Internet Technologies
12- Web 2.0

F. Ricci
2010/2011
Content

- Web 2.0
- Search engines
- Google PageRank
- Content Generated Networks
- Recommender Systems
- Blogging
- Social Networking
- Tagging
- Rich Internet Applications

Some material for this lecture is taken from http://www.deitel.com/Web2eBook/tabid/2478/Default.aspx
What is Web 2.0

- Tim O'Reilly definition
  
  http://www.youtube.com/watch?v=CQibri7gpLM

- Most quoted article by Tim O'Relly
  
Web 2.0 is the **network as platform**, spanning all connected devices. Web 2.0 applications make the most of the intrinsic advantages of that platform:

- delivering software as a **continually-updated service** that gets better the more people use it,
- **consuming and remixing data** from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others,
- creating network effects through an "**architecture of participation**," and going beyond the page metaphor of Web 1.0 to deliver **rich user experiences**.
What is Web 2.0

- **Web 1.0:** a relatively small number of companies and advertisers producing content for users to access (“brochure web”)

- **Web 2.0:** involves the user
  - the content is created by users
  - users help organize it, share it, remix it, critique it, update it.

- Web 1.0 is as a **lecture**: a small number of professors informing a large audience of students

- Web 2.0 is a **conversation**, with everyone having the opportunity to speak and share views.
It’s all about You

Yes, you.
You control the Information Age.
Welcome to your world.
The Long Tail

- **Netflix** (catalog of over 80,000 movie titles) rents a large volume of less popular movies in addition to the substantial business it does renting hits.

- **The Long Tail**: the economic model in which the market for non-hits (typically large numbers of low-volume items) could be significant and sometimes even greater than the market for big hits (typically small numbers of high-volume items).
In Web 2.0 the **content is king** hence the **findability** of content becomes key.

Search engines are the primary tools people use to find information on the web.

Americans conducted 8.1 billion search queries in September 2008, up 9.4% from the same month in 2007 (Nielsen).

**Information overload:** the state of having too much information to make a decision or remain informed about a topic.

**Attention economy:** “Telecommunications bandwidth is not a problem, but human bandwidth is.” (Thomas Davenport and John Beck, The Attention Economy).
What people search

### Top 10 Overall Search Terms

The following report shows search terms for the industry 'All Categories', ranked by Search Clicks for the 4 weeks ending 05/21/2011.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Search Term</th>
<th>Search Clicks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>facebook</td>
<td>3.11%</td>
</tr>
<tr>
<td>2.</td>
<td>youtube</td>
<td>1.01%</td>
</tr>
<tr>
<td>3.</td>
<td>facebook login</td>
<td>0.69%</td>
</tr>
<tr>
<td>4.</td>
<td>craigslist</td>
<td>0.52%</td>
</tr>
<tr>
<td>5.</td>
<td>facebook.com</td>
<td>0.34%</td>
</tr>
<tr>
<td>6.</td>
<td>vahoo</td>
<td>0.33%</td>
</tr>
<tr>
<td>7.</td>
<td>ebay</td>
<td>0.31%</td>
</tr>
<tr>
<td>8.</td>
<td><a href="http://www.facebook.com">www.facebook.com</a></td>
<td>0.27%</td>
</tr>
<tr>
<td>9.</td>
<td>mapquest</td>
<td>0.16%</td>
</tr>
<tr>
<td>10.</td>
<td>youtube</td>
<td>0.16%</td>
</tr>
</tbody>
</table>

