sleep
- Babble on when you have nothing to say
- Run over 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 at the last minute
- Practice for colleagues, etc. to get feedback
- AND: You will give better talks and reap the rewards that follow

Questions

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