

Improving the search experience by organizing Web search results with meaningful and stable categories

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HCIL Symposium and Open House

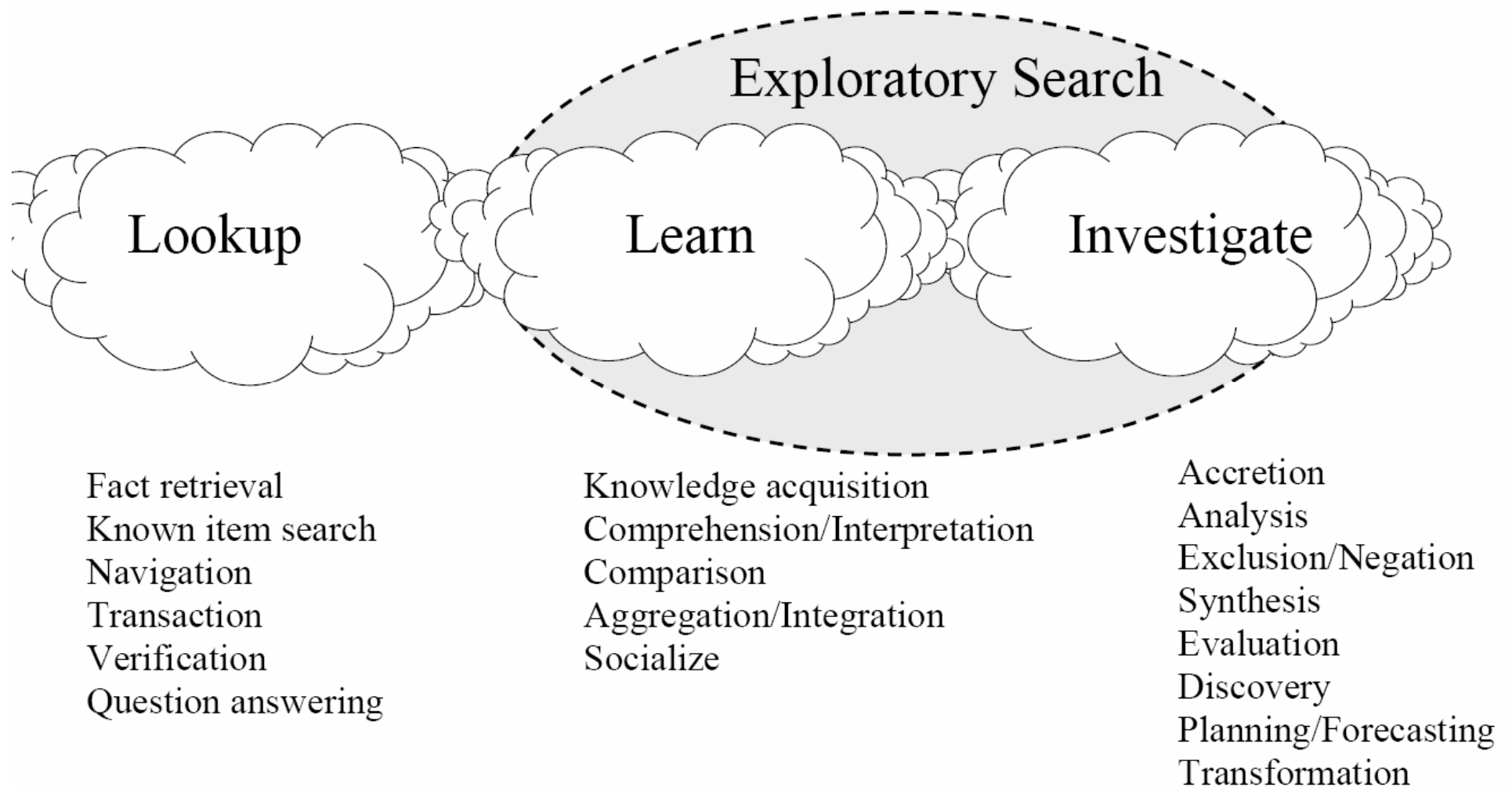


Outline

- Motivation and examples
- Comparative study
- Design principles
- Future work



Communications of the ACM, April 2006



Marchionini, G. (2006), Exploratory search: From finding to understanding, *CACM*, 49(4).

