



Computer Systems and Professional Practice

Professor Matthew Leeke
School of Computer Science
University of Birmingham

Communication and Presentations

Why Think About Communication?

Professional communication is at the core of everything you'll be doing throughout your career, regardless of industry, location, and role

Email is amongst the most misused and challenging format for professional communication

Presentations are as vital to scientific endeavours as they are to industrial advancement

Writing Effective Emails

Subject Line and Greeting

Use a clear subject line

Choose words that capture the main purpose, e.g., "Meeting to Discuss Research Proposal"

Begin with a respectful greeting

Start with "Dear [Title] [Name]," or, for someone you know less formally, "Hello [Name],"

Purpose and Content

State your purpose early

Explain your reason for writing within the first sentence or two

Help the recipient understand the email quickly

Be concise and focused

Stick to the topic at hand, using short paragraphs and bullet points if needed

Polite Language and Proofreading

Use polite language

It is easy to incorporate phrases like “Could you please” or “Would it be possible to”

Proofread

Before sending, check for spelling, grammar, and ensure the tone remains courteous and professional

Sign-off and Follow-up

End with a polite sign-off

Closing with “Best wishes” or “Sincerely” followed by your name and contact details

Follow up politely and respectfully

If you don’t hear back, send a polite reminder after a week

An out-of-office is a response - everyone deserves a holiday

Now Let Me Have A Rant

Most people know how to write a perfectly reasonable email

Basic English and politeness apply

We frequently receive emails which are rude, bizarre, and sometimes impossible to understand

Imagine you're emailing a senior academic or a resource address with unknown membership

How would you like to come across? How can you make your email effective?

From: A Student (MSci Comp Sci) <astudent@student.bham.ac.uk>

To: Matthew Leeke (Computer Science) <m.leeke@bham.ac.uk>

Subject: HELP ME – URGENT!!

I WNAT A EXTENSION FOR WORK THIS WEEK!! I HAVE BIN ILL LOL.

TNX

The advice I offer is inspired by Professor Mark Lee, who developed these guidelines for Birmingham students nearly 20 years ago

My Advice - Informal Emails

Start the email with a greeting. Using “Dear [Name]” or “Hi [Name]” is fine if you know them. Most staff prefer to be called by their forename. Using “Dear Professor [Surname]” is safe if you’re unsure.

Shorter emails are generally more effective

Politeness is not optional

Use correct English - you're at University!

Provide enough detail. For example, if you're asking for a meeting, provide your availability so that the recipient doesn't need to ask for it.

Sign off with a closing salutation and your name.

Advice - Formal Emails

If you know the name of the person and their title, it's best to use both, i.e., "Dear Dr. Jones". If you don't know the name of the person, using "Dear Sir or Madam" is fine.

Use correct English. This is a repeat but it is important if you're applying for a job, etc.. Why would anybody employ somebody who has low standards in their professional work?

Sign off with a closing salutation and your first name and surname

You may also wish to consider which of your email addresses you use.

If you were writing a formal letter, you should use "Yours sincerely" if you address the letter to a particular named individual and "Yours faithfully" if you address the letter to a generic "Sir or Madam"

This rule can be applied to formal email, but "Best regards", "Best wishes" etc. are also fine

Scientific Presentations

Let's Not Reinvent The Wheel

This guidance on scientific presentation is adapted from an infamous talk by Simon Peyton Jones at Microsoft Research Cambridge

The points made are most relevant to the presentation of research papers but the principles are universal



<https://www.microsoft.com/en-us/research/academic-program/give-great-research-talk/>

Importance of Research Presentations

Research presentations are commonplace in almost scientific fields

Computer Science conferences are normally put together on the basis of research presentations relating to a set of accepted (following peer-review) papers

Scientists present their research frequently - students, colleagues, collaborators, funding agencies, regulators, scientists, industrialist, government, general public, etc.

Presentations are a primary communication mechanisms for research results

Style of a Research Presentation

Often determined by length

45-60 min: to motivate the work with a thorough example, explore side-topics, or run a discussion with the audience

25 min: enough to convey the salient details of a piece of research

10 min: enough time to introduce the topic and give a brief introduction to the method or results (6-12 slides) - usually what the work is about , not the work itself

Scientific Presentations - Purpose

Purpose

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

Purpose

People coming to see your presentation is actually giving their valuable time to you

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

Scientific Presentations - Audience

Audience

The audience you would like:

Have read all your earlier papers

Thoroughly understand all the relevant theory of cartesian closed endomorphic bifunctors

Are all agog to hear about the latest developments in your work

Are fresh, alert, and ready for action

Audience

The audience you get:

Have never heard of you

Have heard of bifunctors, but wish they hadn't

Have just had lunch and are ready for a doze

**Your mission is to WAKE THEM UP
and make them glad they did**

Scientific Presentations - What To Include

What To Include

1. Motivation (20%)

2. Your Idea (80%)

3. There is no 3

Motivation

Start the talk by giving a concise overview of what the motivation is, and you have done

Your audience 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 two minutes to engage your audience before they start to doze.

