

Lecture 2

Scientific Presentations

Xuegong Zhang
2022.2.22



主观题 10分

⚙ 设置

- 调查：
 - 你以前听的报告中，最有体会的报告人缺点是什么？
 - 请每人列出至少2条你知道的作报告和做ppt的攻略或建议。

请分小组讨论2分钟，每组3-4人，讨论结果写黑板

正常使用主观题需2.0以上版本雨课堂

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作答





2.1

Scientific Presentation as a Composition

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Types of Scientific Expositions

- Research notes, memos
- Letters, emails, weekly reports, technical reports
- Oral presentations (talks, lectures, speeches)
- Poster presentations
- Conference abstracts, papers
- Journal papers (multiple sub-types)
- Books (monographs, textbooks)
- Grant applications
- Thesis, dissertations
- ...

All forms of scientific expositions need composition.



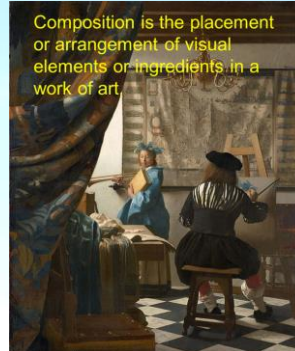
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What are major differences among compositions of different types?

- Visual arts
- Music
- Literature
- High-school writings in Chinese
- Writings in English courses
- Diaries
- **Scientific writings**
- **Scientific talks**
- ...



- Audience
- Purpose/Aim

What should I think of when I prepare for a scientific composition?

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Preparing for a talk

- Things to consider:
 - Audience:
 - Who are they? What did they know? Why do they listen to my talk?
 - Aim/Purpose/Goal/Objective/Intention:
 - Why do I make the presentation?
 - What do I want to gain/achieve with this presentation?

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For a conference talk



The purpose
of your talk
is not:

- To impress your audience with your brainpower
- To tell them everything you know about your topic
- To present all the technical details

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Simon Peyton Jones, Microsoft Research Cambridge
How to give a great research talk.

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For a conference talk

The
purpose of
your talk is:



- To give your audience an intuitive feel for your idea
- To make them foam at the mouth with eagerness to read your paper
- To engage, excite, provoke them
- To make them glad they came

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Simon Peyton Jones, Microsoft Research Cambridge
How to give a great research talk.

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思考：以下类型报告的听众和目的分别是什么？

1. 实验室组会报告
2. Journal Club报告
3. 研究生开题报告
4. 国际学术会议报告
5. 找工作自我介绍
6. 学位论文答辩

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Preparing for a talk

• Things to consider:

– Audience:

- Who are they? What did they know? Why do they listen to my talk?

– Aim/Purpose/Goal/Objective/Intention:

- Why do I make the presentation?
- What do I want to gain/achieve with this presentation?

– Topic

– Materials

– Structure, style

→ Compose slides according to your **audience, goal and materials.**



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充分考虑听众，因为你的报告在消耗他们的生命

- Treasure other people's time and attention.
 - If they listen to your talk for 30 minutes, they lose >30 minutes of their life forever!
 - It's a priceless gift they give you. Don't waste their life!



Take-home message:
Be aware of your purpose and
always think of the audience.



2.2

Composing Slides for Scientific Presentations

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Composition of slides

- Why do we use slides in presentations?
 - To help me remember what I should say? **凡事都要问个为什么!**
 - To help the audience better get my point? **No!** (although sometimes it does help)
 - To help keep the audience awake? **Yes, never forget this!**
 - To impress the audience? **Sometimes.**
 - To impress the audience? **Well, maybe, sometimes.**



The Key Rule for composition of slides:

- Design and organize elements of the slides in a way to best serve your objective from the view of your audience.



Composition is the placement or arrangement of visual elements or ingredients in a work of art

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Composition of slides



- Possible elements / ingredients on the slides
 - Texts
 - Figures/plots
 - Tables
 - Cartoons / Video clips
 - Layout
 - Background
 - Colors
 - Fonts
 - Animations
 - ...

