HOW TO GIVE TALKS THAT PEOPLE CAN FOLLOW

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Entertain your audience!

- **Simon Peyton Jones.** *How to give a great research talk.* (MSR Summer School, 2016)
  - “Your mission is to **wake them up!**”
  - “Your most potent weapon, by far, is **your enthusiasm!**”

- **John Hughes.** *Unaccustomed as I am to public speaking.* (PLMW, 2016)
  - “**Put on a show!**”
Entertain your audience!

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  Good advice, but I don’t know how to teach people to be entertaining…

  “Put on a show!”
How is a conference talk different from a paper?
Conference talks

On the plus side:

✅ Great advertising for you and your work!

On the minus side:
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On the minus side:

❌ You can’t say much.

❌ The audience may or may not care.

❌ Even those who care will easily get lost.
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A paper structure that works

• Abstract
• Intro
• Key ideas
• Technical meat
• Related work
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A paper structure that works

- Intro
- Key ideas
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- Related work
Key ideas

- Use **concrete illustrative examples** and high-level intuition.

- Do **not** show the general solution! (People can go read your paper for that.)
A paper structure that works

- Abstract
- Intro
- Key ideas
- Technical meat
- Related work
A paper structure that works

- **Intro** (8 minutes)
- **Key ideas** (11 minutes)
A paper structure that works

- Intro (8 minutes)
- Key ideas (11 minutes)
- What else is in the paper (1 minute)
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BRO

WHAT'S YOUR PROBLEM?!
Stage the motivation

● **First, get to a problem.**
  - Explain a **general** version of your problem (but not too general) **in the first 2 minutes**.

● **Then, get to the problem.**
  - Motivate and **explicitly state** your **specific** problem in the next 4 minutes.
  - Limit discussion of prior work only to what is needed to explain your problem.
WHAT DID YOU DO?!?!
Tell them what you did!

- **Proudly state your contributions.**
  
  After the motivation, the audience eagerly wants to hear what you did. Tell them!

- **Follow immediately with a crisp statement of your key idea(s).**
  
  It will give audience a take-home message, and give focus to the rest of your talk.
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Flow & coherence

Create flow with old to new

Create coherence with one slide, one point
Does this text flow?
Security proofs of cryptographic protocols are crucial for the security of everyday electronic communication. However, these proofs tend to be complex and difficult to get right. The game-playing technique, originally proposed by Jones et al., follows a code-based approach where the security properties are formulated in terms of probabilistic programs, called games. This is a general design principle for cryptographic proofs to ease their management.
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Old to new

- Begin sentences with old info
  - Creates link to earlier text

- End sentences with new info
  - Creates link to the text that follows
  - Also places new info in position of emphasis
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Flow in talks

- **Within** a slide:
  - Script should follow “old to new”

- **Between** slides:
  - Don’t just flip to next slide and say, “So…”
  - Plan something to say *during* the transition
Flow & coherence

Create flow with old to new

Create coherence with one slide, one point
Optimization & Concurrency

- Compiler performs several optimizations to generate optimized code.
  - >100 optimizations in GCC, LLVM.

Correct optimizations for sequential programs may be incorrect for shared memory concurrency.

State-of-the-Art:

- Compilers are over-conservative;
  * optimization opportunities are lost.

or

- Buggy optimization
  * “Premature optimization is the root of all evil” ~ Donald Knuth
Talklets

- **Break long stretches of talk into talklets.**
  - More digestible units of story (2-4 min.)
  - But just having talklets is not enough…

- **Use transitions between talklets to remind the audience of the big picture.**
  - Summarize the point of the last talklet and how it connects to the next one.
A few words about Slide Design
No sense of style?

Don’t worry

The most important aspects of slide design have nothing to do with style
Access control is inadequate, scenario 2: Facebook timeline
- Facebook introduced timeline in 2011 and
  chronologically order all the information on your profile
- Make them easily searchable for other users
- Easier to search potentially embarrassing older content
- Users were afraid of privacy violation
  Access control was not changed!

