

Lecture 18:

Information design

Logistics

- Milestone-2 is up (**due April 18, 23:59**).
 - Next phase + plan for upcoming phase.
- The next milestone is basically your end presentation.
 - 15 min presentation as a group on your entire project
 - 15 min for individual viva
 - To be held during the final week
 - Slots will be provided this weekend, sign up for a slot that suits your team.
 - **Once picked, you cannot change slots unless there is an emergency.**

Last class...

- Mobile design
 - All about small screens and efficiency.
- Today..
 - Information design

What is information design?

- Information design is the practice of presenting data or content in a way that makes it clear, effective, and useful to the intended audience.
 - Usually, to help people learn, make sense of complex data, navigate content, and make decisions.
 - All about clarity and effectiveness, not about being pretty!
- Important because UIs always present information to user
 - User interacts with information (also called human-information interaction)
- Challenging, because information is a wide variety
 - Text, graphical, A/V, geospatial, ...

Information overload

- Almost always, there's too much information in the world
 - Also in most information interfaces (e.g., websites)
- And all the information is essential for someone / sometime.
- Good information design is about:
 - Finding your way around that information
 - Making sense of that information
 - (Sometimes) Acting on information

Example: Wikipedia

- Wikipedia is an information environment
- Open up Wikipedia page on Information design
- Read up for 2-3 minutes
- Think about how the information is organized.

Example: continued

- Who is the information targeted towards?
 - What is the information for?
 - How easy is this task for target user?
- How much volume?
 - What form is the information in?
 - How efficient is the task for target user within Wikipedia?
- How clear is the information?
- How is it laid out / organized?
- How accessible is it?

Aspects of info. design

- Content – what information is being presented
 - Includes formats too (audio, video, text,)
- Structure – how is it organized, logically!
 - Hierarchies, Lists,
- Display – how it is presented
 - Layout, color, ...
- Context – who, what they need.

Steps in info. design

- Learn about users (abilities, skills, devices, etc.) and their tasks
 - See location vs. drive to place
 - Driver vs. navigator
- Organizing and structuring info. (aka info. architecture)
- Think about form (best way to present information)
- Layout (aka how it appears on screen)
- Navigation (going through/across information)

1. Info. organization

- Logically structuring and organizing info. is key:
 - For finding “stuff”
 - For comprehending “stuff” logically for a task at hand

- Example:

Milestone-2 is up (due April 18, 23:59). Should show your next phase + plan for upcoming phase. The next milestone is basically your end presentation and will have 15 min presentation as a group on your entire project and an extra 15 min for individual viva. This will be held during the final week. Slots will be provided this weekend, and you can sign up for a slot that suits your team. Note that once you've picked a slot, you cannot change slots unless there is an emergency.

- Milestone-2 is up (due April 18, 23:59).
 - Next phase + plan for upcoming phase.
- Next milestone = final presentation.
 - 15 min presentation as a group on your entire project
 - 15 min for individual viva
 - To be held during the final week
 - Slots will be provided this weekend, sign up for a slot that suits your team.
 - Once picked, you cannot change slots unless there is an emergency.

How to organize information?

