How to Prepare Your Presentations

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Part I - Preparing Slides

What kind of Slides

Slide Contents

Examples

Contents

- Choice of Device
- 1st task – identification of audience
- Planning
- Miscellaneous advice
- Some examples

Preparing Slides-I

- Choose your device
  - Powerpoint (or PDF, PROSPER, etc.) + LCD projector
  - OHP slides
- If available at the site, choose LCD

  Advantages:
  - Modifiable to the need of the audience
  - Can use animation effects to focus the attention of the audience on the point you are explaining (I know, these slides here do not have animations...)

Preparing Slides-II

- Disadvantages (powerpoint):
  - Connection troubles may be expected
    - If possible, check in advance
    - Do set up your computer to use the external display mode (often the default is the single-display mode)
    - If possible, have a remote controller with a laser pointer available.
  - You have to pay attention to both slides and the computer (bothersome)

- OHP Slides
  - Advantage: Simple
  - Disadvantages:
    - Difficult to keep the attention of the audience to the point of focus
    - Changing slides often takes time

Preparing Contents of Slides-I

- 1st task: Identify your audience
  - Are they experts, or average, or non-experts? etc.
  - Design your talk for them. (More about this later.)
- 2nd task: What is the main message of your presentation?
- 3rd task: Then create your presentation.

Preparing Contents of Slides-II

- Very common mistake:
  - Try to include too much material
- Results:
  - You will run short of time
  - Audience will NOT understand what you want to say --- This is more serious.
  - Because the material is mostly NEW to the audience (authors forget this)
- Recipe:
  - -> Continued on next page

Preparing Contents of Slides-III

- Make a good plan before you start
  - Worst strategy:
    - Just copy part of your manuscript
    - This will just make slides unreadable
- Choose what you want to say
  - What is the problem
  - Where is the difficulty
  - How you attack the problem
  - What is then obtained
  - -- continued on next page

Preparing Contents of Slides-IV

- Always keep in mind that the audience does NOT know what you are going to say
- Be brief, but friendly
- Make a story of the whole presentation
  - In what way or why the problem is interesting
  - How your approach differs from the conventional thinking
  - How significant your results are, etc.
- Give a simple outline slide in the beginning
- You may choose to come back to this slide at turning points; but don't overdo this; it may also be dull and artificial

Preparing Contents of Slides-V

- Additional advice
  - Visualize typical audience; think of a canonical person
  - Try to visualize to whom you want to talk
  - Try to read their minds:
    - What would they think when you say this?
    - What would they want to know in this topic?
  - Take these into account when you make the STORY of your presentation

Preparing Contents of Slides-VI

- Make your presentation visually appealing
- Make your statements simple
  - It's very dull for the audience to try to read from line to line on a very dense slide
  - Or, the audience will stop listening after first 5 minutes
- If you are going to give a dull talk, better not to give it at all: it will ruin your reputation

Preparing Contents of Slides-VI

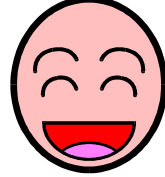
- But…
  - Make sure to include at least the core of the technical contents in your presentation
  - Slides full of fancy effects with poor technical contents are just as bad as dense, unreadable ones

