



University of Pittsburgh

Giving a Presentation

How to give a good presentation

School of Computing and Information
Department of Computer Science





How to give a good presentation

1. Decide on **content** of value to audience
2. **Organize** your thoughts on slides
3. Practice your **delivery**



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Decide content based on audience and time



Your audience: Generally smart individuals

- Computer Scientists? Yes
- Knowledgeable about your area? Maybe
- Knowledgeable about your problem? Probably not

Time is usually limited

- Invited talk: < 1 hour
- Conference talk: 20 minutes or so
- Elevator talk: < 2 minutes
- Your talk: 30 minutes

This is not a lot of time...



Bottom line: Your audience should learn something from your talk

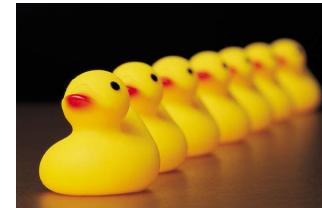


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How should I organize my thoughts?

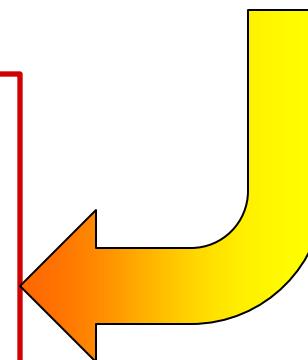


This is a **hard** ... with **interesting** problem... applications...

... that builds on prior work...

Two sub-parts:

- You solved a problem
- You used neat technological advancements to do this





Create an Outline

- It should be more than:
 - Introduction
 - Implementation
 - Outcome
- Write full **sentences** of what you want to get across
 - Intro: I worked on project X that fulfilled need Y
 - The project was challenging because it had to scale to a million users
 - Existing tools A, B, C are available to tackle the problem
 - Implementation: I used tool B to implement project X
 - Tool B was chosen over A and C because it is more scalable
 - I designed the system on the cloud to scale dynamically (diagram)
 - While coding, I found these difficulties with scaling and solved it by...
 - Outcome: Project X fulfilled need Y and more
- Putting the sentences together should form a **story**



Create Slides

- With a good outline, creating slides is straightforward
1. Title the slide based on the outline bullet point
 2. Add slide content with focus on that title
 3. Add figures in support of content



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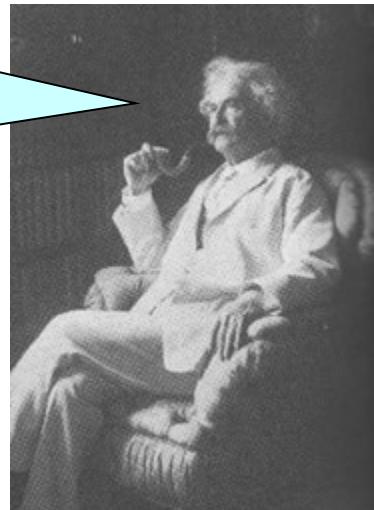


Practice, Practice, Practice

■ Practice makes better

- *Alone*: Work on your “script”. Try recording yourself!
- *Peer group*: Get used to other people being around
- *Broader population*: Assess outsider comprehensibility

It takes three weeks to
prepare a good ad-lib speech
- *Mark Twain*





It's not just *what* you say, but *how* you say it

■ Body language says a lot

- Make eye contact with your audience
- Some movement is good to draw attention
- Have a measured pace



■ Present **one primary idea** per slide

- Use slide titles to convey take-away message

■ Refer to **every item** on the slide

- If you don't, better to remove that item

■ **Avoid reading** from your slides

- Slides are there for the audience, not you





Make your delivery engaging

- Do not lose sight of the big picture
 - Audience should always know where you are taking them
 - Audience may need refocusing from time to time

- Give context
 - Why are you telling me this? Where does it fit in?
 - Why did you make that choice? What were the constraints?
 - Was that choice successful? Why or why not?

