

Research Methods in computer science

Spring 2020

Lecture 20

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Agenda

Talk Critique

Generating Ideas

Reading Papers

Conference Updates

We had discussion with Jaspal Subhlok on talks and presentations. This was a follow up from last week's lecture.

Some Practical Points about Talks

Managing questions

References slides

Slide numbers

Type/number of examples

What to do when reaching time limits

What if people get up and leave?

What is the most important thing that matters as a speaker?

Is there a dress code?

How to shorten a talk?

How much details to put in a talk?

Should I maintain eye contact?

How to talk about weakness of the work?

Input from Students on Things to Improve

Confidence

Humor

Develop good knowledge of the topic

Provide clear idea

Illustrations and Images

Good organization

Tailor to the audience

Lots of Practice

Record and watch

Speak slow and clearly

Smartly deal with malicious questions

Good time management

Fluency

Logical order

Have good research result

What worked well in a Recent Talk

Conveyed good knowledge of the topic

Volume was loud

Detailed explanation

Lots of diagrams and graphs and visuals

Confidence of the speaker

Always smiled

Basics was covered

Logical organization

Maintained map of the talk

Explained the topic well

What didn't work well in a Recent Talk

Slow

Too basic

Didn't explain some topics well

Some illustrations/graph not intuitive

Didn't highlight key ideas

Too much content

Too many jargons

Poor time management

We had a student share his/her recent presentation experience.

Generating Research Ideas

“Standing on the shoulders of giants”

Most ideas may not be new

New may be subjective

Adding a layer to an existing deep learning architecture

When is it new?

When is it not new?

Idea Generator Heuristics

Combination / Hybrid techniques

From the same discipline

(e.g.,)

From a different discipline

(e.g.,)

Address Gap/limitation (Incremental?)

Handle some cases that were not handled

Improve some (partial) aspects of dimension

Apply different datasets / settings / contexts

In Class Activity

Idea Generation

Pick an important paper in your area of research.

Consider three different ways to generate research based on the paper you picked and generate one idea per technique.

Explain the heuristics and demonstrate how you use the heuristics to create a new ideas.

How to Read a Scientific Paper

Begin with introduction, not abstract.

Identify the big question

Summarize the background in five sentences

Identify the specific questions

Identify the approach

Read the methods section

Read the results section

Determine if the results answer the questions

Read the conclusions/discussion/interpretation section

Read the abstract

Find out what others say about the paper

https://www.huffingtonpost.com/jennifer-raff/how-to-read-and-understand-a-scientific-paper_b_5501628.html

How to read a research paper

Goal is to understand the scientific contribution

Read critically

Question the study, approach, ...

Read creatively

Extrapolate, extend, generalize, ...

Make notes

Summarize

Compare

<https://www.eecs.harvard.edu/~michaelm/postscripts/ReadPaper.pdf>

How to Read a Paper

First pass [5-10 mins]

High level idea, category, context, contributions

Second pass [1 hr]

Some results, key ideas of the paper and key evidence

Third pass [variable]

Attention to detail, re-create the paper

<http://ccr.sigcomm.org/online/files/p83-keshavA.pdf>

How to Read an Engineering Research Paper

Read to answer questions

1. What are motivations for this work?
2. What is the proposed solution?
3. What is the work's evaluation of the proposed solution?
4. What is your analysis of the identified problem, idea and evaluation?
5. What are the contributions?
6. What are future directions for this research?
7. What questions are you left with?
8. What is your take-away message from this paper?

From “Where” to Read Papers?

Conferences? Which?

Journals? Which?

From where else?

Paper Notes / Tracking

Things worth remembering

Results, Ideas, Authors,

Electronic systems [Mendeley??...]

Could be integrated with References

Conference Updates

Paper submission deadline this Friday

Review and other logistics