Composition is the placement or arrangement of visual elements or ingredients in a work of art.

The Key Rule for composition of slides:

- **Design and organize elements** of the slides in a way to best serve your **objective** from the view of your **audience**.

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Composition of slides



- With this Key Rule, all tips follow naturally!

The Key Rule for composition of slides:

- Design and organize elements of the slides in a way to best serve your objective from the view of your audience.

- And they are **not** unbreakable.

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Composition of slides

- With this Key Rule, all tips follow naturally!

- Such as

- Avoid using full sentences, use keywords or phrases instead.

- Avoid using fonts like this or 这样的字体.

Use fonts like this, or this or 像这样或这样的字体 instead.

- Do not use fonts smaller than 18pt.

- Refrain from using unnecessary animations.

- Less is more! Leave empty spaces.

- Avoid using >7 lines on one slide

- ...

- And they are **not** unbreakable.

The Key Rule for composition of slides:

- Design and organize elements of the slides in a way to best serve your objective from the view of your audience.

提示:

- “技巧”背后都有原理
- 不要学老师讲课的ppt设计

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Design effective scientific presentations

-- Prof. Susan K. McConnell of Stanford University



<https://cloud.tsinghua.edu.cn/f/610853c7d2a7470895e6/>
(42 mins)

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PowerPoint basics: 1. What font to use

形式

Use a Sans Serif font:

This font is Arial.

This font is Comic Sans.

This font is Trebuchet.

Serif fonts take longer to read...

This font is Times New Roman.

This font is Courier.

This font is Didot.



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PowerPoint basics: 1. What font to use

形式

Type size should be 18 points or larger:

18 point

20 point

24 point

28 point

36 point



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* References can be in 14 point font

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PowerPoint:
the bottom line

Make simple slides.
Build content progressively.
If you're not going to talk about it,
leave it out.



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形式

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投票 最多可选4项

设置

结构

当我们听报告时，我会一直注意力集中吗？

A 是的，我会

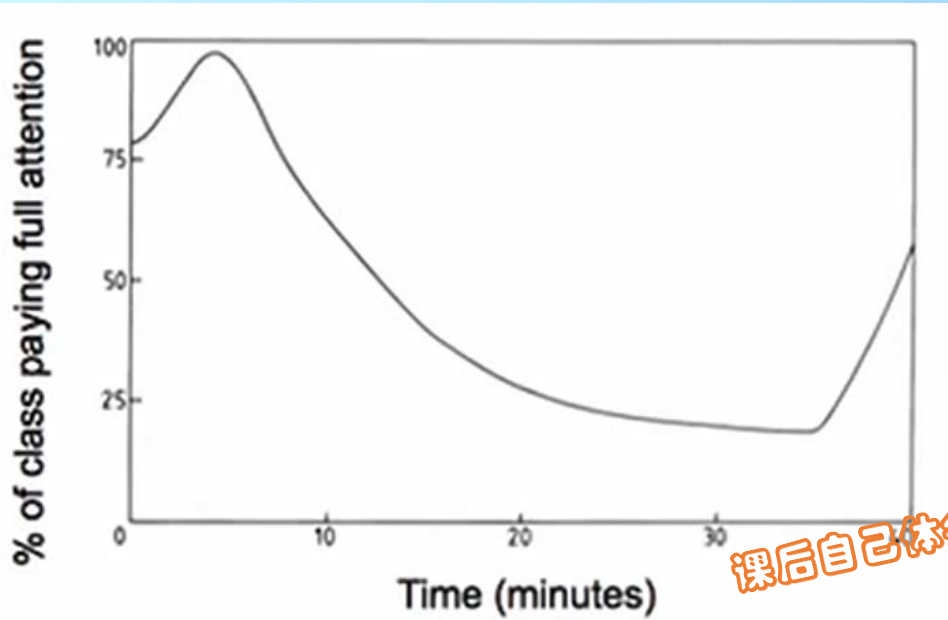
B 很难，开始集中一会儿就走神了

C 开始集中，中间就跟不上了，最后想再好好听一下结论

D 取决于报告人怎样引导

提交

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结构

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Organizing a great talk

结构



- Be smart with PowerPoint
- Introductions: start broad, then get specific
- Think of your talk as consisting of episodes
- Use a home slide to make transitions effectively
- Conclusions: start with specifics, end broadly

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做好ppt了，
是不是就等于准备好报告了？

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Composition of the presentation

- Performing is the process of “re-composition”. So is a talk.





