Improving Your Technical Presentation Skills

Sandhya Dwarkadas
University of Rochester
Sandhya Dwarkadas

• Education
  • Bachelor’s degree in Electronics from Indian Institute of Technology, Madras, India
  • Master’s and Ph.D. in Electrical and Computer Engineering from Rice University, Houston, Texas
• Research Areas: Computer systems: architecture, hardware/software interface, parallel and distributed systems
• Post-Ph.D.
  • Research scientist at Rice
  • Faculty member at University of Rochester
    • Currently the Albert Arendt Hopeman Professor and Chair of Computer Science with a secondary appointment in Electrical and Computer Engineering
• Sabbaticals at IBM Watson, HPCLinks/IISc India, EPFL Switzerland
Why do Presentations Skills Matter?

• Essential for
  – Crystallizing your ideas
  – disseminating important results
    • Ideas don’t sell themselves; they will lie on the shelf and gather dust unless you sell them
  – Explaining your work to colleagues
  – Giving talks/seminars in industry or academia
  – Selling your ideas to funding agencies (or venture capital firms)
  – Interviewing for jobs
  – Teaching
Presentation Skills

• Written
• Oral
Oral Presentation: The Three MUST HAVES

• **Content**: know your material *really* well
• **Design**: Organize the material and create a high-quality presentation (usually, for formal research talks, in the form of slides)
  – Drive home key points
  – Visualize what you are saying
• **Delivery**: plan your oral presentation/what you will say along with each slide
  – practice, practice, practice
Content: Know Your Material

- Do you have sufficient motivation for the work?
- What is the state of the art?
- What is your contribution/approach? How is it novel?
- Is the work mature enough for presentation/have you ironed out the corner cases?
- How sound are your results and analysis?

Remember: you are the expert (have chosen to become one): now you need to project that image
Design: Organize Your Material

• What are the key points you want your audience to remember?
  – Keep it simple
  – Repeat them: tell them what you’re going to tell them (forecast) and why, tell them, and tell them what you told them (summary)

• Is your presentation at an appropriate level for your audience?
PRACTICE, PRACTICE, PRACTICE!

Build your confidence; get feedback; form a support group; return the favor
Know Your Audience and Purpose

• Who is your audience? Why are they there? What do they know? What biases do they have?
• What is the purpose of your talk?
  – To inform? To persuade? To inspire? To teach?
• Is this a formal or informal occasion? What is the size of your audience? How much time do you have?
Conference Talks

- Remember
  - There is no way you will cover every detail of a 10 page paper in 25 minutes
  - The main goal is to get the audience interested in your work so they go read the paper
  - The talk is that sales job (but don’t overdo the selling)
A General Talk Outline (20-25 mins.)

- Title/author/affiliation (1 slide)
- Motivation and problem statement (1-3 slides)
- Related work (0-1 slides)
- Main ideas and methods (7-8 slides)
- Analysis of results and key insights (3-4 slides)
- Summary (1 slide)
- Future work (0-1 slide)
How to Give a Bad Talk: The Ten (9) Commandments*

- Thou shalt not waste space
- Thou shalt not be neat
- Thou shalt not covet brevity
- Thou shalt not write large
- Thou shalt not use color
- Thou shalt not illustrate
- Thou shalt not make eye contact
- Thou shalt not skip slides in a long talk
- Thou shalt not practice

*Courtesy David Patterson, circa 1983, via Mark Hill, with appropriate modification to accommodate changes in technology
Thou Shalt Not Covet Brevity

• Do not omit technical material from your paper
  – You did the work; it is important; make sure the audience understands all nuances of approach and also how smart you are
  – Many in audience will never read the paper – they *must* leave the room fully understanding your approach, motivation, and contributions!

• Include lots of material in each slide
  – Avoid sentence fragments because they may make you look illiterate.
    • Also, if the slides have full sentences, then you can read the slides verbatim and audience will be able to follow along.
    • All points you make orally should also be on the slide, and vice versa.
    • Some may say that no item on a slide should span more than one line. Ignore this! Take as much room as you need to make your point.
    • Take advantage of technology – small fonts allow you to provide information-rich slides.
      – Fonts smaller than 24 point are fine
      – And the important people sit in front anyhow!
    • Make several points on each slide.

• Include lots of slides in each talk
  – 1 Lampson = 1 slide per second
  – Impress audience with intensity and difficulty of material
    • They should leave knowing that you did a lot of work and that it was hard, even if they don’t understand all of the details.
  – Avoid moving content to “backup slides”
    • You probably won’t get a chance to show many of them
Slide Design

• 3 is the golden number (almost!); 3-5 bullets or points per slide
  – Don’t overcrowd
  – Make sure font is legible even in your figures (test it out in a room of similar size)
  – Spell and grammar check!
  – No need for complete sentences, but be consistent in your style and format
Outline Slide or No Outline Slide: To be or not to be
Roadmap

- Background
- Design
- Evaluation
- Conclusion
Roadmap

- Background
- Design
- Evaluation
- Conclusion
Background:
Brief Introduction of Page Coloring
Background: Brief Introduction of Page Coloring
Instead ...
The Multi-Core Challenge

- Multi-core chips
  - Dominant on the market
  - Last level cache is commonly shared by sibling cores, however sharing is not well controlled

- Challenge: Performance Isolation
  - Poor performance due to conflicts
  - Unpredictable performance
  - Denial of service attacks