Motivation

Example: Java class files are large (brief figures), and get sent over the network. Can we use language-aware compression to shrink them?

Yes, and I'm going to show you how we can do 50% better than the best generic zipping technology

You have 2 minutes to answer these questions.

Don't waste those 2 minutes.

Example: Synchronisation errors in concurrent programs are a nightmare to find. I'm going to show you a type system that finds many such errors at compile time.

Your Idea

You must identify a key idea.

“What I did this summer” is No Good.

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

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.

Narrow-and-Deep Usually Beats Wide-and-Shallow

Avoid shallow overviews at all costs

Cut to the chase: the technical “meat”

It's ok to cover only part of your paper

Always use examples to convey ideas - move from specifics (examples) to general ideas (theory, generalisation)

People learn from specifics and move towards abstractions from there

Examples are your main weapon

To motivate the work

To convey the basic intuition

To illustrate The Idea in action

To show extreme cases

To highlight shortcomings

Scientific Presentations - What To Leave Out

Outline Of My Talk

Background

The FLUGOL system and Shortcomings of FLUGOL

Overview of synthetic epimorphisms

Π -reducible decidability of the pseudo-curried fragment under the S- invariant in FLUGOL

Benchmark results

Related work

Conclusions and further work

No outline!

“Outline of my talk”: conveys near zero information at the start of your talk.

Worse, since your audience only gives you 2 minutes before dozing, you've just lost them

But maybe put up an outline for orientation after your motivation

Signposts at pause points during the talk

Related Work

[PMW83] The seminal paper

[SPZ88] First use of epimorphisms

[PN93] Application of epimorphisms to wibblification

[BXX98] Lacks full abstraction

[XXB99] Only runs on Sparc, no integration with GUI

Do Not Present Related Work!

But:

You absolutely must know the related work; respond readily to questions

Acknowledge co-authors (title slide), and pre-cursors (as you go along)

Praise the opposition

"X's very interesting work does Y; I have extended it to do Z"

Technical Detail

$$\begin{array}{c}
 \frac{}{\Gamma \vdash k : \tau_k} \quad \frac{\Gamma \cup \{x : \tau\} \vdash e : \tau'}{\Gamma \vdash \lambda x.e : \tau \rightarrow \tau'} \quad \frac{\Gamma \vdash e_1 : \text{ST } \tau^o \tau \quad \Gamma \vdash e_2 : \tau \rightarrow \text{ST } \tau^o \tau'}{\Gamma \vdash e_1 >>= e_2 : \text{ST } \tau^o \tau'}
 \\[10pt]
 \frac{\Gamma \vdash e : \tau}{\Gamma \vdash \text{returnST } e : \text{ST } \tau^o \tau} \quad \frac{\Gamma \vdash e : \tau}{\Gamma \vdash \text{newVar } e : \text{ST } \tau^o (\text{MutVar } \tau^o \tau)} \quad \frac{\Gamma \vdash e : \text{MutVar } \tau^o \tau}{\Gamma \vdash \text{readVar } e : \text{ST } \tau^o \tau}
 \\[10pt]
 \frac{\Gamma \vdash e_1 : \text{MutVar } \tau^o \tau \quad \Gamma \vdash e_2 : \tau}{\Gamma \vdash \text{writeVar } e_1 e_2 : \text{ST } \tau^o \text{ Unit}} \quad \frac{}{\Gamma \cup \{x : \forall \alpha_i.\tau\} \vdash x : \tau[\tau_i/\alpha_i]}
 \\[10pt]
 \frac{\Gamma \vdash e : \tau' \rightarrow \tau \quad \Gamma \vdash e' : \tau'}{\Gamma \vdash e e' : \tau} \quad \frac{\Gamma \vdash e : \text{ST } \alpha^o \tau}{\Gamma \vdash \text{runST } e : \tau} \quad \alpha^o \notin FV(\Gamma, \tau)
 \\[10pt]
 \frac{\forall j. \Gamma \cup \{x_i : \tau_i\}_i \vdash e_j : \tau_j \quad \Gamma \cup \{x_i : \forall \alpha_{j_i}.\tau_i\}_i \vdash e' : \tau'}{\Gamma \vdash \text{let } \{x_i = e_i\}_i \text{ in } e' : \tau'} \quad \alpha_{j_i} \in FV(\tau_i) - FV(\Gamma)
 \end{array}$$

Figure 1. Typing Rules

Omit Technical Details

Even though every line is drenched in your blood and sweat, dense clouds of notation will send your audience to sleep

Present specific aspects only; refer to the paper for the details

By all means have backup slides to use in response to questions

Scientific Presentations - Presenting

Enthusiasm

Your most potent weapon, by far, is your **ENTHUSIASM!!**

If you do not seem excited by your idea, why should the audience be?