2.3 Composing Talks

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Composition of the presentation



- What are the elements or ingredients of a talk or a presentation?



Composition is the placement or arrangement of visual elements or ingredients in a work of art



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Elements of a presentation

- Content and materials
- Speech (.....)
- Slides (.....)
- Gestures and body languages
- Pointer use
- Pace & Timing
- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing



The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

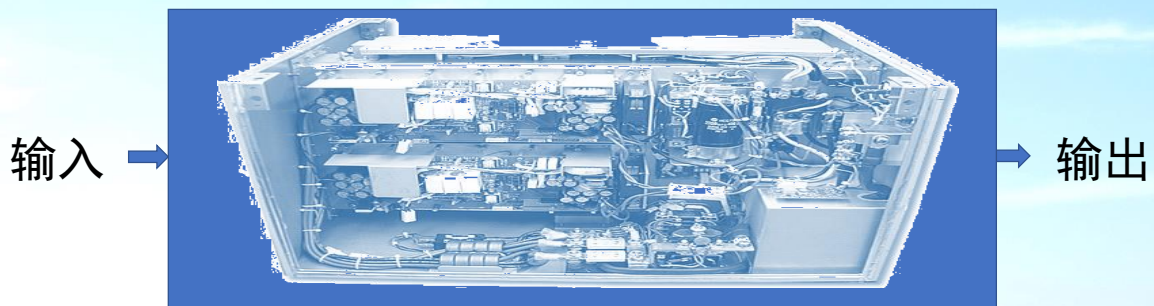
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控制系统基本原理

- 如何让一个系统准确实现预期目标？



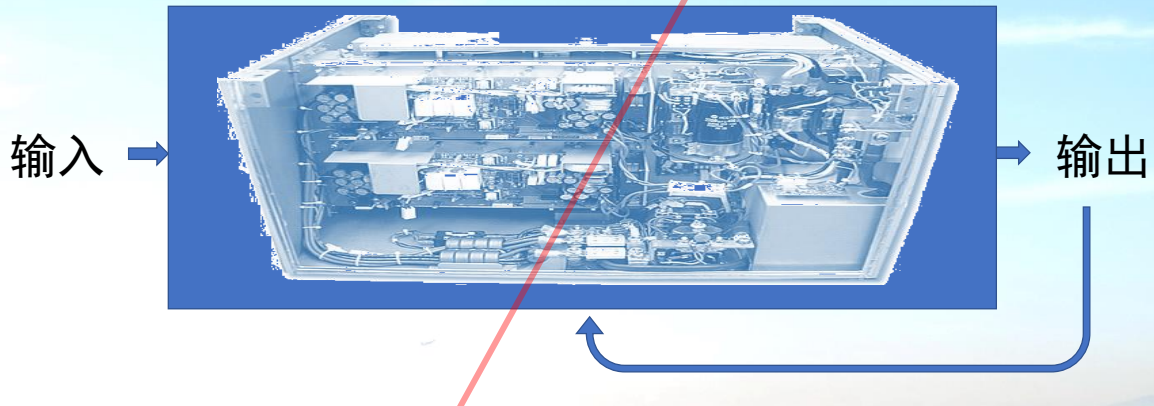
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控制系统基本原理



- 如何让一个系统准确实现预期目标？



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Giving Presentations as a Scientific Experiment



- Given the input, you adjust all adjustable elements and factors to achieve the best output.