Categorized overview demo

Click below to filter results

[ODP Topics \(64%\)](#) ?

[Science \(26\) \[x\]](#)

[Reference \(22\) \[x\]](#)

[For Kids & Teens \(8\) \[x\]](#)

[Society \(8\) \[x\]](#)

[Business \(8\) \[x\]](#)

[Arts \(8\) \[x\]](#)

[Computers \(7\) \[x\]](#)

[Home \(5\) \[x\]](#)

[Health \(5\) \[x\]](#)

[News \(4\) \[x\]](#)

[Sports \(1\) \[x\]](#)

[Uncategorized \(36\) \[x\]](#)

[Geography \(27%\)](#) ?

[North America \(23\) \[x\]](#)

[Europe \(2\) \[x\]](#)

[Oceania \(1\) \[x\]](#)

[Asia \(1\) \[x\]](#)

[Uncategorized \(73\) \[x\]](#)

[US Government \(6%\)](#) ?

[Dept of Commerce \(3\) \[x\]](#)

Top 100 results containing **median**

Median

The **median** is the middle of a distribution: half the scores are above the ...

The **median** is less sensitive to extreme scores than the mean and this makes it ...

davidmlane.com/hyperstat/A27533.html [1]

Mean and Median

www.ruf.rice.edu/~lane/stat_sim/descriptive/ [2]

Median

Again, this statistic is easy to determine because the **median** literally is ...

Comparing the mean to the **median** for a set of data can give you an idea how ...

www.robertniles.com/stats/median.shtml [3]

Introduction to Statistics: Mean, Median, and Mode

The goal of this lesson is to introduce the concepts of mean, **median** and mode

... The Mean and **Median** Activity lets students explore mean and **median** in an ...

www.shodor.org/interactivate/lessons/sm1.html [4]

