PROGRAMMING IN PYTHON II

Literature Research – Resources

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Outline

1. First ML Project Steps
2. Literature Research – Start
3. Literature Research – Resources
4. Literature Research – Caution!

FIRST ML PROJECT STEPS

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  1. Meeting to discuss goals of project with parties involved
  2. Meeting to get overview over existing data, if any
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$\rightarrow$ Literature research!

LITERATURE RESEARCH – START

Literature Research – Start

- Always look into the current state of research!
- The field of ML is advancing rapidly and you will/should be overwhelmed by the amount of publications
- Start by getting an overview
  - Do a google-search to get first impression and keywords
  - Talk to (non-ML) experts in the field of the data/task to get a list of potential research fields and different naming conventions
  - Especially in research: Talk to your supervisor and colleagues to get names of fields, authors, conferences, journals – use their experience!
  - Be aware of research "bubbles" and biases!

LITERATURE RESEARCH – RESOURCES

Literature Research – Resources (1)

- Books
  - Yes, they do exist and are important
  - Standard works, e.g. Pattern Recognition And Machine Learning (Bishop), are preferred references
- Lecture Materials
- Conferences and Journals
  - Conferences (NeurIPS, ICML, ICLR) have a higher status than in other scientific fields
  - Medium of publication depends on field
  - Reviewed and high quality
- Relevant publications
  - Check the bibliography, someone already did literature research for you (but might be biased)

Literature Research – Resources (2)

- `https://arxiv.org/` – Pre-print publications
  - Not all peer-reviewed, be careful!
  - Lots of scientific fields, including different categories directly concerning ML
  - 30-100 new publications per day
- `https://scholar.google.com/` – Search-engine for publications
  - Good for looking up authors, papers, books, topics
  - Good source for citation information
- `https://github.com/`
  - Main resource for published code, baseline implementations, benchmarks
  - Typically not reviewed, often unofficial – be careful!

Literature Research – Resources (3)

- `https://www.reddit.com/r/MachineLearning/`, wikis, blogs, twitter, ...
  - Good to get an overview/introduction
  - Sometimes good for benchmarks but often biased
  - Not reviewed, often not by original authors, often very shallow
  - Nice complimentary material but no replacement for actual publications

LITERATURE RESEARCH – CAUTION!

Literature Research – Caution!

- Finally, a word of caution:
  - Too many submissions, not enough reviewers $\rightarrow$decreasing quality of publications
  - Check if scientific standards were violated
  - Keep biases and bubbles in mind
  - Do not blindly trust code you find on the internet