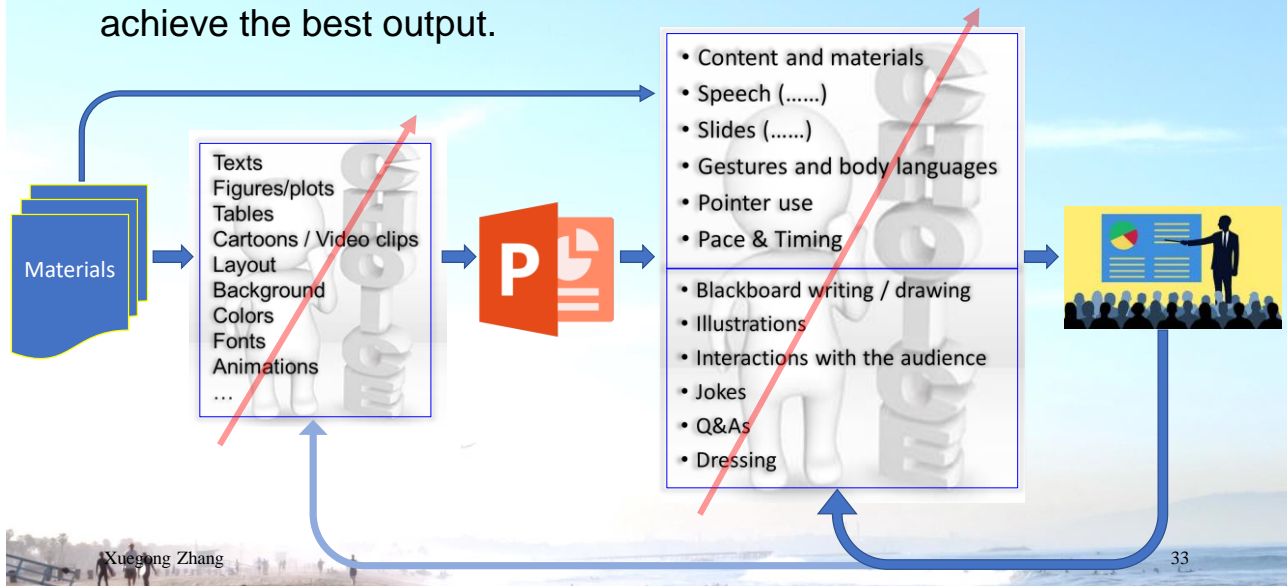


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Giving Presentations as a Scientific Experiment

- Given the input, you adjust all adjustable elements and factors to achieve the best output.



Breakdown of the elements

- Contents & materials
 - What is **the key message** (take-home message)?
 - Assumptions on **the audience's background**

-

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Breakdown of the elements



- Contents & materials
 - What is the key message (take-home message)?
 - Assumptions on the audience's background
- Speech
 - Language
 - Words, terms (jargons), phrases, and sentences
 - Pace, chunking, tone,
 - and **pauses**

- Content and materials
- Speech (.....)
- Slides (.....)
- Gestures and body languages
- Pointer use
- Pace & Timing
- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

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Breakdown of the elements



- Slides
 - Texts, figures/plots, tables, cartoons / video clips
 - Layout, background, color scheme, fonts
 - Animations ...

- Content and materials
- Speech (.....)
- Slides (.....)
- Gestures and body languages
- Pointer use
- Pace & Timing
- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

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Breakdown of the elements



- Slides
 - Texts, figures/plots, tables, cartoons / video clips
 - Layout, background, color scheme, fonts
 - Animations ...
- Gestures & body languages
 - Why?
 - Suggestions:
 - **Know the stage, choose your position**
 - **Avoid random gestures and random moves**

- Content and materials
 - Speech (.....)
 - Slides (.....)
 - Gestures and body languages
 - Pointer use
 - Pace & Timing
-
- Blackboard writing / drawing
 - Illustrations
 - Interactions with the audience
 - Jokes
 - Q&As
 - Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

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Breakdown of the elements



- Pointer use
 - Why?
 - Use properly and smartly
 - Control it!
 - Do not keep it on.