Pitfalls you want to avoid



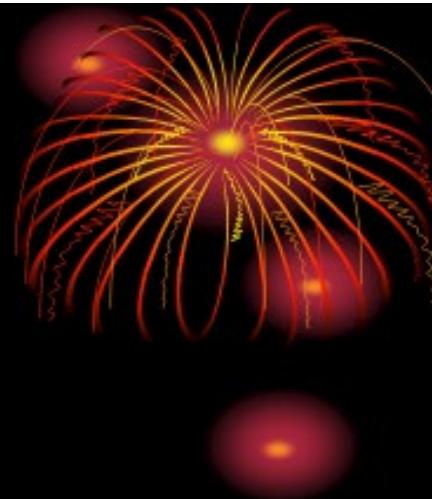
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Pitfall 1: Admire my beautiful slide

OUTLINE

- **Introduction**
- **Experimental**
- **Results**
- **Discussion**
- **Conclusions**
- Future Work





A slide is not abstract art

OUTLINE

- Introduction
- Experimental
- Results
- Discussion
- Conclusions
- Future Work

A stylized, abstract graphic resembling fireworks or a celestial body with many radiating lines in shades of red, orange, and yellow against a black background.

- Fonts, colors, and style should be consistent
 - If not, the difference should convey a meaning
- By the way, was that outline slide *really* necessary?
 - Most talks are structured that way - no information content



Pitfall 2: Look at my amazing code

- This is my pseudocode for solving Hanoi towers:

```
void solve_hanoi(n, src -> dest, temp)
{
    if (n == 0) return;
    solve_hanoi(n-1, src -> temp, dest);
    move(1, src -> dest);
    solve_hanoi(n-1, temp -> dest, src);
}
```



Warning: Example of a bad slide. Do not imitate.



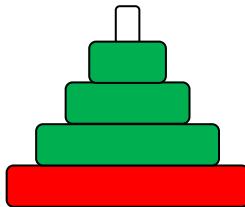
Nobody wants to read your code

- If you still feel it is important
 1. Explain at a **high level** what the code is doing
 2. **Focus** audience attention at the interesting part



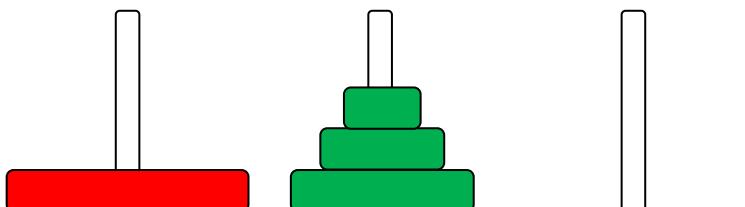
Towers of Hanoi: Recursive Solution

src temp dest



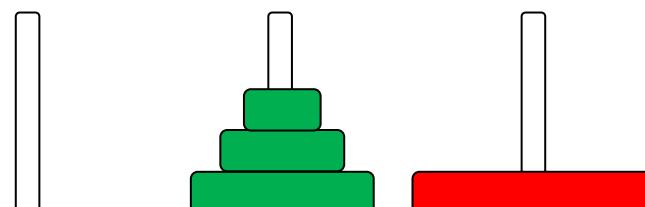
■ Move all disks at src → dest

- With the help of temp
- Rule: disks must always be stacked smallest → largest

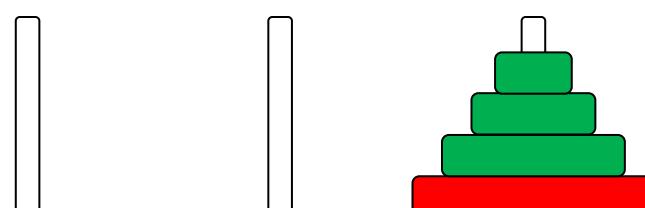


1. Move n-1 disks into temp

- Recursive formulation as original problem, just with n-1 disks



2. Move 1 disk into dest



3. Move n-1 disks into dest

- Again, n-1 version of same problem



Towers of Hanoi: Recursive Solution

■ Recursive solution for the Hanoi towers:

```
void solve_hanoi(n, src -> dest, temp)
{
    if (n == 0) return;
    solve_hanoi(n-1, src -> temp, dest);
    move(1, src -> dest);
    solve_hanoi(n-1, temp -> dest, src);
}
```

Solve moving n-1 disks with the power of recursion!