Preparing Contents of Slides-VII

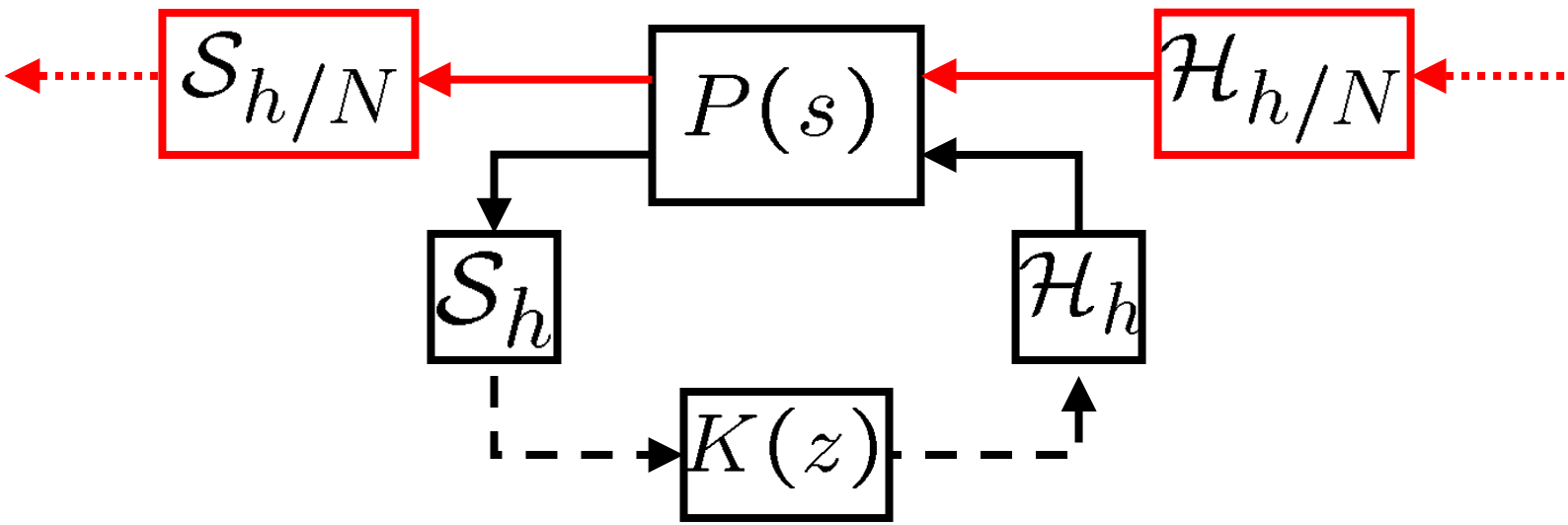
- Additional advice on technical contents
  - Do not flood your slides with
    - Complicated math formulas
    - Very dense paragraphs with text copied from your paper
  - Always give an idea, NOT a detailed proof
  - Limit the # of your slides: 1 slide/2min is a rough guideline recommended by many experts (some say: 1 slide/min but this applies only to very sparse slides.)
- Four examples follow

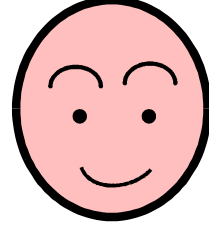
Example - Good

Fast-Sampling Fast-Hold (FSFH) Approximation



- For large N
  - Approximate the inputs by step functions of step size h/N
  - Approximate the outputs by taking their samples every h/N seconds





Convergence theorem

Theorem: S: set of stable controllers K such that

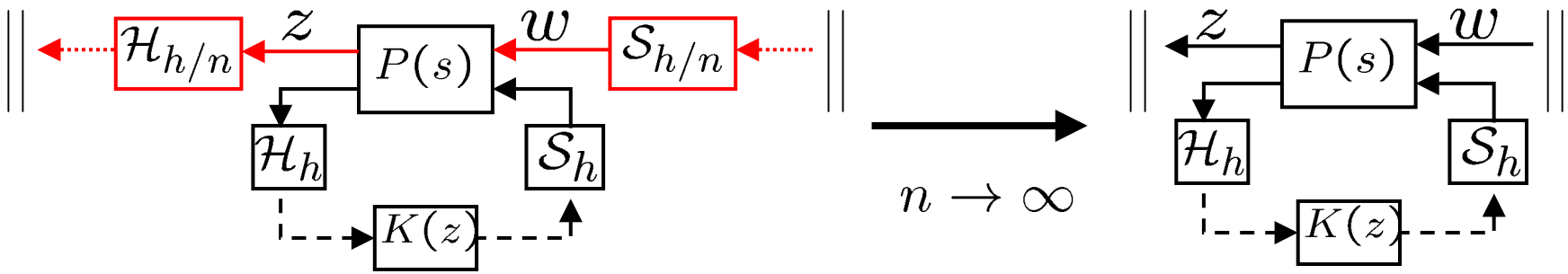
i) every K stabilizing, $\sigma(A+BK) \subset \{s | \Re s \leq -c\}$

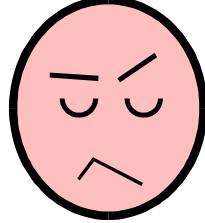
ii) S: compact with respect to H^∞ norm

Then

$$\|\mathcal{T}_{zw}^n(K)(e^{j\omega h})\| \to \|\mathcal{T}_{zw}(K)(e^{j\omega h})\| \quad (n \to \infty)$$

uniformly in $K \in S$ and in $\omega \in [0, 2\pi/h)$.





