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
    • It’s 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