

Explanation

- Why
- What
- How

Literature

- Joseph Y. Halpern, Judea Pearl: Causes and Explanations: A Structural-Model Approach - Part II: Explanations. IJCAI 2001: 27-34
- Joseph Y. Halpern, Judea Pearl: Causes and Explanations: A Structural-Model Approach: Part 1: Causes. UAI 2001: 194-202.

Why?

- Why explain?
 - Transparency for the user
(may be legal requirement)
- Why present uncertainty?
 - No certain answer
 - Certain answers not sufficient
 - Domain is uncertain per se (e.g. IR)

What to explain?

- a) Uncertainty of input
 - b) Uncertainty of model
 - c) Derivation graph -> lineage
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- Explanation at different levels of granularity (domain-dependent)
 - User-dependent explanation (expertise / privacy)

How to present uncertainty?

- Probabilities
 - Point value / mean + variance
 - Histograms
- Thresholding
(e.g. in spam filters)
- Fuzzyness:
 - Similarity search
 - Fuzzy joins
- Ranking
- Possible worlds
(for impossible answers)

When to explain how

- Probabilities
Business applications -> expected gain/loss
- Thresholds
Users want binary classification only
- Ranking
Users want order for inspecting answers
- Possible worlds/lineage
Why was this tuple (not) retrieved?