

Models/Theory of Adaptive IR

Breakout session

2nd Int. Workshop on

Adaptive Information Retrieval

Outline

- Why theory?
- Three layers, at least...
- Models of what?
- How does it help?
- How to get there?
- Roadmap...

Why Theory?

- Need models to solve practical ranked lists of choices
 - Steps leading to interaction, not documents.
 - Design choices based on principles rather than adhoc
- Meta-theory of interaction
 - Vocabulary, understanding, explaining, predicting?
- Model revision
 - Based on value explaining real behavior

Three Layers (at least)

- Meta-theory, framework
 - Of interaction
 - systems
 - but also users (!)
- Abstract models
 - Many: e.g., presenting term suggestions
- Concrete methods
 - Practical ways of estimating parameters
- Systems

Model of What?

- Meta-theory/Framework
- Macro level models of “interaction” in general
 - System, Users, ...
- Micro level models of “optimal” (list of) interaction options
 - Including the choice not to interact
- Goals of micro models is to optimize/satisfies macro-model
- Goal of macro model is to do “a better job than non-adaptive IR”

How Does it Help?

- Models tells what is important/ignored
- Models restricts how to estimate parameters
- More concretely, needed at the abstract level:
 - Effort/Cost, Utility/Relevance, Context (user, task, system).
 - More detailed (e.g., breaking down relevance) if needed
- Need to take into account
 - Modes of interactions
 - Abilities, Barriers of use
 - Variations on data, task, user background, session history, context, etc.

How to Get There?

- Top-down:
 - From grand theory (even Quantum?!?)
 - Probabilistic principles
 -
- Bottom-down:
 - From practical “design choices” (rank interaction choices)
 - From practical “interaction assumption” (users may value trust, or not)

Roadmap

- From small to grand theory
 - First practical models of low-level interaction
- Connect quickly to bottom-up
 - Test these models on fidelity – and practical usefulness
- Revise and expand theory
 - Etc.
- In this way, theory will contribute to practice
 - And it will advance theory...

Discussion

- Interaction and not adaptation?
 - Need to start small, but “adaptation” will need to take more than a single step into account
 - Further models need to deal with the whole “episode”
 - “Interaction” here is used in a broad sense
 - Its about user and system taking alternate turns in some sort of information game
 - Low-level interaction, one step taking input from user
 - High-level interaction, at the level of information behavior