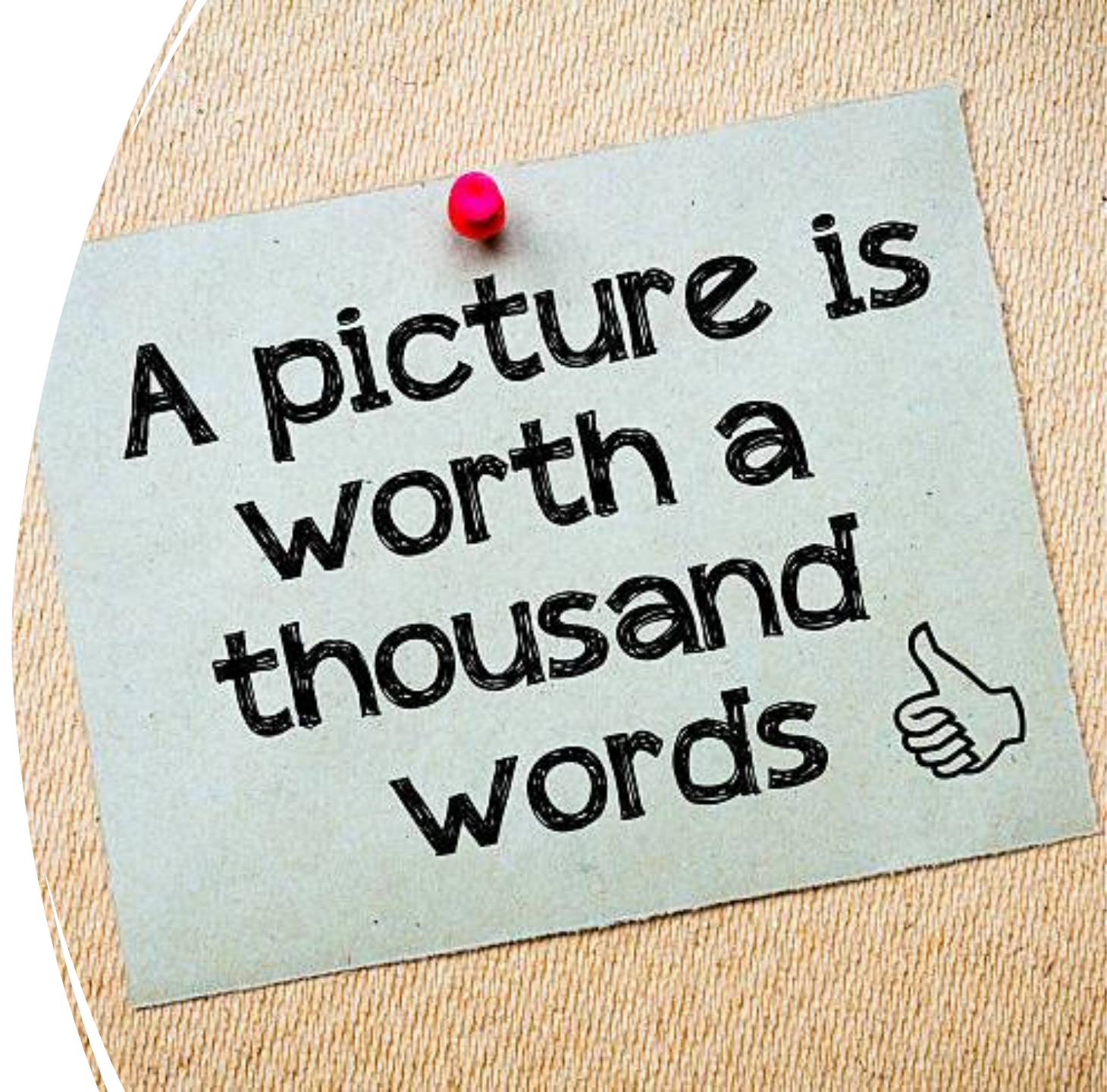
- Content is related – find relation between content
- Possible relations
 - Examples, illustrations (multiple representations of same thing)
 - Lists
 - Ordered lists
 - Sequences
 - Hierarchies/categories and subcategories (topics, subtopics, etc.)
 - Tables (e.g., data, items...)
 - Links / references
- Simply make all these relations apparent and efficient
 - Someone who knows finds faster, someone who doesn't know can “perceive” the relation, without having to “infer” it.

How do you go about doing it?

- Use conventions when one exists
- Ask the users / domain experts
 - To validate
 - Or when you don't know their structure
- E.g., categories of chemicals for a chemistry website
 - Ask a chemist, and/or users of your website
- A technique called card sorting!
 - Topics as cards, ask each user to sort all the cards, ask for their logic
 - Do across users and combine!

Form of information

- Walls of text are not the most efficient form of communication.
- Images / audio is more engaging
- Video is even more engaging
- Allows for more than one ways of remembering



Information foraging

1 language

Article

Talk

Read

Edit

View history

Tools

From Wikipedia, the free encyclopedia

Information foraging is a theory that applies the ideas from [optimal foraging theory](#) to understand how human users search for information. The theory is based on the assumption that, when searching for information, humans use "built-in" foraging mechanisms that evolved to help our animal ancestors find food. Importantly, a better understanding of human search behavior can improve the usability of websites or any other user interface.

History of the theory [edit]

In the 1970s [optimal foraging theory](#) was developed by [anthropologists](#) and [ecologists](#) to explain how animals hunt for food. It suggested that the eating habits of animals revolve around maximizing [energy](#) intake over a given amount of time. For every [predator](#), certain prey is worth pursuing, while others would result in a net loss of energy.

In the early 1990s, [Peter Pirolli](#) and [Stuart Card](#) from [PARC](#) noticed the similarities between users' information searching patterns and animal food foraging strategies. Working together with [psychologists](#) to analyze users' actions and the information landscape that they navigated (links, descriptions, and other data), they showed that information seekers use the same strategies as food foragers.

In the late 1990s, [Ed H. Chi](#) worked with Pirolli, Card, and others at [PARC](#) to further develop information scent ideas and algorithms to actually use these concepts in real interactive systems, including the modeling of web user browsing behavior, the inference of information needs from web visit log files, and the use of information scent concepts in reading and browsing interfaces.