Proof of Theorem 2.1

Fix $\epsilon > 0$, and take $K \in S$. Then $\exists N(K,\epsilon)$ s.t.

$$\left| \|\mathcal{T}_{zw}^n(K)(e^{j\omega h})\| - \|\mathcal{T}_{zw}(K)(e^{j\omega h})\| \right| < \epsilon,$$

$\forall n \geq N(K,\epsilon)$, $\forall \omega \in [0, 2\pi/h)$. (Yamamoto, et al., '99) By the continuity of the error norm w.r.t. K (Lemma 2.3), there exists $B(K,\delta) := \{K' : \|K' - K\| < \delta\}$ s.t.

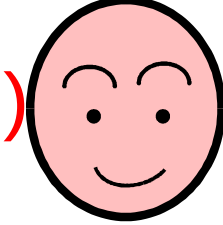
$$\left| \|\mathcal{T}_{zw}^n(K')(e^{j\omega h})\| - \|\mathcal{T}_{zw}(K)(e^{j\omega h})\| \right| < \epsilon,$$

$\forall n \geq N(K,\epsilon)$, $K' \in B(K,\delta)$.

$B(K,\delta)$ yields a covering $S = \cup_{K \in S} B(K,\epsilon)$, and by the compactness, $S = B(K_1,\epsilon) \cup \cdots \cup B(K_m,\epsilon)$, and $n \geq \max\{N(K_1,\epsilon), \ldots, N(K_m,\epsilon)$ implies

$$\left| \|\mathcal{T}_{zw}^n(K')(e^{j\omega h})\| - \|\mathcal{T}_{zw}(K)(e^{j\omega h})\| \right| < \epsilon, \ \forall K \in S$$

A modification (although certainly not the best)



Proof of Theorem 2.1

- $\forall \epsilon > 0,\ K \in S. \Rightarrow \exists N(K,\epsilon)$ s.t.

$$\left| \|\mathcal{T}_{zw}^n(K)(e^{j\omega h})\| - \|\mathcal{T}_{zw}(K)(e^{j\omega h})\| \right| < \epsilon,$$

$\forall n \geq N(K,\epsilon),\ \forall \omega \in [0, 2\pi/h).$

- $\exists B(K,\delta) := \{K' : \|K' - K\| < \delta\}$ s.t

$$\left| \|\mathcal{T}_{zw}^n(K')(e^{j\omega h})\| - \|\mathcal{T}_{zw}(K)(e^{j\omega h})\| \right| < \epsilon,$$

$\forall n \geq N(K,\epsilon),\ K' \in B(K,\delta).$ (continuity in K)

$\Rightarrow$ a covering $S = \cup_{K \in S} B(K,\epsilon)$

$\Rightarrow$ Compactness takes care of the rest.

Something you should never do

Proof Recall that $\hat{f}$ is in H^∞ if and only if convolution with f defines a bounded linear operator on $L^2[0,\infty)$. Take an arbitrary $x \in L^2[0,\infty)$, and we show $(\delta_{\ell(q)} * q^{-1} * x) \in L^2[0,\infty)$. First $q^{-1} * x \in L^2[0,\infty)$ since $\hat{q}^{-1}$ belongs to H^∞. Then it remains to show that the support of $(q^{-1} * x)$ is contained in $[-\ell(q),\infty)$. Notice that $\ell(q^{-1}) + \ell(q) = \ell(\delta) = 0$ and

$$\ell(q^{-1} * x) = \ell(q^{-1}) + \ell(x) = -\ell(q) + \ell(x) \geq -\ell(q),$$

by Lemma 2.1, since x is in $L^2[0,\infty)$. ∎

For example take $\hat{q}(s) = se^s - c$ and the left-shifted (by 1) transfer function $e^s/(se^s - c)$ is indeed causal. The following theorem gives the inner function $\hat{m}$ satisfying $\hat{X}^q = H(\hat{m})$ in a simple form for all stable pseudorational transfer functions.

