Epicurious Curious: A User Centered Evaluation

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Outline

- Epicurious User-Centered Evaluation
- Evaluation
  - Evaluation of Evaluation
  - Web-based IR Evaluation (User-centered approach)
- Users
  - Searcher Studies
  - Searcher Theorizing
- Take Away
- Q & A

Related Work Presentation

- **Evaluation** in Information Retrieval
- **Users** in Information Retrieval

Evaluation of Evaluation

- Saracevic (1995)
  - Critical and historical analysis of evaluations of IR
    - System approach
    - Concerned with ‘information explosion’
    - Evaluating at certain level

Evaluation

- Evaluation of Evaluation
  - (Saracevic, 1995)

- Web-based IR Evaluation
  - Model of User Evaluation
    - (Su, 2003)
  - Recent Evaluations
    - (Hansen, 1998)
    - (Salampasis & Diamantaras, 2002)
    - (Spink, 2002)
Evaluation of Evaluation

- Levels of objectives in evaluation
  - System-Centered
    - Levels
      - What to evaluate
      - Engineering
        - Computational effectiveness
    - Input
      - Inputs and contents
    - Processing
      - Performance of algorithms
    - Output
      - Interactions with the system
    - Use & Users
      - Application to given problems
    - Social
      - Impact on the environments
  - User-Centered
- Challenges
  - IR is everywhere
  - Isolation of evaluations of IR at different levels
- IR Evaluation should be:
  - Integrating evaluations on different levels

Web-based IR Evaluation

- Model of User Evaluation
  - (Su, 2003)
- 3 experimental user-centered studies
  - IR User Interface (Hansen, 1998)
  - Evaluation of Web Search Engine (Salampasis & Diamantaras, 2002)
  - Evaluation of hypermedia digital library systems (Spink, 2002)

Su (2003):
- A Model of User Evaluation
  - Consists of two types of variables
    - Performance Measures
    - Non-performance characteristics
- IR Evaluation should:
  - Consider both performance and non-performance measures
  - Be based on real users, real information problems, and real systems

Web-based IR Evaluation

- Model of User Evaluation
  - Consists of two types of variables
    - Performance Measures
    - Non-performance characteristics
- 3 experimental user-centered studies
  - IR User Interface (Hansen, 1998)
  - Evaluation of Web Search Engine (Salampasis & Diamantaras, 2002)
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Evaluation of IR User Interface

Hansen (1998):
- An experimental evaluation study
  - Conducted in a real environment with a real users & information seeking situations
  - Data collection
    - Pre- and Post- Internet-based evaluation questionnaires
    - Search log history
- Results describe the user’s activities, tasks, and seeking behavior and preferences
- Implications for a user interface redesign of a web-based IR system

Experimental user-centered Evaluation

Spink (2002):
- A user-centered approach to evaluating human interaction with Web search engines
- The evaluation including effectiveness and usability
- Exploratory study with real users, real problems, and real system
  - 22 subjects searched Inquirus (a web meta-search tool) on their own personal information topics
- Information problem shift as the IR evaluation measure

Experimental user-centered Evaluation

Salampasis & Diamantaras (2002):
- Experimental User-Centered Evaluation
  - Evaluating two hypermedia systems
  - Real users, real system, but not real problems
- Results
  - Recall and Precision
  - Questionnaire results
- Multiple information seeking strategies should be supported

Synopsis: 3 User-centered studies

- Limitations
  - Many different variables must be taken into account
  - It requires a large effort to organize a user-centered evaluation
- Real users
- Evaluating at different levels (process and users at least)

User-centered Evaluation

“We cannot discover how users can best work with systems until the systems are built, yet we should build systems based on knowledge of users and how they work. This is a user-centered design paradox” (Marchionini, 1995, p. 75)

USERS

IR is a social problem between producers of information and users of information

(Saracevic, 1995)
**Users**

- **Searcher Studies**
  - (Thury, 1998)
  - (Spink et al., 2001)
  - (Fidel, 1987)
  - (Greisdorf, 2003)

- **Searcher Theorizing**
  - (Bates, 2002)
  - (Dervin, 1995)

**Taking Aim at Users?**

**Web Searcher Study**

(Thury, 1998) – Observed the searchers

Findings
- Not concerned with authority, bias or time spent searching
- Do not consider all possibilities
- "take what they can get"

Conclusion: The search process for web users is aimless, undirected and arbitrary.

**Web Searcher Study**

(Spink et al, 2001) – Analyzed user queries:

- Queries are short, simple in structure, few advanced search features used (1/2 of those are wrong)
- Not interested in relevance feedback or in viewing many results

Conclusion: "Searching is a very low art."

**Web Searcher Study**

(Fidel, 1987) – 10 subjects, 2 requests / 2 months between searches

- Variables – no trend
- Situational variables (i.e. mood) ignored
- Also reviewed past work

Conclusion: Variables can not be studied until the search process is understood.

**Searcher Study**

(Greisdorf, 2003) – How users evaluate information – 32 users self reported value of results.

- Relevancy is complex – user dependant
- Cognitive levels to evaluation process

(Greisdorf, 2003) cont.

- **JUDGMENTS**
  - **PROBLEM** (information need)
  - **TOPIC** (expressible need)
  - **UNDERSTANDING** (comprehension)
  - **FUNCTION** (information use)

NEXT
Conclusions:

- Search process is complex.
- Searchers are engaged in a dynamic, multifaceted cognitive process.

Searcher Studies

- (Thury, 1998) (Spink et al., 2001)
  - Web searchers process is ill-conceived and poorly executed.
- (Fidel, 1987)
  - Stop targeting “the perfect searcher”
  - Look at search process
- (Greisdorf, 2003)
  - The search process is highly complex.

Searching Behavior Theory:

- (Dervin, 1995) - Communications
  - (Bates, 2002) – She did not stop with berrypicking

Searching Behavior Theory

- (Dervin, 1999) – Very Theoretical
  - Pigeon holing (hitting the user target) is a waste of time
  - Focus on process / usings / bridging.
  - Systems need to take this fluidity into account.

(Bates, 2002)

- Humans learn 80% just being aware
- 19% - browsing
- 1% - directed searching

To study searching include biological, physical and anthropological layers.
(Bates, 2002) Modes of Information Seeking

<table>
<thead>
<tr>
<th>Directed</th>
<th>Undirected</th>
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<tbody>
<tr>
<td>Active</td>
<td>Passive</td>
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<tr>
<td>Searching</td>
<td>Monitoring</td>
</tr>
<tr>
<td>Browsing</td>
<td>Being Aware</td>
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</tbody>
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(Bates, 2002) cont.

Conclusions:

- Searchers evolved as browsers.
- Least effort used to work.
- Unless highly motivated (Hungry?) Humans prefer browsable retrieval systems.

User Theory Conclusion

Class Query:

Can you think of an IR system that supports browsing, hunting, foraging, berry-picking, mating, information seeking and selection?


Take Away

- IR is everywhere
- Web searchers are often looking for gap filler not 1 specific document.
- Humans prefer to browse, be passive observers, unless highly motivated to actively search.
- Evaluation of IR: system-centered → user-centered or system-centered + user-centered?

Thank you. Questions?