Details of the theory [edit]

"[Informavores](#)" constantly make decisions on what kind of information to look for, whether to stay at the current site to try to find additional information or whether they should move on to another site, which path or link to follow to the next information site, and when to finally stop the search. Although human cognition is not a result of evolutionary pressure to improve Web use, survival-related traits to respond quickly on partial information and reduce energy expenditures force them to optimize their searching behavior and, simultaneously, to minimize the thinking required.

Information scent [edit]

The most important concept in the information foraging theory is *information scent*.^{[1][2]} As animals rely on scents to indicate the chances of finding prey in current area and guide them to other promising patches, so do humans rely on various cues in the information environment to get similar answers. Human users estimate how much useful information they are likely to get on a given path, and after seeking information compare the actual outcome with their predictions. When the information scent stops getting stronger (i.e., when users no longer expect to find useful additional information), the users move to a different information source.

Information diet [edit]

Some tendencies in the behaviour of web users are easily understood from the information foraging theory standpoint. On the Web, each site is a patch and information is the prey. Leaving a site is easy, but finding good sites has not always been as easy. Advanced search engines have changed this fact by reliably providing relevant links, altering the foraging strategies of the users. When users expect that sites with lots of information are easy to find, they have less incentive to stay in one place. The growing availability of broadband connections may have a similar effect: always-on connections encourage this behavior, short online visits to get specific answers.

Models [edit]

Attempts have been made to develop computational cognitive models to characterize information foraging behavior on the Web.^{[3][4][5]} These models assume that users perceive relevance of information based on some measures of information scent, which are usually derived based on statistical techniques that extract semantic relatedness of words from large text databases. Recently these information foraging models have been extended to explain social information behavior.^{[6][7][8]} See also [models of collaborative tagging](#).

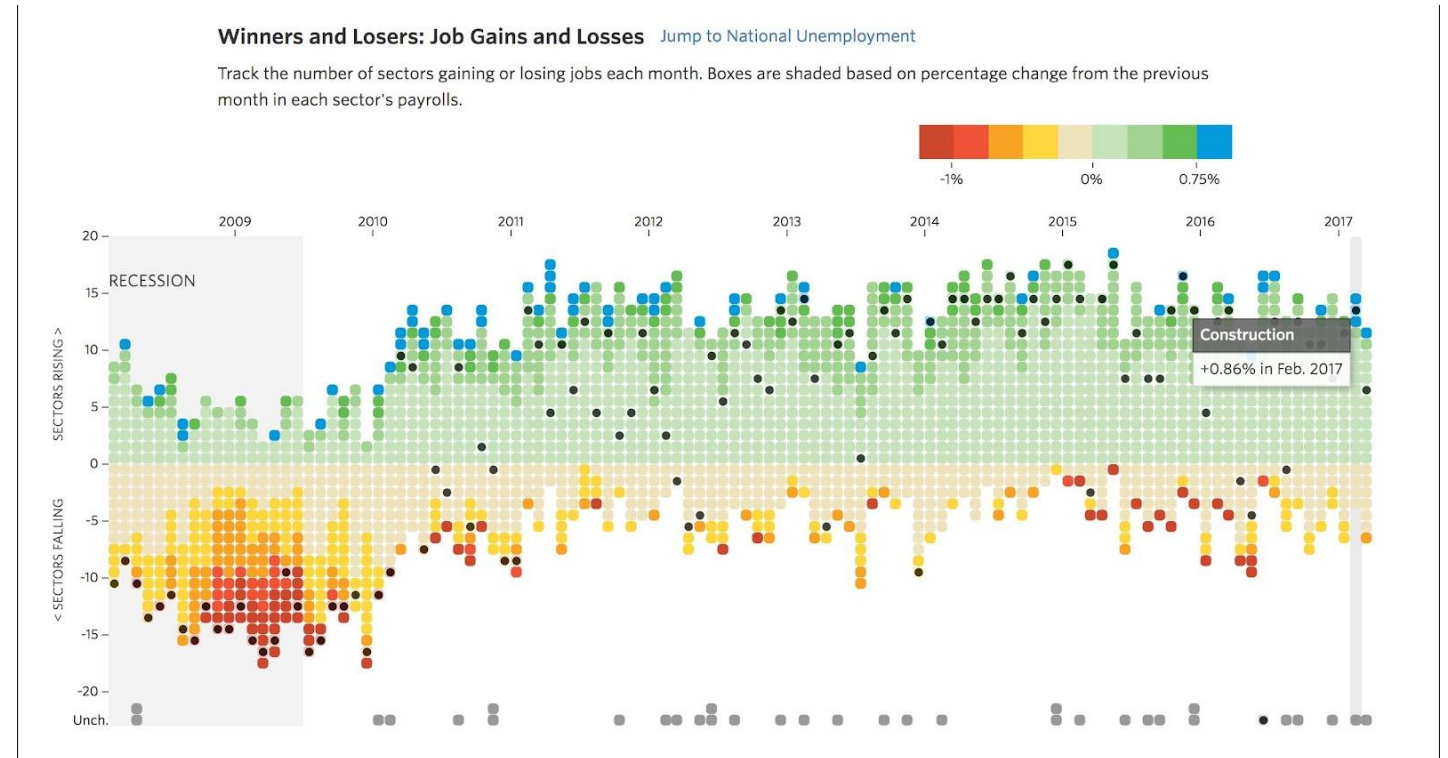
Notes [edit]