- Content and materials
 - Speech (.....)
 - Slides (.....)
 - Gestures and body languages
 - Pointer use
 - Pace & Timing
-
- Blackboard writing / drawing
 - Illustrations
 - Interactions with the audience
 - Jokes
 - Q&As
 - Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

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Breakdown of the elements



- Pointer use
 - Why?
 - Use properly and smartly
 - Control it!
 - Do not keep it on.
- Pace & timing
 - Plan your time
 - Order and relative timing of each part of materials
 - Be aware of your time
 - Be adaptive during the course



- Content and materials
- Speech (.....)
- Slides (.....)
- Gestures and body languages
- Pointer use
- Pace & Timing

- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

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Breakdown of the elements



- Blackboard writing / drawing & Illustrations
 - Plan ahead when possible
 - Clarify and simplify your thought
 - Avoid being trapped in unplanned illustrations
 - Make sure your writings / drawings visible

- Content and materials
- Speech (.....)
- Slides (.....)
- Gestures and body languages
- Pointer use
- Pace & Timing

- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

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Breakdown of the elements



- Interactions with the audience
 - Eye contact: where should I look at?
 - Asking questions
 - Do I plan to wait for answers?
 - How do I react to answers?
 - How long should I wait for the answer?
 - Answering questions
 - Shall I adjust my pace for answering the question?

- Content and materials
- Speech (.....)
- Slides (.....)
- Gestures and body languages
- Pointer use
- Pace & Timing
- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

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Breakdown of the elements



- Jokes
 - Great if used well
 - But be careful!
- Q&As after the talk
 - Repeat the question before answering it
 - Take care of the whole audience
- Dressing

- Content and materials
- Speech (.....)
- Slides (.....)
- Gestures and body languages
- Pointer use
- Pace & Timing
- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your objective from the view of your audience.

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Summary

- Content and materials
- Speech (.....)
- Slides (.....)
- Gestures and body languages
- Pointer use
- Pace & Timing
- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing

The Key Rule for composition of talks:

- Design and organize elements of the talk in a way to best serve your **objective** from the view of your **audience**.



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休息2秒钟



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最重要的还是内容

如何有效组织内容？

Ref. How to give a great research talk

Simon Peyton Jones, Microsoft Research Cambridge

For a conference talk

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What to put in

1

Motivation
(20%)

2

Your key idea
(80%)

3

There is no 3



Simon Peyton Jones, Microsoft Research Cambridge
How to give a great research talk.

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Motivation

You have two minutes to engage your audience before they start to doze.

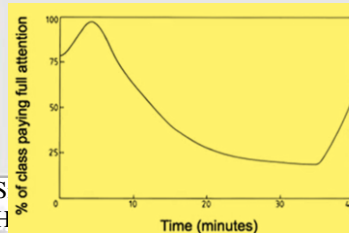
They are thinking...

- Why should I tune into this talk?
- What is the problem?
- Why is it an interesting problem?
- Does this talk describe a worthwhile advance?

You have 2 minutes to answer these questions.



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我听报告的时候情况经常是：

- A 听得非常好，很有收获
- B 开始努力听，发现听不懂，看了下手机，再听就更不懂了
- C 开始认真听，发现都知道，看了下手机，发现不知道讲啥了
- D 一直认真听，一直也听不懂，真浪费时间
- E 一边听报告，一边用电脑干其他事
- F 越听越困
- G 其他

Your key idea

If the audience remembers only one thing from your talk, what should it be?

- You must identify a key idea.
"What I did this summer" is No Good.
- Be specific.
Don't leave your audience to figure it out for themselves.
- Be absolutely specific.
Say "If you remember nothing else, remember this."
- Organise your talk around this specific goal.
Ruthlessly prune material that is irrelevant to this goal.

Also try to think of these questions after you have listened to some talk.

