Deep Learning for Big Code

263-2926-00L

Veselin Raychev

Organizational

Every Monday, 16-18, CAB G52

Fill in the top 5 choices of papers on the link sent by email until end of day, Tuesday, **22.02.2022**

21.02. This lecture (Veselin Raychev)

Then, two presentations per class, schedule to be posted
A few classes will/may be over zoom, indicate if you want to present this way
We may transmit over zoom,
But not recording

Presentation schedule and paper assignment will be posted on the website on 23.02.2022

https://www.sri.inf.ethz.ch/teaching/bigcode22

The goal is open discussion of papers,
not producing teaching materials

Organizational (2)

Important:

Fill in the top 5 choices of papers on the link sent by email until end of day, Tuesday, **22.02.2022**

Failure to submit paper preferences on time may cause organizational trouble and in the worst case inability to present at all

Presentation schedule and paper assignment will be posted on the website on 23.02.2022

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Goals

Learn how to read and evaluate papers in the area

Understand a paper in depth

Learn state-of-the-art machine learning techniques

Learn how to make good technical presentations

Have fun (applies to all steps)

How to read and understand a paper?

3 C’s of reading

Carefully	lookup terms, skim related work or follow-up work
Critically	find limitations
Creatively	think of improvements

Write down key ideas
Consult with TA/instructors with questions (over email is best)

Understand a paper in depth (1)

Explain motivation for work

Understand concept

Sketch the technical solution (in presentation)

If applicable

- Try to play with the ideas on a smaller example (not from the paper)

Understand a paper in depth (2)

Find limitations of approach. Two questions:

- When is the approach a good idea? When is it not so good idea?

Why are evaluation results such

- What does not work?

What can be improved

- e.g. can some property in the input be taken into account?
- e.g. is technique slow/fast and scalable and why?
- Is it easy to generate or obtain more training data?

Making good technical presentation

Meet advisor, get feedback. Discussion with adviser not graded.

Mandatory at least one meeting, be ready with draft presentation

Get most out of it

Case 1 Paper not well understood, presentation is going over the chapters and evaluation results	Case 2 Ideas in paper are understood	Case 3 Paper is well understood Limitations are clear
Discussion will mostly be on **style** and **formatting** of slides	Discussion will be on **how** to present the ideas	Discussion will be on **which** are the **interesting results** to present

Common pitfalls

Explaining some complex math

Why is it a problem?
- Audience will not follow you
- Rarely it is surprising

What to do:
- Give intuition. Paper is for details
- Say what is unusual. Not a lecture

Hard to follow parts => bad questions

But do not oversimplify

Asking the wrong question about the neural network architecture

Why is it a problem?
- “Precision is higher” is not a sufficient reason to choose an architecture

What to do:
- Give a drawing, talk on it briefly
- Give motivation where possible

Considering only the example from the paper

Why is it a problem?
- Authors chose it for a reason, but the reason is to “sell” the paper

What to do:
- Understand what works

Contact your TA for help

It is required to contact them the week before the seminar

TA are not required to answer you on Friday afternoon or during the weekend (unless prearranged)
Make sure to be almost ready for presentation when meeting a TA

Learn state-of-the-art machine learning techniques

Ask questions during presentations

You can learn about the topic without reading everything yourself

Cumulative knowledge of the group increases

Deep questions will help others understand the topic

Grading

Quality of your final presentation:

- how well you **understood** the material ? (e.g. did you run the code if there is one)
- how well you **presented** it ? (did we understand it)
- how well you **answered** the questions ?

We will take into account **paper difficulty**

Participation: did you ask good questions ?

Attendance will be taken (do not miss classes)