- ↑ Nielsen, Jakob (June 30, 2003). "Information Foraging: Why Google Makes People Leave Your Site Faster" . Retrieved 2017-02-25.
- ↑ Nielsen, Jakob (August 2, 2004). "Deceivgly Strong Information Scent Costs Sales" . Retrieved 2017-02-25.



Data vs. visualizations

- Large csv with one row per point. Vs.



Infog

INDIA: AN OVERVIEW

ECONOMY

9th LARGEST
economy
in the world

and likely to
be third largest
by 2030 (3)

— MAIN — INDUSTRIES

Automotive, textiles,
steel, biotechnology,
drugs and
pharmaceutical, and
food processing (4)

GDP GROWTH
FOR FY 2016
7.3% (6)

FORECAST
GDP GROWTH
FY 2017: 7.5% (13)

— TOP — EXPORTERS TO INDIA (7)

China, USA, Saudi,
Switzerland, UAE

— TOP — IMPORTERS FROM INDIA

USA, UAE, Hong Kong,
China, UK

COUNTRY FACTS



X 13 = INDIA

India is approximately 13
times the size of the UK

English is widely
spoken in business,
political and
commercial circles:
25% of printed
newspapers are
published in English



India has the world's largest youth population
with 356 million 10-24 year-olds

INDIA
ACCOUNTS FOR...

2.4%
of the world's surface

17.6%
of the world's population

INDIA
IS THE LARGEST...



Democracy in the world,
and English speaking
nation in the world

MEMBER
OF THE G20

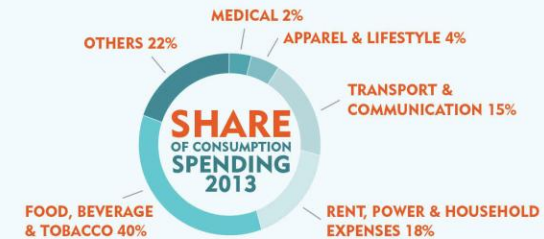


CURRENCY
INDIAN RUPEE (INR)



CONSUMER MARKET

- INDIA LABOUR FORCE STANDS AT
496,960,163 MILLION (8)
- 3RD LARGEST ECONOMY IN
THE WORLD BY PURCHASING POWER
PARITY, AFTER THE USA AND CHINA (9)



In 2011: 45 Indian cities with population > 1 million (11)

By 2030: 68 Indian cities with population > 1 million (12)

(1) Census of India <http://censusindia.gov.in> (2) The states of Uttar Pradesh, Maharashtra, Bihar, West Bengal, Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Rajasthan and Gujarat – Census of India (3) WorldBank (4) Business Portal of India www.business.gov.in (5) World Bank (6) IMF (7) Indian Department of Commerce (8) WorldBank (9) International Monetary Fund (10) KMPG (11) UKIBC, with data from the Census of India (12) McKinsey & Company (13) IMF

Audio vs. video vs. text

- For same content
 - What's good and bad about podcasts
 - What's good and bad about videos
 - What's good and bad about text + images
 - What's good and bad about just text
- Can we find a common in between?

Navigation

- Navigation involves:
 - Finding content
 - Search works
 - Logical ordering is useful for better engagement and serendipitous discovery
 - Organize content in logical order
 - Topics and subtopics
 - Time periods
 - Sequences
 - Back / forward in a step
 - Sections (e.g., in video, book)
- Allow for random and sequential access
- Go back and forth as well, since people backtrack a lot!

Think about a book...

- How is navigation done?
- What other additions do we add as readers?

In class...

- Have you seen a digital reader / e-reader?
 - For essays/ long articles / books?
- What all should its navigation contain?
 - What kinds of users?
 - What do they need to navigate to and when?