Enthusiasm makes people dramatically more receptive

It gets you loosened up, breathing, moving around

Avoid making your talk a formal entity, but making an informal dialog (e.g., like explaining something to a colleague on a white board)

Write Your Slides The Night Before

Your talk absolutely must be fresh in your mind

Ideas will occur to you during the conference, as you obsess on your talk during other people's presentations

Do Not Apologise

“I didn’t have time to prepare this talk properly”

“My computer broke down, so I don’t have the results I expected”

“I don’t have time to tell you about this”

“I don’t feel qualified to address this audience”

The Jelly Effect

If you are anything like me, you will experience apparently severe pre-talk symptoms

Inability to breathe

Inability to stand up (legs give way)

Inability to operate brain

What To Do About It

Deep breathing during previous talk

You are not a wimp.

Script your first few sentences precisely (no brain required)

Everyone feels this way.

Move around a lot, use large gestures, wave your arms, stand on chairs

Go to the loo first

Being Seen

Face the audience, not the screen

Know your material

Put your laptop in front of you, screen towards you

Don't point much, but when you do, point at the screen, not at your laptop

Being Heard

Speak to someone at the back of the room, even if you have a microphone on

Make eye contact; identify a nodder, and speak to him or her (better still, more than one)

Watch audience for questions...

Questions

Questions are not a problem

Questions are a **golden golden golden** opportunity to connect with your audience

Specifically encourage questions during your talk: pause briefly now and then, ask for questions

Be prepared to truncate your talk if you run out of time. Better to connect, and not to present all your material

Questions

Dealing with antagonistic questions?

What to do when majority of your audience is lost?

Repeat the question from an audience member so that others can also hear it

If you do not know the answer to a question say so and see if you can yourself gain some insights from that question.

Being A Good Audience Member

Eye contact with speaker

Nod frequently

Ask questions

Don't wait for the speaker to invite questions; ask

Start doing so the moment you lose contact with the talk. The rest of the audience will thank you for it.

Stop when you sense that you are beginning to de-rail the entire talk.

Presenting Your Slides

Use a wireless presenter gizmo

Test that your laptop works with the projector, in advance

Laptops break: leave a backup copy on the web; bring a backup copy on a disk or USB key

Presenting Your Slides

A very annoying technique

... is to reveal

... your points

... one

... by one

... by one, unless

... there is a punch line

Presenting Your Slides

Use animation effects:

very

very

very

very

very

very

very

sparingly

Finishing

Audiences get restive and essentially stop listening when your time is up.

**Absolutely without fail,
finish on time.**

Continuing is very counter productive

Simply truncate and conclude

Do not say "would you like me to go on?" (it's hard to say "no thanks")

Conclusion: There Is Hope

You will attend 50x as many talks as you give.

Watch other people's talks intelligently, and pick up ideas for what to do and what to avoid.

The general standard is often low.

You don't have to be outstanding to stand out.

What Your Talk Is For

What your talk is for:

Your paper = the beef

Your talk = the beef advertisement

Do not confuse the two

Do it! Do it! Do it!

Good papers and talks are a fundamental part of research excellence

Invest time

Learn skills

Practice

Write a paper, and give a talk, about any idea, no matter how weedy and insignificant it may seem to you.

Research Is Communication

Your papers and talks:

Make your ideas concrete

Communicate them to others

Get feedback

Build relationships

(And garner research brownie points)

**The greatest ideas are worthless
if you keep them to yourself.**

Checklist for Your Presentation

What is the key thing the audience should remember?

Is the talk self-contained?

Is the structure right for the length?

Is the talk balanced, without too much time given to any one element?

Are complex issues explained in gentle stages?

Are the results explained and is the impact of the results made clear?

Were the limitations of the research discussed?

Checklist for Your Presentation

Are the font sizes reasonable?

Are the slides easy to understand?

Do you have the right to use the figures and illustrations?

Have you prepared something to say about each slide?

Is there a clear conclusion?



Advice on Presentations

Consider your audience and what they might want to gain from your presentation

Prepare your presentation, focusing on what you will say and the key idea that you are trying to communicate

Reaching calm and comfort in presentations usually comes with experience - try to take opportunities to present