Mean, Median and Mode Discussion

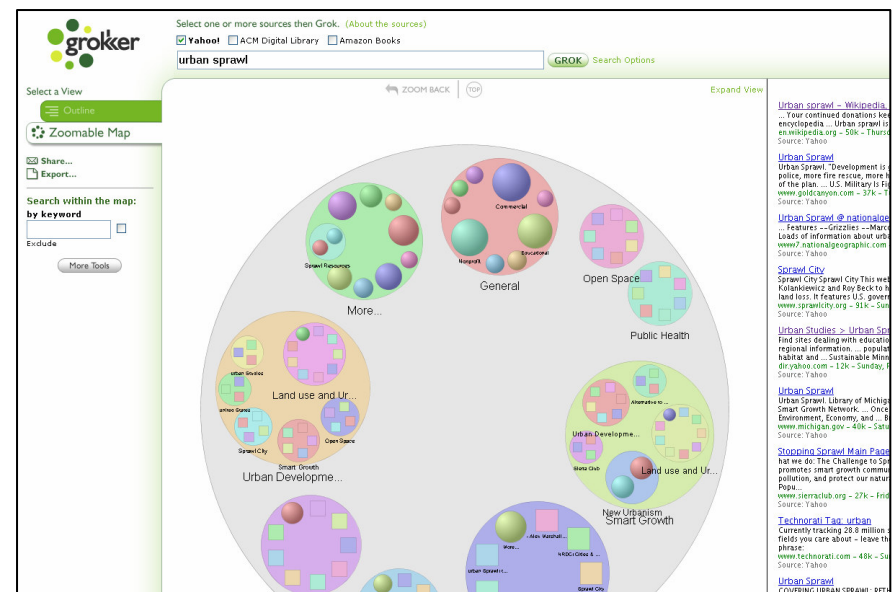
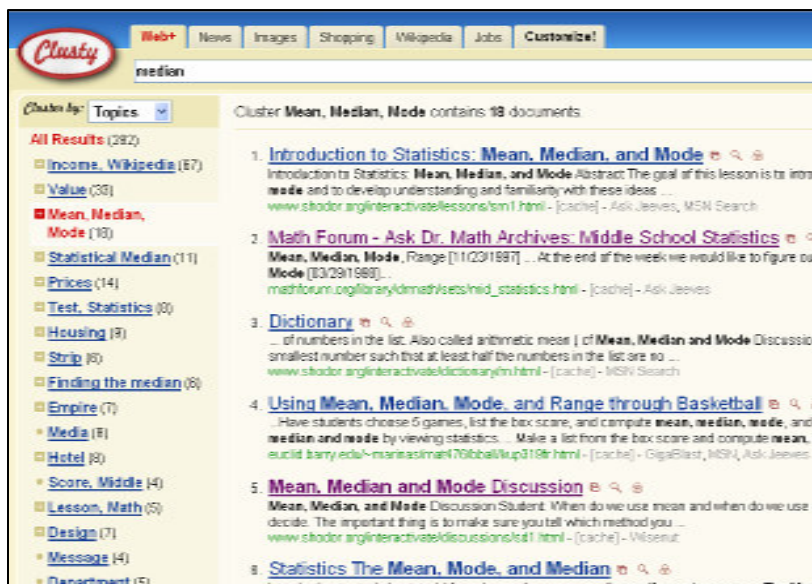
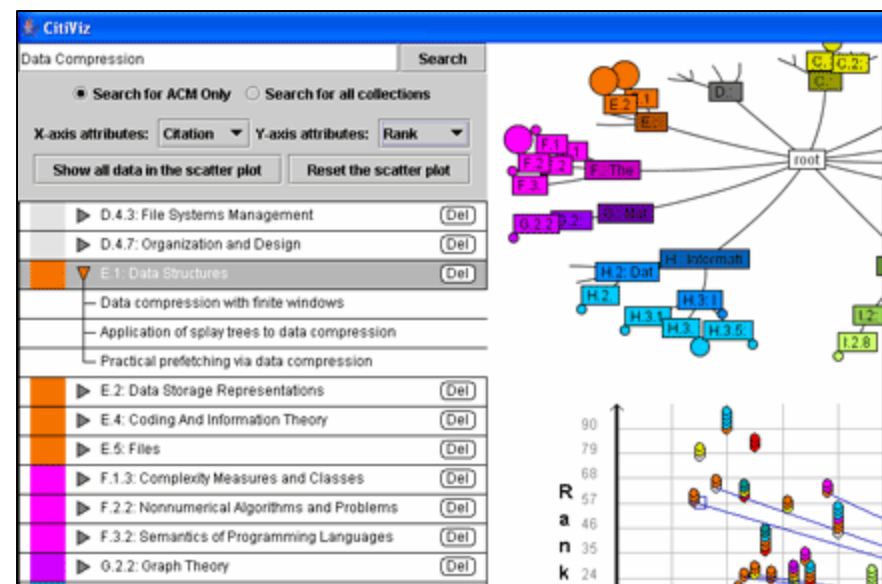
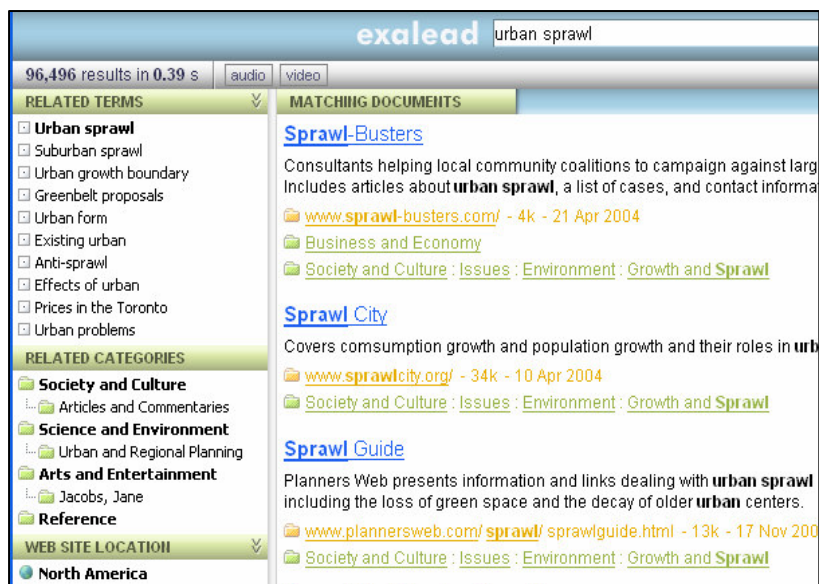
Student: When do we use mean and when do we use **median**? ... Unfortunately often people call mean, **median** and mode by the same name: average. ...

