

Advice on Writing and Presentation

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Logistics

Access to the Prince cluster

Project presentation (10%)

- ▶ Date: Dec 8 during the lecture
- ▶ Important: **one member** from each team should create a **group submission** on Gradescope under “Final project presentation”
- ▶ Presentation schedule will be announced on Piazza
- ▶ Format: 3 minute talk and 1 minute Q&A with the audience
- ▶ Grading policy:
 - ▶ Clarity (problem 2% + approach 3% + evaluation 2%)
 - ▶ Style (2%)
 - ▶ Q&A (1%)

Logistics

Final report (20%)

- ▶ Due date: Dec 20 11:59pm
- ▶ Each group only needs to submit one report on Gradescope
- ▶ Format: 4–8 pages (.pdf) in ACL format (see details on website)
- ▶ Structure: we will talk about it today.
- ▶ Grading policy:
 - ▶ Clarity (3%)
 - ▶ Literature survey (3%)
 - ▶ Technical content (soundness 5% + innovation 5%)
 - ▶ Evaluation (4%)

Write the paper first

Jason Eisner's advice: [http:](http://www.cs.jhu.edu/~jason/advice/write-the-paper-first.html)

[//www.cs.jhu.edu/~jason/advice/write-the-paper-first.html](http://www.cs.jhu.edu/~jason/advice/write-the-paper-first.html)

- ▶ Writing is the best use of limited time
 - ▶ The audience only pays attention as far as they can understand
 - ▶ The idea (the writeup) is often more useful than the software
- ▶ Writing helps you plan what to do next
 - ▶ Writing things down forces you to come up with a coherent story
 - ▶ It helps you see the holes in your logic (if you are honest)
- ▶ Writing makes collaboration easier
 - ▶ Meetings are more effective
 - ▶ Someone can continue to work from where you left

Writing is not just translating thinking into words; it is part of the thinking.

Typical structure of an NLP paper/talk

1. **Title:** a precise summary of the paper's contribution
2. **Abstract:** high-level overview of the paper
3. **Introduction:** extended abstract
4. **Method:**
 - 4.1 Problem statement: formulation of the problem
 - 4.2 Approach: technical details of your method
5. **Experiments:**
 - 5.1 Setup: data, baselines, hyperparameters etc.
 - 5.2 Results: report all results (positive or negative)
 - 5.3 Analysis: how should one read the results
6. **Related work** (may also come after intro): prior approaches to the problem
7. **Conclusion:** summarize the highlights and point out future directions

Title

- ▶ Used as an index to retrieve or refer to the paper
- ▶ Be precise and specific
 - ▶ Too generic: “A New Model for Image Caption Generation”
 - ▶ Better: “Neural Image Caption Generation with Visual Attention”
 - ▶ Think about the keywords your audience might put in the search bar
- ▶ Don't overclaim your contribution
- ▶ It's nice to have a catchy phrase but don't force it
 - ▶ Include it only if it's relevant and delivers the key message
 - ▶ Good examples:
 - ▶ “[Show, Attend and Tell](#): Neural Image Caption Generation with Visual Attention”
 - ▶ “[Know What You Don't Know](#): Unanswerable Questions for SQuAD”
 - ▶ Often a precise, “plain” title is good enough
- ▶ Avoid extra formatting

Abstract

Include all key messages: abstract has the most number of readers!

1. **The problem:**

- 1.1 The general topic: “Deep Neural Networks (DNNs) are powerful models that have achieved excellent performance on difficult learning tasks.”
- 1.2 The specific problem: “Although DNNs work well whenever large labeled training sets are available, they cannot be used to map sequences to sequences.”

2. **Your contribution:**

- 2.1 One-sentence summary: “In this paper, we present a general end-to-end approach to sequence learning that makes minimal assumptions on the sequence structure.”
- 2.2 Your method: “Our method uses a multilayered Long Short-Term Memory (LSTM) to map the input sequence to a vector...”
- 2.3 Impact/results: “Our main result is that on an English to French translation task from the WMT-14 dataset...”

Introduction

Follow the same structure as the abstract but with more details

1. The problem: context, motivation, important related work
 2. Your approach: intuition, high-level description
 3. Results: summary of experimental results, takeaways
- ▶ Don't spend too much space on general introduction and related work. The reader should know what you did by the second paragraph.
 - ▶ Use examples and figures to illustrate your method.
 - ▶ All claims should be supported by experiments/theories/analysis/citations.
 - ▶ Use forward reference:
“Our algorithm has linear time complexity at inference time (Section 2.1).”

Approach

- ▶ Many different ways to structure the section depending on the content
- ▶ Bad strategy: top down
 - ▶ A documentation of your final method: “Our model consists of three components: A, B, C.”
 - ▶ Easier to write but hard to read: where does each component come from?
- ▶ Good strategy: bottom up
 - ▶ **Build up the method** as if the readers are developing the method with you
 - “A really simple way to solve the problem is to use A.”
 - “However, it doesn’t consider X, so we add B.”
 - “To further improve Y, we add C.”
 - ▶ By the time the reader finishes reading, they should think: “This is obvious! I could have come up with the idea”.

Approach

General suggestions:

- ▶ Always give high-level ideas and intuitions before go into technical details
- ▶ Put the “why” before the “how”
- ▶ Use running examples when illustrating complex concepts or procedures
- ▶ Notations and terminologies should be consistent throughout the paper
- ▶ Use equations only when it adds additional information.
 - ▶ Sometimes an idea can be described precisely in words.
 - ▶ Even when you do need an equation, describing it in words first is helpful.

