

# How to Prepare Your Presentations

**Yutaka Yamamoto**

**<http://www-ics.acs.i.kyoto-u.ac.jp/~yy/>**

**Dept. AACDS**

**Kyoto University**



# Part I - Preparing Slides

What kind of Slides

Slide Contents

Examples

# Contents

- Choice of Device
- 1<sup>st</sup> 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

# Preparing Slides-I I

- 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-I I

- 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
- Prepare a very good introduction and a very good ending – Imagine the audience
- 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-I V

- 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-VI I

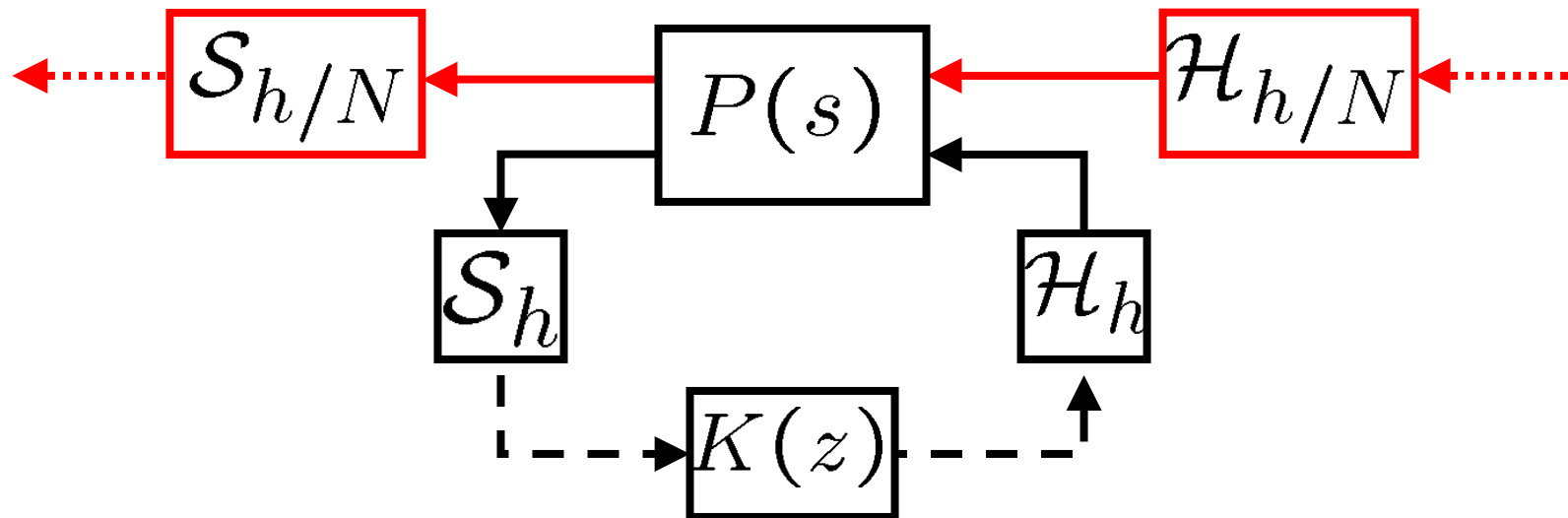
- Additional advice on technical contents
  - Do not flood your slides with
    - **Complicated** math formulas
    - **Very** dense paragraphs **with text copied from your paper**
  - Always give an idea, **NOT** a detailed proof
  - Limit the # of your slides: 1 slide/2min is a rough guideline recommended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

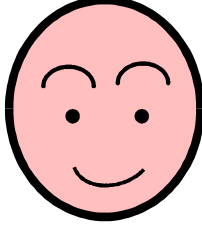
## Example - Good



# 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





## Example - Acceptable

# Convergence theorem

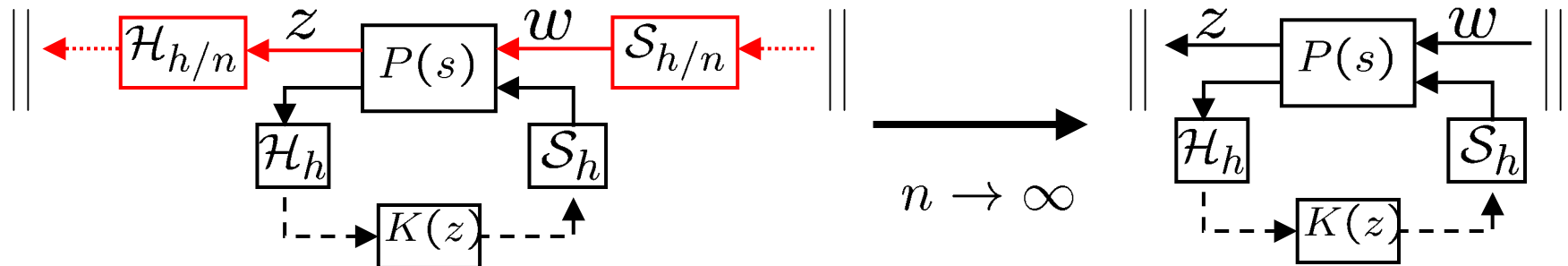
**Theorem:**  $S$ : set of stable controllers  $K$  such that