www.shodor.org/interactivate/discussions/sd1.html [5]

CancerGuide: The Median Isn't the Message

The text of an essay by Gould on the subject of cancer and statistics based on

Categories: *Dynamic Stable*



Comparative study

- How can categorized overviews change
 - Search tactics
 - Search outcomes
 - Search experience
- Scenario/task: Journalist asked to generate story ideas for an upcoming meeting
 - Topics like “human smuggling”

Query:

[Help](#)

Click below to filter results

Topic Category (62%) ?

[Society \(25\) \[x\]](#)

[News \(16\) \[x\]](#)

[Science \(14\) \[x\]](#)

[Reference \(10\) \[x\]](#)

[Arts \(8\) \[x\]](#)

[Computers \(7\) \[x\]](#)

[Kids and Teens \(3\) \[x\]](#)

[Business \(3\) \[x\]](#)

[Health \(2\) \[x\]](#)

[Shopping \(2\) \[x\]](#)

[Recreation \(1\) \[x\]](#)

[Uncategorized \(38\) \[x\]](#)

[Empty Categories](#)

Geography (34%) ?

[North America \(28\) \[x\]](#)

[Europe \(2\) \[x\]](#)

[South America \(2\) \[x\]](#)

[Africa \(1\) \[x\]](#)

[Asia \(1\) \[x\]](#)

[Uncategorized \(66\) \[x\]](#)

US Government (5%) ?

[Dept of the Interior \(1\) \[x\]](#)

[States \(1\) \[x\]](#)

[Environmental Protection](#)

Top 100 results containing **urban sprawl**

[Stopping Sprawl Main Page - Sierra Club](#)

The Challenge to the **Sprawl** Campaign works to fight poorly planned runaway development and promotes smart growth communities.

www.sierraclub.org/sprawl/

[Sprawl Overview - Sierra Club](#)

Sprawl destroys more than two million acres of parks, farms and open space. Hundreds of **urban**, suburban and rural neighborhoods are using ...

www.sierraclub.org/sprawl/overview/

[Urban Sprawl @ nationalgeographic.com](#)

Loads of information about **urban sprawl**, including essays, books, and current news. This site examines the roots of the problem. ...

magma.nationalgeographic.com/ngm/data/2001/07/01/html/ft_20010701.3.html

[Urban Sprawl: the Big Picture](#)

NASA Science News: Satellites provide a "big picture" perspective on the environment and **urban sprawl**. But most city planners don't.

science.nasa.gov/headlines/y2002/11oct_sprawl.htm

[Sprawl City](#)

Covers consumption growth and population growth and their roles in **urban sprawl**.

www.sprawlcity.org/

[Urban sprawl - Wikipedia, the free encyclopedia](#)

Publicly-editable encyclopedia entry supplies examples and arguments for and against sprawl.

en.wikipedia.org/wiki/Urban_sprawl

Query:

[Help](#)

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[Urban Sprawl](#)

Links to articles about **urban sprawl**.

www.goldcanyon.com/us/urbansprawl.html

Results

- Categorized overviews were used to narrow, filter, refine, and explore

I loved it. I was in love with that. I wish Google had that! With 3 clicks you have 5 pieces of information...

Sort of a search within a search. That was very cool.