Pitfall 3: I am a math whiz

$$\text{score}(p, A.R, v) = \sum_{(C_i, w_i) \in \text{osets}_\omega(v.C, A.R)} w_i \cdot \frac{1}{2}^i$$

$$\omega_{len}(C_s, _) = \gamma^{\max_{p \in \text{paths}(C_s)}(\text{length}(p))}$$

$$\omega_{ind}(C_s, C) = 1 - \frac{\max_{C_i \in C \setminus \{C_s\}}(|C_s \cap C_i|)}{|C_s|}$$

$$\omega_{li}(C_s, C) = \alpha \cdot \omega_{len}(C_s, _) + \beta \cdot \omega_{ind}(C_s, C)$$



Well guess what. Many are not.

- Translate math to plain English whenever you can
- At least highlight what matters, and what is the take home message

$$\omega_{ind}(C_s, C) = 1 - \frac{\max_{C_i \in C \setminus \{C_s\}}(|C_s \cap C_i|)}{|C_s|}$$

Increasing the elements of C_s decreases the value of the function



Pitfall 4: Just read my text

■ Proof sketch:

Monotonic. To prove the monotonicity of Equation 6, we proceed by induction. We first assume that principal p has previously discovered the (ordered) collection of proofs and weights $(C_1, w_1), \dots, (C_n, w_n)$ for the role $A.R$. The base case that we must consider is that a new pair (C_s, w_s) is discovered such that no weight w_i is less than w_s . In this case, this new pair will introduce a new term to the end of the summation calculated by Equation 6, thereby increasing principal p 's score for the role $A.R$.

Assume that (C_s, w_s) can be inserted before up to n terms in the sequence of (c_i, w_i) pairs while still preserving the monotonicity requirement. Now, assume that p has previously found proofs of authorization with the sequence of weights $S = (C_1, w_1), \dots, (C_i, w_i), \dots, (C_{i+n}, w_{i+n})$ and has now discovered a (C_s, w_s) pair such that $w_s > w_i$, thereby needing to be inserted before $n + 1$ terms in the sequence S . We first note that replacing (C_i, w_i) with (C_s, w_s) will generate a sequence S' that—when used in conjunction with Equation 6—will produce a score greater than that produced using S , since $w_s > w_i$ and all other terms are the same. By the inductive hypothesis, (C_i, w_i) can then be re-inserted before the n final terms of S' while still preserving monotonicity.



Then why am I listening to you?

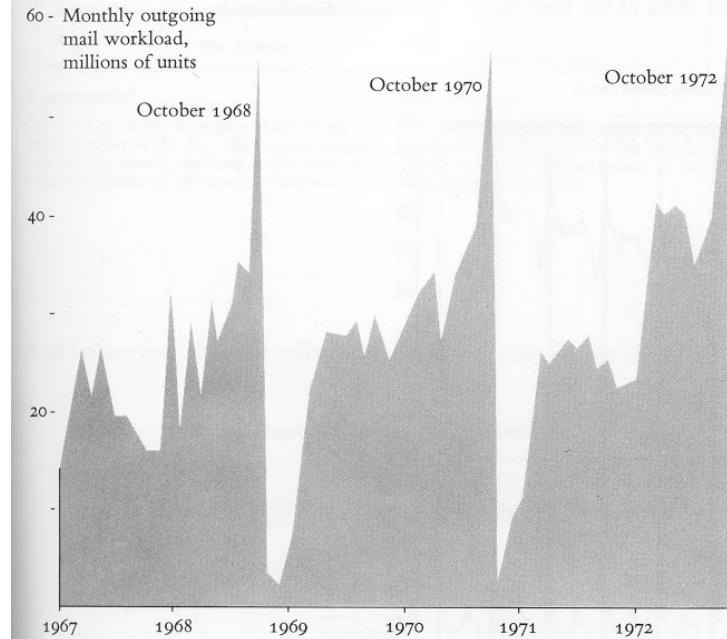
- Having too much to read can interfere with listening
- Reading and listening use same part of the brain
 - Both require language processing
- Use figures and diagrams as much as possible
 - Interferes much less with listening
 - Write text as part of diagrams that visually add meaning
 - Tables, flow charts, tree structures, pyramids, ...



