

JADS Workshop on Responsible Data Science

RDS:

- Fairness
- Accuracy
- Confidentiality
- Transparency

“Data science without guesswork –
How to answer questions with a
guaranteed level of accuracy?”

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Data science with(out) guesswork

- Why?
- What?
- How?



Open questions

- Accuracy \Leftrightarrow Guarantees, accountability and responsibility
- Accuracy \Leftrightarrow What are the right measures?
- Accuracy \Leftrightarrow Do we understand the trade-offs well?

When should you trust your model's prediction?

- What are the **limits** of an algorithm / model and when is it known to (have high chances to) fail?
 - Beyond “simple” error bounds: errors generated by uncertain data, noisy labels, biased data, concept drift, ...
- Guarantees on *average* vs. *per case* performance
 - cf. worst case analysis
- **What** are we really trying to guarantee?
 - what are the right accuracy measures
 - in connection to accountability

What are (not so) well understood tradeoffs?

Models are hard to make 100% accurate \Leftrightarrow many trade-offs:

- Well formulated and well studied:
 - precision-recall; bias-variance; robustness-adaptivity;
- Well formulated, but not so well studied:
 - accuracy-computational resources; accuracy-human resources (inducing, applying and maintaining does not come for free)
- **Not so well formulated** and not so well studied:
 - Accuracy-fairness, accuracy-confidentiality, accuracy-privacy, accuracy-transparency, ...