- Fewer, broader queries
 - Reduced cognitive effort

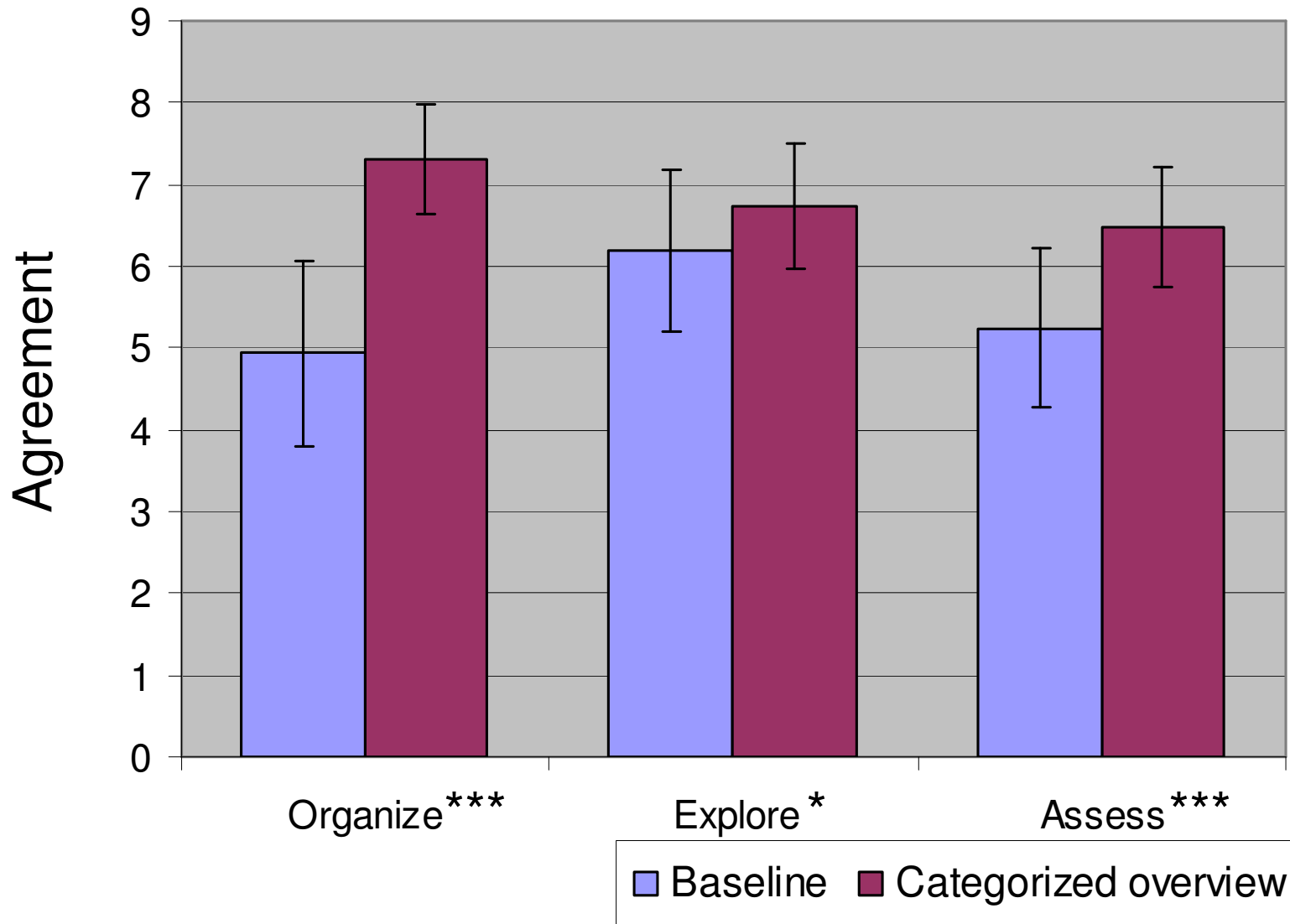
Results

- Provoked ideas / questions

For the art crimes one, I saw Science and [asked], "What does that have to do with art crimes?" ...and I found out that science can help solve art crimes.