Pitfall 5: Use figure but don't explain

■ Don't leave a picture hanging there and expect your audience to interpret it

■ If you have something on your slide that you don't explain, it is just **noise**.



The graphic is worth at least 700 words, the number used in a news report describing how incumbent representatives exploit their free mailing privileges to advance their re-election campaigns:

FRANKED MAIL TIE TO VOTING SHOWN

Testimony Finds the Volume Rises Before Elections

WASHINGTON, June 1 (AP) — New court testimony and documents show that much of the mail Congress sends at taxpayer expense to its re-election campaign of Senate and House members, according to material filed in a lawsuit in Federal Court.

Senate Republicans put two direct-mail pieces on the public payroll to advise them on how to use their free mailing privileges to get votes.

"An election manual prepared for Senate Democrats refers to newsletters as a "free forum," and sets up a timetable

for sending them as an integral part of a model re-election campaign.

Senator John G. Tower, Republican of Texas, mailed more than 100,000 specially prepared letters at taxpayer expense as part of his 1972 re-election effort and received campaign volunteer offers and donations in response.

Senator Jacob K. Javits, Republican of New York, gave written approval in 1973 for a tax-paid mail program intended to better his image and sway voters at the polls. He focused his mail on areas where he needed votes.

"The volume of official Congressional mail rises in election years and peaks just before general elections," she said.

None of this activity necessarily violates any law or regulation,

founding of the republic, and only Congress polices against abuses of the free mailings. Complaints of political use of the free-mailing privilege, called the franking privilege, are heard every election year. Recently, however, the volume and cost of franked mail has multiplied. A new Federal law will limit what out-of-office challengers can spend to unseat incumbents.

In 1972, Congress passed a law prohibiting mass franked mailings within 28 days before an election. The legislation, Representative Morris K. Udall, Democrat of Arizona, said in an interview that further changes were needed to combat political abuse of the franking privilege.

Mr. Udall urged a 60-day pre-election cutoff for mass mailings and said he favored closing a loophole that recently allowed defeated Representative Frank M. Clark, Democrat

of Pennsylvania, to send a franked newsletter to his old constituents after he had left office. Mr. Clark is seeking to regain his old post.

Political Documented

Seldom has the political use of franked mail been so well documented as in recent testimony and documents filed in a Federal Court by Common Cause, the lobby group, which is suing for an end to tax-financed mass mailings by Congress.

For example, Joyce P. Baker, a political mail specialist, said in a 1973 job proposal that she wanted to set up direct-mail programs for Republican Senators using franked mail for the purpose of helping a program to help incumbents get re-elected, she said.

She was put on the Senate payroll at \$18,810 a year in 1973 and 1974 and testified that during that time she aided

Republican Senators Robert J. Dole of Kansas, Peter H. Dominick of Colorado, Charles McMathias Jr. of Maryland and another political specialist, Lee W. MacGregor, wrote a proposal for the use of franked mail by his chief, Senator in the Senate.

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Mr. Tower was not available for comment. His administrative assistant, Elwin Skiles, said the senator's use of franked mail in 1972 was within the law, and he defended mailings."

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Mr. Tower was not available for comment. His administrative assistant, Elwin Skiles, said the senator's use of franked mail in 1972 was within the law, and he defended mailings."

"It is a standard device to let voters, not voters but citizens, know what Senator Tower is doing here in Washington," he said.