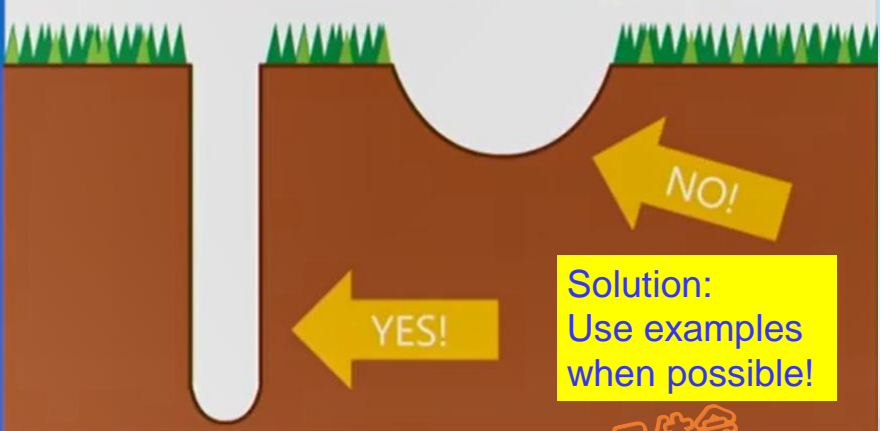


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Simon Peyton Jones, Microsoft Research Cambridge.
How to give a great research talk.

Narrow,
deep beats
wide,
shallow

- Avoid shallow overviews at all costs
- Cut to the chase: the technical "meat"
- It's ok to cover only part of your paper



Solution:
Use examples
when possible!

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How to give a great research talk.

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How to present your talk
Your most potent weapon, by far, is your

enthusiasm!

Simon Peyton Jones, Microsoft Research Cambridge

How to give a great research talk.

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2.4 Poster Presentations

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Major types of academic conferences



- Conferences
- Workshops
- Symposiums
- Meetings
- Congresses
- ...
- Plenary sessions
- Parallel sessions
- Panel sessions
- Poster sessions
- Tutorial sessions
- Sponsored/industry sessions
- Breakout sessions
- ...

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Major types of conference presentations



- Oral presentations
 - Keynote talks/speeches (Plenary)
 - Invited talks (Plenary or in parallel sessions)
 - Contributed talks (Usually unpublished work, submitted and accepted)
 - Highlight talks (recently published work, submitted and accepted)
 - Short talks (...)
- Poster presentations
 - Poster only
 - Poster + brief talk
- Exhibitions / industry presentations
- Tutorials

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Poster presentations



有没有同学作过作过
张贴报告？体会是？



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Examples of posters

Super-enhancer prediction from epigenetic signatures and sequence motif data

Kei Kato, Xuegang Zhang
MOE Key Lab of Bioinformatics and Bioinformatics Division, Tsinghua University, Beijing 100084, China

Background: Super-enhancers are clusters of enhancers that can drive cell-specific gene expression. They are composed of multiple enhancers, each containing one or more transcription factor binding sites. Super-enhancers are often found near genes that are highly expressed in specific cell types.

Results: We developed a novel method to predict super-enhancers by integrating epigenetic signatures (H3K27ac, H3K4me1, H3K4me3) and sequence motif data. Our method outperforms existing methods in terms of both precision and recall.

Conclusion: Our method provides a more accurate and comprehensive prediction of super-enhancers, which can be used to study gene regulation and disease mechanisms.

Ultra-Fast Splicing-QTL Analysis

Qian Yang¹, Yue Han¹, Jun Li¹, Xuegang Zhang^{1,2}
¹MOE Key Laboratory of Bioinformatics and Bioinformatics Division, Tsinghua University, Beijing 100084, China
²Department of Biomedical Engineering and Tsinghua University, Beijing 100084, China

Introduction: Splicing-QTL analysis is a powerful tool to study the genetic regulation of alternative splicing. However, existing methods are often computationally intensive and require large sample sizes.

Results: We developed Ultra-Fast Splicing-QTL Analysis, a novel method that significantly improves the efficiency of splicing-QTL analysis. Our method can process large-scale data in a much shorter time compared to existing methods.

Conclusion: Ultra-Fast Splicing-QTL Analysis is a powerful tool for studying the genetic regulation of alternative splicing. It can be used to identify novel splicing-QTLs and to study the underlying mechanisms.