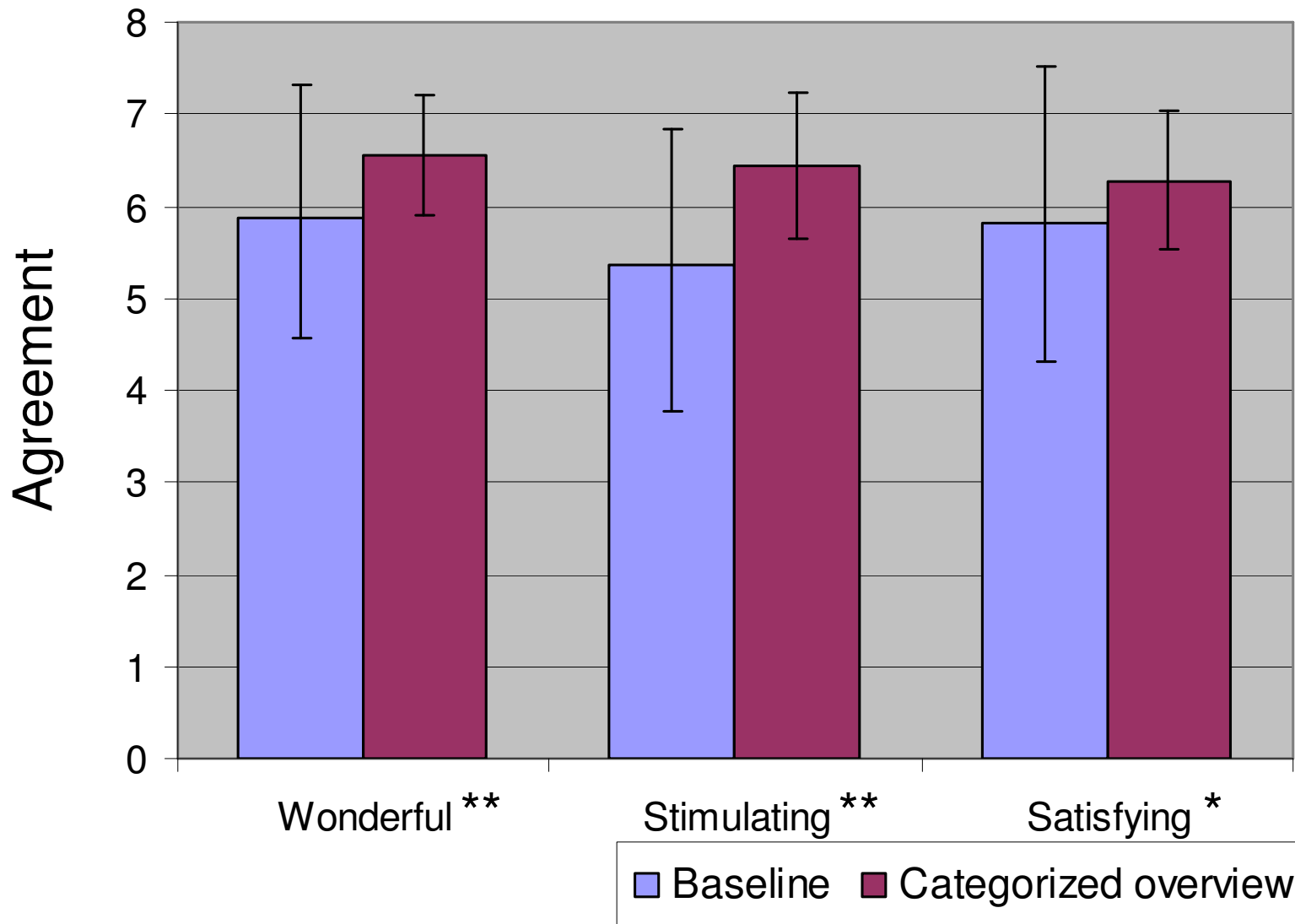
- When feeling stuck

Subjective ratings



Significance: *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$

Subjective ratings



Significance: *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$

Design principles for exploratory search interfaces

- ❑ Provide categorized overviews
 - ❑ Organize by meaningful categories
 - ❑ Expose hierarchy structure
- ❑ Tightly couple overview and list
- ❑ Support multiple kinds of categories
 - ❑ Separate into visual facets
- ❑ Support multiple kinds of visual displays
- ❑ Arrange text for scanning and skimming

Thank you!

For more information:

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www.cs.umd.edu/hcil/categorizedoverview

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Statistical Knowledge Network.”