A picture is worth a thousand words

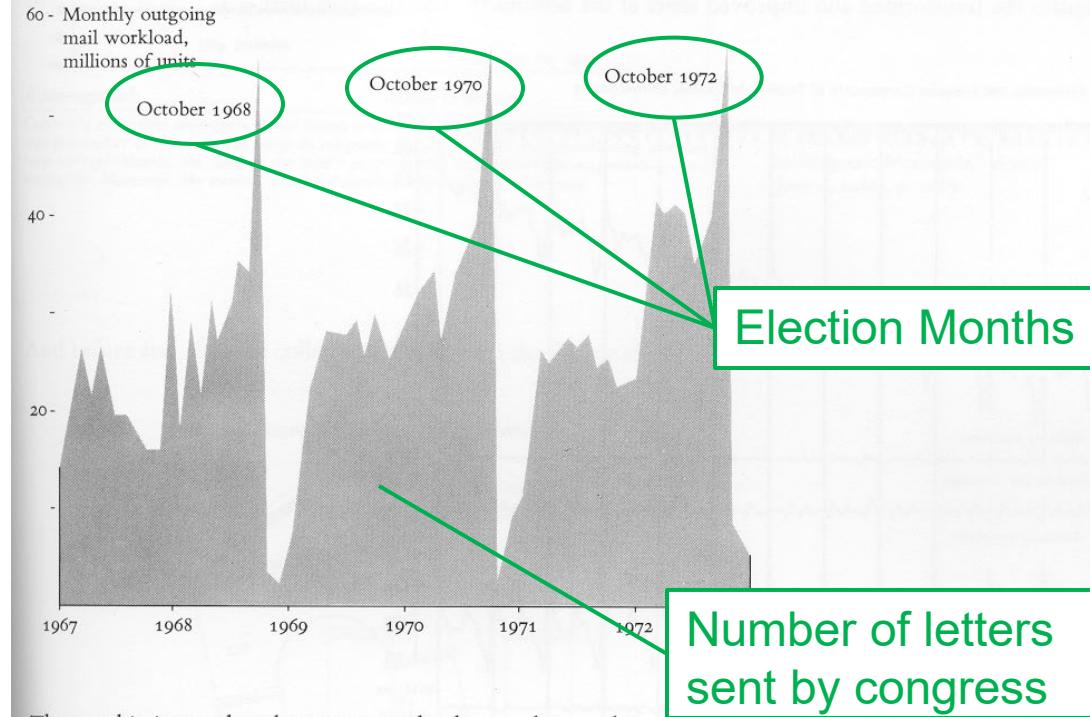


But only if you explain it!

■ Put in graphical cues to focus attention

■ Point to the figure and explain each part

■ Interpret the figure on behalf of the audience



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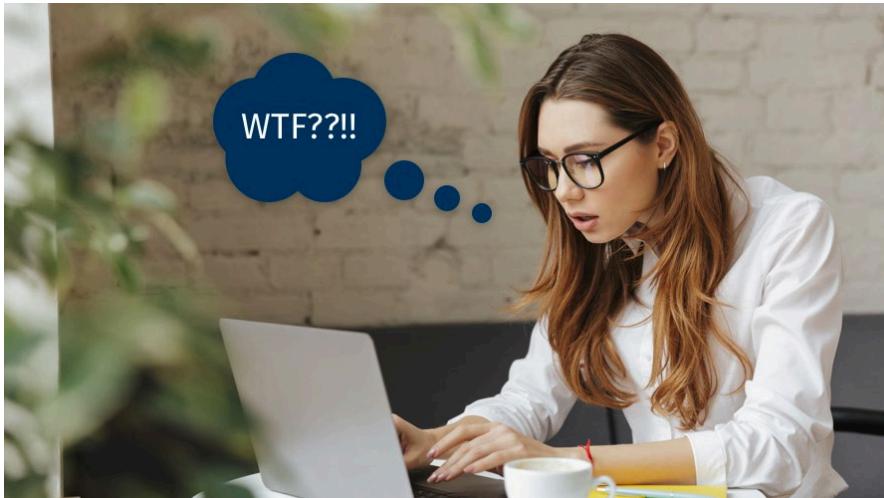
privileges.

Postal Service figures show that in the 12 months before the 1974 election, Congress sent 222.9 million franked pieces of mail. But in the next 12 months, covering the election period from July 1, 1974, to June 30, 1975, Congress sent 350.6 million, a jump of 57 per cent about what's happening," Mr. Skiles said.



Pitfall 6: Acronyms and jargons makes me look smart!

- IMHO, ARE = ADIH. TBH, FUBAR & 2M2H.



- Translated: In my humble opinion, an acronym rich environment is another day in hell. To be honest. Its f***ed up beyond all recognition and too much to handle.
- Acronyms can be useful *but only if you explain them!*