Access control is inadequate, scenario 3: Spokeo
- Service aggregating information about individuals
  E.g., your Facebook profile address
- We can infer new non-public information
- Estimating wealth using address and property records
- Users complain of privacy violation
  Access control was not changed!

Access control is inadequate: Summary
- User retention suggests each of the cases violate privacy
- However, in none of the cases access control is violated
- We propose a new model to reason about privacy

Exposure: Definition
- We define exposure of information at time t or x P(x)
- P(t) (x) = U1d (x) t
  If not x, then E = \sum P(x)

Modeling user privacy using exposure
- For each content users have an expected exposure
  - How many other users are likely to access the content
- We can model privacy violation for an information as
  - Large deviation of actual exposure from expected exposure

Revisiting scenario 1: Facebook newsfeed
- Before newsfeed was introduced
  - Expected exposure: friends who will visit user's profile
  - Actual exposure was the same as expected exposure
- After newsfeed was introduced
  - Actual exposure is much higher than the expected exposure

Revisiting scenario 2: Facebook timeline
- Before timeline was introduced
  - Expected exposure for old data: friends who will still find old content
  - Actual exposure for old data was same as expected exposure
- After timeline was introduced
  - Actual exposure for old data: All friends who visit the profile
  - Actual exposure is much higher than the expected exposure

Revisiting scenario 3: Spokeo
- Before spokeo aggregated data
  - Expected exposure for new inferred data: users who dig
    up each individual piece of content from different sources
  - Actual exposure for inferred data was same as expected exposure
- After spokeo aggregated data
  - Actual exposure for new inferred data: all users who visit
    public information on website
  - Actual exposure is much higher than the expected exposure

Proposed model: managing privacy via exposure
- Major deviation from expected exposure can capture the privacy violations not covered by access control

Key challenge: Predicting future exposure
- Huge existing work for predicting growth in content popularity
  - Future YouTube views, Facebook likes, Retweets
  - Use machine learning, regression techniques
  - We can leverage advances in those fields to predict exposure
- ONS operators are best positioned to do the predictions
  - Empirical data on how information disseminates in networks
  - Facebook or YouTube already provide number of likes or views

Limitations of our model
- Privacy violation by inference using available data
  - It is extremely hard to enumerate all possible inference
Introduction
- Like an expanded version of the abstract
- Alternative approach (SP): Eliminate Context
  - Start with a concrete example, e.g., "Consider this Haskell code..."
  - If this works, it can be effective, but I find it often doesn't work
  - It assumes reader already knows context

A structure that works
- Abstract (1-2 paragraphs, 1000 readers)
- Intro (1-2 pages, 100 readers)
- Key ideas (2-3 pages, 50 readers)
- Technical meat (4-6 pages, 5 readers)
- Related work (1-2 pages, 100 readers)

"Key ideas" section
- Use concrete illustrative examples and high-level intuition
- Do not have to show the general solution (that's what the technical section is for)

Why have a "key ideas" section at all?
1. Forces you to have a "takeaway"
2. Many readers only care about the takeaway, not the technical details
3. For those who want the technical details, the key ideas are still useful as "scaffolding"

A confession
I don't always have a key ideas section.

Breadth-first traversal
Sometimes breadth-first doesn't work! e.g., if explaining 3 & 4 requires first explaining subtree rooted at 2

Layering the presentation
- "The paper is extremely well written."
- "The presentation of the semantics is well-motivated and understandable."
- Section 3-4: Present other key ideas and build up to the full semantics incrementally

Layering the presentation
- What if you don't have enough space for such a layered presentation?
  - Move some technical details to appendix
  - Submit to a better conference (I.e., a conference with a higher page limit)

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Key takeaways

- **Avoid PowerPoint-itis**
  - Don’t put lots of text on slides just so they are readable independently of the talk

- **Vary the look of the slides**
  - Some text-only slides are fine, but if there are too many in a row, audience falls asleep
That's all Folks!