Experiments

- ▶ Setup: datasets, metrics, baselines
- ▶ Implementation details: preprocessing, hyperparameters of the model and the algorithm
- ▶ Results:
 - ▶ Full results are often shown in tables and charts.
 - ▶ In the main text, highlight important numbers and [takeaways](#).
- ▶ Analysis: provides better understanding of the results, e.g.
 - ▶ Ablation study of the model: are all components equally important?
 - ▶ Error analysis: what are the limitations of the method?
 - ▶ If the results are negative: what are possible reasons?
(Often there is a mismatch between the assumptions you made and the data.)

Related work

If some work directly motivates your work, it should go into the intro. E.g. you are

- ▶ extending a previous work,
- ▶ applying a prior method to your problem.

Why put related work at the end?

- ▶ The reader has not gained a good understanding of the problem and your approach to make judgments after the introduction.
- ▶ It breaks the flow from the introduction to the approach.
- ▶ It provides an overview of the area and transitions well to the conclusion.

Don't just survey the area; describe **how your work situates in the broader context**.

Conclusion

- ▶ Highlight the key findings from your work.
- ▶ Here is the place where you can take some freedom to state your opinions
 - ▶ What are the limitations of your approach?
 - ▶ What are the important next steps?
 - ▶ What are promising future directions for the problem?

General suggestion

- ▶ Think about the key message you want to deliver and “repeating” it throughout the paper.
- ▶ Put yourself in the reader’s shoes.
- ▶ Get feedback from people who are less familiar with your work.

Talks vs papers

- ▶ The talk mirrors the paper so much of the advice still applies.
- ▶ But, the talk contains **much fewer details**.
The paper is similar to the manual of a tool, while the talk is your explanation of how to use the tool.
- ▶ You have more freedom on how to communicate in the talk
 - ▶ Use video/audio/animation, memes/stories etc.
 - ▶ Interact with the audience (ask questions, voting, demo)
- ▶ Purpose of the talk
 - ▶ Convey the key idea of your paper (not all technical details)
 - ▶ Advertise your work (so that they will read the paper)
 - ▶ Entertaining (it's a performance)

Giving the talk

General advice

- ▶ Number one mistake to avoid: **go over the time limit**
(Generally, prepare n slides for an n -minute talk.)
- ▶ Know your opening sentences by heart (the rest will be easy)
- ▶ Use a lot of examples, especially given limited time
- ▶ Don't talk about related work (they may be mentioned during Q&A)

For the project presentation

- ▶ You only have 3 minutes: practice is important!
- ▶ If more than one member will be presenting, practice the transition.
- ▶ Test audio and screen sharing to avoid technical issues.
- ▶ Suggested structure:
problem/motivation, key ideas, evaluation, conclusion (1 slide each)

Opening

Main goal: engage the audience

- ▶ What is the problem? (Audience: what's this about?)
- ▶ Why is it important? (Audience: why should I care?)
- ▶ What's the challenge? (Audience: this is not trivial?)

They should be excited to hear your approach by now.

Be creative: use examples, data, quotes, anecdotes etc.

Key ideas

- ▶ **Use the bottom-up strategy**: solve the puzzle with the audience. It doesn't have to follow how you actually solved the problem, but there should be a story to connect all the pieces.
- ▶ **Think about what the audience may be wondering**: ask a question, then answer it.
“Now, how do we optimize it given that the expectation is intractable? We use ...”
- ▶ **Leave the details to the paper**: what is the minimal set of things they need to understand?
- ▶ **Create references** to your key ideas/concepts.
 - ▶ Use icons, figures, running examples, toy problems, analogies etc.
 - ▶ This should be in their head when they retrieve your idea.

Results

- ▶ Don't paste a wall of numbers. Use bar charts.
- ▶ Guide the audience on where they should pay attention.
- ▶ Put an explicit takeaway/tagline for each result you show.
- ▶ Think about it as a sequence of question-answer pairs.
 - “How well does the approach work on benchmark A?”
 - “What about a different domain?”
 - “Is component B really necessary?”
 - “How fast is the inference?”

Conclusion

- ▶ Don't end the presentation with a “thank you” slide (you could just say it).
 - ▶ It's good to show acknowledgement to collaborators though.
- ▶ Show the takeaway messages you want the audience to leave with.
- ▶ Show the highlights/summary of the talk to start Q&A.

Style

Basics

- ▶ Font: sans-serif; sizes: 24+.
- ▶ Number slides (for easy reference during Q&A).

Layout

- ▶ Avoid clutter, wordiness (and full sentences).
The lecture slides are bad examples (because it's used both for the talk and for reference).
- ▶ Use keywords, diagrams, figures: the audience should pay attention to *you*, not the slides.
- ▶ If the content is complex, use animation to reveal the full slide.

Visual guidance

- ▶ Color coding should be consistent throughout the presentation.
- ▶ Use arrows and boxes to help the audience read figures and tables.
- ▶ Highlight (bold, background color) key messages.

Q&A

- ▶ Common types of questions
 - ▶ Clarification: “Can you explain X again?”
 - ▶ Interpretation of the results: “Why is there a dip in the learning curve?”
 - ▶ Comparison: “How is this different from X?”
 - ▶ Extensions and new perspectives of the work (this is the type of questions we like)
- ▶ It’s okay to pause before you answer the question.
- ▶ Provide your thoughts even if you have no idea what’s the answer. Don’t just say “I don’t know”.