Theorem 2.2 Let $1/\hat{q}(s)$ be stable. Then $\hat{X}^q = H(\hat{m})$ where $\hat{m}$ is given by

$$\hat{m} = e^{-\ell(q)s}\frac{\hat{q}^-(s)}{\hat{q}(s)}. \tag{1}$$

Proof First we show that $\hat{m}$ defined by (2.5) is indeed an inner function. Since clearly $|\hat{m}| = 1$ on the imaginary axis, it suffices to prove that $\hat{m}$ is in H^∞. Take an arbitrary $x \in L^2[0,\infty)$, i.e., $\hat{x} \in H^2$ and we show $m * x \in L^2[0,\infty)$. From the property above $\hat{m}\hat{x} \in L^2(j\mathbb{R})$ and this implies $m * x \in L^2(-\infty,\infty)$. Since q^- is the mirror image of the distribution q, the support of q^- is entirely contained in $[0,-\ell(q)]$. Therefore we have

$$\ell(m * x) = \ell(q) + \ell(q^{-1}) + \ell(q^-) + \ell(x) \geq 0$$

by Lemma 2.1. Then $m * x \in L^2[0,\infty)$ and $\hat{m}$ is inner.

Now let us show $\hat{X}^q \subset H(\hat{m})$. Take any $\hat{\omega} \in \hat{X}^q \subset H^2$, i.e., $q * \omega \in \mathcal{E}'(\mathbb{R}_-)$. Then $\hat{m}^-\hat{\omega}$ is in $L^2(j\mathbb{R})$, because $\hat{m}$ is inner. It follows from Lemma 2.1 that $r((q^-)^{-1}) = -r(q^-) = \ell(q)$ and

$$r(m^- * \omega) = r(\delta_{-\ell(q)} * (q^-)^{-1}) + r(q * \omega) \leq 0.$$

This yields $m^- * \omega \in L^2(-\infty,0]$, i.e., $\hat{m}^-\hat{\omega} \in H^2_-$ and we have $\hat{X}^q \subset H(\hat{m})$.

Conversely, suppose that $\hat{x} \in H^2$ and that $\hat{m}^-\hat{x} \in H^2_-$. Hence

$$\hat{m}^-\hat{x} = \frac{\hat{q}\hat{x}}{e^{-\ell(q)s}\hat{q}^-} =: \hat{\psi} \in H^2_-.$$

This yields $\hat{q}\hat{x} = (e^{-\ell(q)s}\hat{q}^-)\hat{\psi}$. Since $r(q * x) = \ell(q) + r(q^-) + r(\psi) \leq 0$ and $\ell(q * x)$ is bounded, $q * x$ belongs to $\mathcal{E}'(\mathbb{R}_-)$. This implies $H(m) \subset \hat{X}^q$. ∎

Supplementary Ideas

- Does it take a bit too long before reaching the main part?
  - Try to announce the main result first
    - this helps you keep the attention of the audience, and helps them to re-organize your talk on their own points of view
- Try to present questions, like
  - "Now can this be unique?"
  - Much less dull compared to flat statements

Part II - Giving Your Talk

Giving your talk

What to do if you run out of time

How to finish

Giving Your Talk I

- Where to start:
  - Tell the subject of your talk
  - Reading out the title is one way, but not the best
  - You can also say: “I’m going to talk about ...” That’s more friendly.
  - If you can tell some jokes, or start with a relevant story related to your talk, that’s nice, but this is not always easy.