Consistency of 16s rRNA Gene Sequencing Results with Different PCR Primers and Sequencing Runs

Junfeng Li¹, Xuegang Zhang^{1,2}
¹MOE Key Laboratory of Bioinformatics, Bioinformatics Division/Center for Synthetic & Systems Biology, Tsinghua University, Beijing 100084, China
²School of Life Sciences and School of Medicine, Tsinghua University, Beijing 100084, China

Background: 16s rRNA gene sequencing is a common method to study microbial communities. However, the results of 16s rRNA gene sequencing can be affected by different PCR primers and sequencing runs.

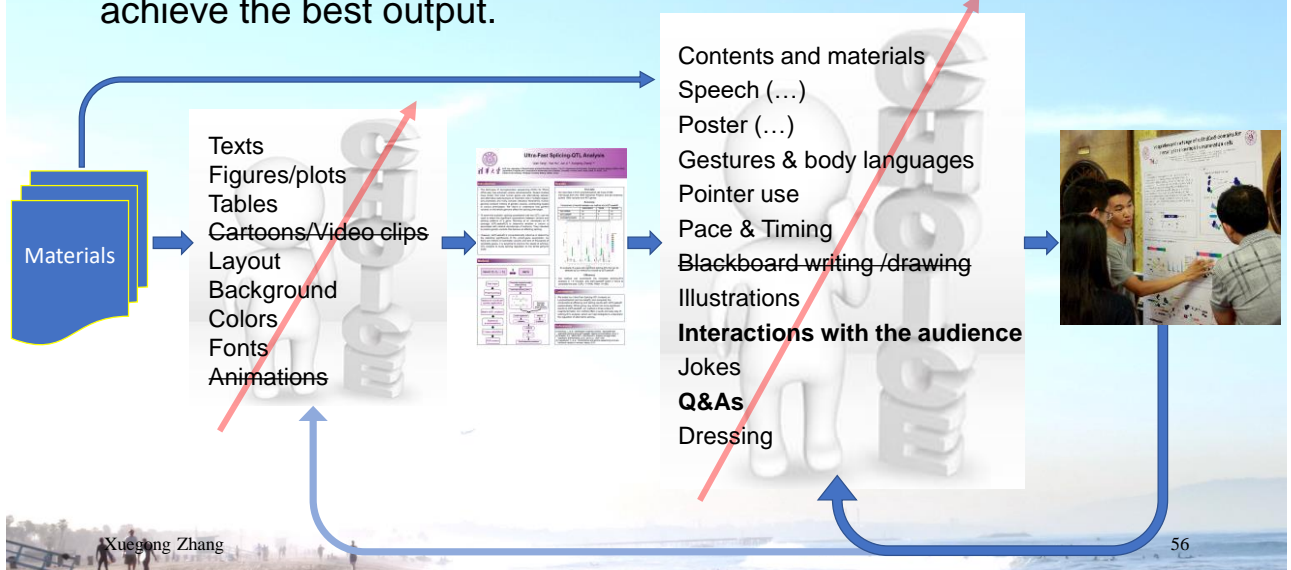
Results: We evaluated the consistency of 16s rRNA gene sequencing results with different PCR primers and sequencing runs. Our results show that the consistency is high, indicating that 16s rRNA gene sequencing is a reliable method for studying microbial communities.

Conclusion: Our study demonstrates the consistency of 16s rRNA gene sequencing results with different PCR primers and sequencing runs. This can be used to improve the reliability of 16s rRNA gene sequencing results.



Giving Presentation as a Scientific Experiment

- Given the input, you adjust all adjustable elements and factors to achieve the best output.



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Giving Presentation as a Scientific Experiment

Take-home message:

- Given the input and factors to achieve the best output.
- Be aware of your purpose and always think of the audience.**
- Use your mind. Be aware and control everything.**

Materials

- Figures/plots
- Tables
- Equations
- Background
- Animations
- ...

- Content and materials
- Slides (.....)
- Graphics
- Pointer use
- Blackboard writing / drawing
- Illustrations
- Interactions with the audience
- Jokes
- Q&As
- Dressing

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下课，3月1日见！

别忘了作业！




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