Picture courtesy Intel
Possible Software Approach: Page Coloring

- Partition cache at coarse granularity
- Page coloring: advocated by many previous works
  - [Bershad’94, Bugnion’96, Cho ‘06, Tam ‘07, Lin ‘08, Soares ‘08]
- Challenges:
  - Expensive page re-coloring
    - Re-coloring is needed due to optimization goal or co-runner change
    - Without extra support, re-coloring means memory copying
    - 3 micro-seconds per page copy, >10K pages to copy, possibly happen every time quantum
  - Artificial memory pressure
    - Cache share restriction also restricts memory share

\[ \text{Color } \# = \frac{\text{CacheSize}}{\text{PageSize} \times \text{CacheAssociativity}} \]
Hotness-based Page Coloring

• Basic idea
  – Restrain page coloring to a small group of hot pages

• Challenge:
  – How to efficiently determine hot pages
Roadmap

• Efficient hot page identification
  – locality jumping

• Cache partition policy
  – MRC-based

• Hot page coloring
Thou Shalt Not Illustrate

- **Table:**
  - Precision?
  - Allow audience to draw their own conclusion
- **Pictures:**
  - Worth a thousand words (or numbers)?
Accuracy
Accuracy
Instead ...
Hot Page Identification Accuracy

- No major accuracy loss due to jumping as measured by two metrics (Jeffrey divergence & rank error rate)
- Result is fairly accurate
Illustration and Color

- “A picture speaks a 1000 words”
  - A 1000 words don’t speak, however
  - The picture may need a little help
- Color for emphasis (when appropriate)
- Animation when appropriate
Re-coloring Procedure

- Quick search for K-th hottest page's hotness
  - \(Bin[i][j]\) indicates # of pages in color \(i\) with normalized hotness in \([j, j+1]\) range

```
procedure Recolor

budget (recoloring budget)
old-colors (thread's color set under old partition)
new-colors (thread's color set under new partition)

if new-colors is a subset of old-colors then
  subtract-colors = old-colors - new-colors.
  Find the hot pages in subtract-colors within the budget limit and reallocate to new-colors in a round-robin fashion.
end if

if old-colors is a subset of new-colors then
  add-colors = new-colors - old-colors.
  Find the hot pages in old-colors within the \(\frac{|new-colors|}{|add-colors|} \times budget\) limit, and then move at most budget (i.e. \(\frac{|add-colors|}{|new-colors|}\) proportion) of them to add-colors.
end if
```
Instead ...
Re-coloring Procedure(I)

Cache share decrease
Budget = 2 pages

Old colors  Subtract colors
Re-coloring Procedure (II)

Cache share increase
Budget = 2 pages

Old colors  Add colors

hot  
warm  
cold

[Diagram showing color representation]
Related Work – Version I

• “A reasonable approach to page coloring”
  – ASPLOS’06

• “Another page coloring idea”
  – OSDI’08

• “Yet another page coloring idea”
  – ASPLOS’07
Spatial display of design space highlights your novelty or approach
Conclusions

• A chance to summarize and place your work in a broader context
• Open problems?
• Future work?
Delivery
PRACTICE, PRACTICE, PRACTICE!

Build your confidence; get feedback; form a support group; return the favor
Helpful Hints

• Record yourself and watch the video
• Enroll in a public speaking class
  – Toast masters, community courses
• Memorize first 5 minutes of your talk
  – Helps start out if you are nervous
• Leverage your nervous energy
  – Adrenalin can help you give a good talk
Plan Your Verbal Presentation

• Work on the flow
• Motivate the work
• What are the main points
• Reiterate the main points
• Summarize – tell them what you told them
Body Language

- Eye contact
- Fillers
- Gestures
- Enunciation
- Voice modulation and emphasis
- Speed of delivery
  - There’s no prize for learning how to fit 20 words in 10 seconds
- Most of all, project your enthusiasm for what you are presenting!
Questions?

• Anticipate them
• Prepare backup slides
• Have a strategy for aggressive questioning
• Follow up
It Pays To Be Cautious!

- Redundancy/fault tolerance: make copies of your slides on a flash drive
  - Your computer may fail you
- Create versions in multiple formats for just in case
  - E.g., ppt and pdf
- Make sure you check the projection systems prior to your talk or session if at a conference
- Use practice talks to get possible questions
  - Be prepared with backup slides on details
Poster Presentation

- 1-2 minute presentation that addresses
  - What
  - Why
  - How/what’s novel
  - Outcome
- Poster content
  - Once again, pictures speak a 1000 words
    - With some help from text
    - Don’t overcrowd
    - Make sure the main points above stand out
Posters: Follow-Up Questions

• Be prepared to
  – Discuss approach in more detail
  – Discuss validation in more detail
  – Discuss limitations of your work
  – Discuss related work
  – Outline ongoing and future work
Writing Style

• Clear organization of individual ideas
  – Sections and paragraphs should have a logical flow
    • Define terms before you use them
    • Keep forward references to a minimum
  – Each section represents a high-level topic/organizational unit
  – Each paragraph contains a single idea with supporting details
  – Each sentence expresses a single point/detail
• Pay attention to detail – spelling and grammar
Good Presentation: The Three (actually, Four) MUST HAVES

• Knowledge of audience: know your audience, purpose, and constraints
• Content: know your material really well
• Design: plan what you want to say and how you will say it (both visual and auditory)
• Delivery: practice, practice, practice! … and use feedback you receive to improve
Useful Resources

• Mark Hill’s “Oral Presentation Advice”, http://pages.cs.wisc.edu/~markhill/conference-talk.html
• http://www.randsinrepose.com/archives/2008/02/03/out_loud.html
• http://www.slideshare.net/selias22/taking-your-slide-deck-to-the-next-level