Giving Your Talk II

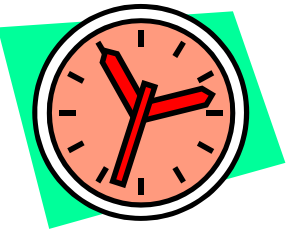
- Remember
  - The audience is NOT your enemy
  - But you can turn them to be one by giving an incomprehensible talk☹
  - Be friendly, and try to find someone who is paying attention to you
  - Talk to him/her
  - Try to deliver a message, NEVER read

Giving Your Talk I I I

- In general,
  - It's not a good idea to prepare a full text material (to be read) for presentation
  - If you want, prepare a piece of memo
  - Try to talk to the audience, do NOT read
  - Try to motivate
    - Raise a question
    - Take a pause to let the question sink in the audience
    - Then give your next statement

Giving Your Talk IV

- When you proceed to a different section, give the indication where you are
- Give a short summary of what you have done so far and what you are still going to say
- Inserting a copy of the outline slide is helpful



If you run out of time

- This should not happen, even though it all too frequently does.
- Don’t panic, but
- Make up your mind promptly on
  - How much of the rest you can say in the rest of the time, and then
- Give a brief summary of the rest of the contents
- Do NOT stick to your original plan
  - Audience is restless
- But, never go over time.

How to Finish

- Give a conclusion
- What you have done, proved, etc.
- This will have the effect of refreshing the memory of your talk
- Be brief, do not overload the conclusion

An appendix for non-native Speakers follows.

Appendix

Some useful hints from experts

especially for non-native speakers

Hints for non-native speakers

- Here are some hints from experts; some are serious, some with a lighter touch.
- Do not blindly follow them, but use your own judgment.
- They are listed randomly. The level of advice, hints varies from one to another.

Acknowledgments

- I'm indebted to many friends, for providing the advice here, although I am not quoting them individually at each place. Special thanks are due to: Karl Astrom, Jan Willems, Steve Morse, M. Vidyasagar, Bruce Francis, A. Antoulas, Allen Tannenbaum, P. P. Khargonekar, Andy Packard, Roy Smith.

- So Ready? Here we go!

- Speak loud, with emphatic expressions.
  - This solves many problems.
- Stories are important.
  - Already emphasized several times.
- Be confident; don't be uptight or nervous.
  - If you are uneasy, practicing at home helps.
  - Image-training is also very helpful.
- Bring your own pointer.
  - That is, if you want to use one. This releases your tension.
  - A conventional pointer is often better than a laser one (hard to control without shaking).

- Clear, boldfaced, well-defined slides (transparencies) are important.
  - Use larger fonts. On OHP sheets, do not hesitate to add some by handwriting.
- Avoid acronyms, abbreviations as much as possible.
- Give an outline, overviews.
- You should keep in mind:
  - Do not assume the audience is really interested in your talk technically.
  - Try to raise interest: Motivate them to look up your paper in the Proceedings.
  - if at the end the audience is interested in the problem, your talk was a success.

- Don’t try to say too much.
- Don’t be afraid of native speakers.
- You can’t satisfy everyone.
  - This is worth remembering. Make your own policy, and make it clear.
- Look at the audience. Smile, occasionally.
  - That helps. (Releases your tension, too.)
- Talk to the audience.
- Body-expressions can also help.
- It’s just intolerably a waste of time to get lost on slide No. 2.
  - No need to explain. But this guideline is so often broken.

- Be honest.
  - This is often the best strategy.
- Don't try to mimic very flashy native speakers. Be yourself.
- If you feel uncomfortable about these guidelines, esp. clear motivations, suspect that you may not have something good enough to say.
- Don't give a detailed technical proof, unless it is really the core of your talk.
  - Rather, try to explain where the difficulty is.)
- Don't try to speak fast. You need not.

- The audience can drift away at any point. So you have to hold them tight.
- Don’t worry about mistakes in English: Remember the Americans (English) most likely will not speak your language!
- Even if frustrated, do NOT use expletives (like, damn, sxxx, Chxxxx, Jexxx, etc.).
- Don’t start your talk with apologies such as: “I’m inexperienced to talk about ...”; the audience will be embarrassed.

Glossary of some useful(?) maxims

- Is everybody with me? = I know you are lost.
- So you see, ... = I know you don't see it, but you have to buy my words even if it's wrong.
- OK!, ... = I don't know what to say to change the subject.
  - Don't take these overly serious☺

- I ventured to give these guidelines in English, because I believe there is some common knowledge that can be shared by many people.
- If you do not agree with some of them, or have an additional piece of advice, please let me know: yy@i.kyoto-u.ac.jp
- Good luck!