- i) every  $K$  stabilizing,  $\sigma(A+BK) \subset \{s | \Re s \leq -c\}$
- ii)  $S$ : compact with respect to  $H^\infty$  norm

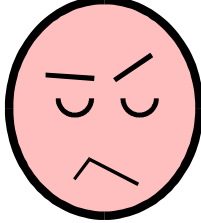
Then

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

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



## Example - Bad



# Proof of Theorem 2.1

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

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

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

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

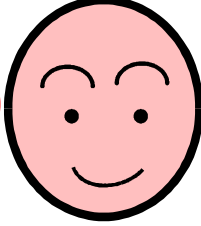
$\forall n \geq N(K, \epsilon), K' \in B(K, \delta)$ .

$B(K, \delta)$  yields a covering  $S = \cup_{K \in S} B(K, \epsilon)$ , and by the compactness,  $S = B(K_1, \epsilon) \cup \dots \cup B(K_m, \epsilon)$ , and

$n \geq \max\{N(K_1, \epsilon), \dots, N(K_m, \epsilon)\}$  implies

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

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

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

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

$\Rightarrow$  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  $f$  is in  $H^\infty$  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  $H^\infty$ . 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

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

**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  $H^\infty$ . Take an arbitrary  $x \in L^2[0, \infty)$ , i.e.,  $\hat{x} \in H^2$  and we show  $\hat{m} * x \in L^2[0, \infty)$ . From the property above  $\hat{m}\hat{x} \in L^2(j\mathbb{R})$  and this implies  $\hat{m} * x \in L^2(-\infty, \infty)$ . Since  $\hat{q}^{\sim}$  is the mirror image of the distribution  $\hat{q}$ , the support of  $\hat{q}^{\sim}$  is entirely contained in  $[0, -\ell(q)]$ . Therefore we have

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

by Lemma 2.1. Then  $\hat{m} * x \in L^2[0, \infty)$  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  $\hat{m}^{\sim}\hat{\omega}$  is in  $L^2(j\mathbb{R})$ , because  $\hat{m}$  is inner. It follows from Lemma 2.1 that  $r((\hat{q}^{\sim})^{-1}) = -r(\hat{q}^{\sim}) = \ell(\hat{q})$  and

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

This yields  $\hat{m}^{\sim} * \omega \in L^2(-\infty, 0]$ , i.e.,  $\hat{m}^{\sim}\hat{\omega} \in H^2_-$  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

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

This yields  $\hat{q}\hat{x} = (e^{-\ell(q)s}\hat{q}^{\sim})\hat{\psi}$ . Since  $r(q * x) = \ell(q) + r(\hat{q}^{\sim}) + r(\hat{\psi}) \leq 0$  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 I I

- 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

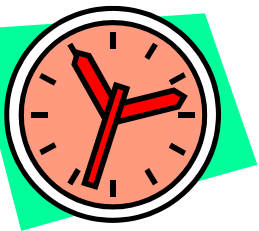
# Giving Your Talk I I I



- 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 I V

- 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



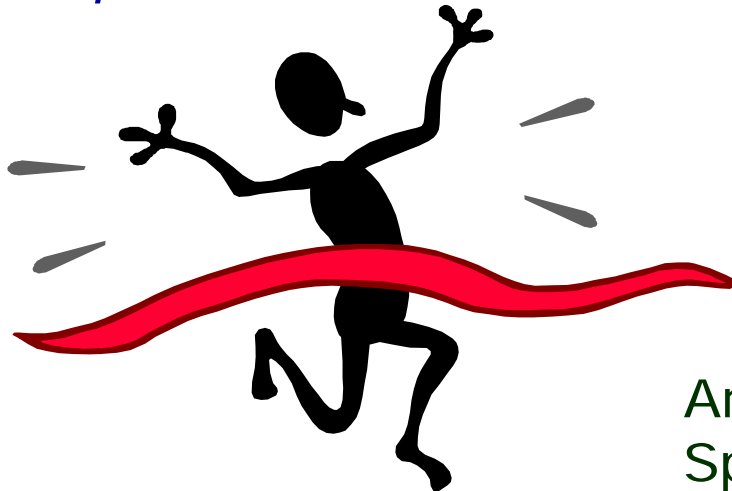
# If you run out of time



- 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, or even in front of a real screen, speaking loudly surely 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.
  - Make overall plans: making a list of all your slides and preparing a time line can help you to have good overall design.
- 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 ..."; "I drank too much last night"; 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](mailto:yy@i.kyoto-u.ac.jp)
- **Good luck!**