### Top 10 Fast Moving Search Terms

The following report shows search terms for the industry 'All Categories', ranked by largest increase for the week ending 05/21/2011, compared with the week ending 05/14/2011. (Filters applied)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Search Term</th>
<th>Volume</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>mildred patricia baena</td>
<td>0.02%</td>
<td>New</td>
</tr>
<tr>
<td>2.</td>
<td>arnold schwarzenegger lo</td>
<td>0.02%</td>
<td>New</td>
</tr>
<tr>
<td>3.</td>
<td>doodle 4 google</td>
<td>0.02%</td>
<td>New</td>
</tr>
<tr>
<td>4.</td>
<td>barack obama</td>
<td>0.01%</td>
<td>New</td>
</tr>
<tr>
<td>5.</td>
<td>zombie apocalypse cdc</td>
<td>0.01%</td>
<td>New</td>
</tr>
<tr>
<td>6.</td>
<td>end of the world may 21st</td>
<td>0.01%</td>
<td>New</td>
</tr>
<tr>
<td>7.</td>
<td>mildred baena</td>
<td>0.01%</td>
<td>New</td>
</tr>
<tr>
<td>8.</td>
<td>25 000th big mac</td>
<td>0.01%</td>
<td>New</td>
</tr>
<tr>
<td>9.</td>
<td>arnold schwarzenegger mr</td>
<td>0.01%</td>
<td>New</td>
</tr>
<tr>
<td>10.</td>
<td>racist tinged question</td>
<td>0.01%</td>
<td>New</td>
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http://www.google.com/trends
From needs to queries

- Information need -> query -> search engine -> results -> browse OR query -> ...

Encoded by the user into a query
In the web context the "need behind the query" is often not informational in nature. [Broder, 2002] classifies web queries according to their intent into 3 classes:

1. **Navigational**: The immediate intent is to reach a particular site (20%)
   - \( q = \text{compaq} \) - probable target http://www.compaq.com

2. **Informational**: The intent is to acquire some information assumed to be present on one or more web pages (50%)
   - \( q = \text{canon 5d mkII} \) - probable target a [page] reviewing canon 5d mkII

3. **Transactional**: The intent is to perform some web-mediated activity (30%)
   - \( q = \text{hotel Vienna} \) - probable target TISCOVER
Google

- **Google** is the leading search and online advertising company - founded by Larry Page and Sergey Brin (Ph.D. students at Stanford University)

- “googol” or $10^{100}$ is the mathematical term Google was named after

- Google’s success in search is largely based on its **PageRank™** algorithm

- Gartner reckons that Google now make use of more than 1 million servers, spitting out search results, images, videos, emails and ads

- Google reports that it spends some 200 to 250 million US dollars a year on IT equipment.
Ranking web pages

- **To count inlinks:** [http://siteexplorer.search.yahoo.com](http://siteexplorer.search.yahoo.com)

- **Web pages are not equally “important”**
  - [www.unibz.it](http://www.unibz.it) vs. [www.stanford.edu](http://www.stanford.edu)
  - Inlinks as votes
    - [www.stanford.edu](http://www.stanford.edu) has 823,723 inlinks
    - [www.unibz.it](http://www.unibz.it) has 6,389 inlinks (May 2011)

- **Are all inlinks equal?**
  - Recursive question!
Simple recursive formulation

- Each link’s vote is proportional to the importance of its source page.
- If page $P$ with importance $x$ has $n$ outlinks, each link gets $x/n$ votes.
Simple “flow” model

The web in '1839'

\[ y = \frac{y}{2} + \frac{a}{2} \]
\[ a = \frac{y}{2} + m \]
\[ m = \frac{a}{2} \]
Solving the flow equations

- 3 equations, 3 unknowns, no constants
  - No unique solution
  - All solutions equivalent modulo scale factor
- Additional constraint forces uniqueness
  - \( y + a + m = 1 \)
  - \( y = 2/5, a = 2/5, m = 1/5 \)
- Gaussian elimination method works for small examples, but we need a better method for large graphs.
Matrix formulation

- Matrix $\mathbf{M}$ has one row and one column for each web page.
- Suppose page $i$ has $n$ outlinks:
  - If $i$ links to $j$, then $M_{ij}=1/n$
  - Else $M_{ij}=0$
- $\mathbf{M}$ is a row stochastic matrix:
  - i.e., rows sum to 1
  - *Except for dead ends (pages without outlinks)*
- Suppose $\mathbf{r}$ is a vector with one entry per web page:
  - $r_i$ is the importance score of page $i$
  - Call it the rank vector
Example

\[
y = \frac{y}{2} + \frac{a}{2} \\
\frac{a}{2} = \frac{y}{2} + m \\
m = \frac{a}{2}
\]
Power Iteration Example

\[
\begin{pmatrix}
y \\
a \\
m
\end{pmatrix} = \begin{pmatrix}
\frac{1}{2} & \frac{1}{2} & 0 \\
\frac{1}{2} & 0 & \frac{1}{2} \\
0 & 1 & 0
\end{pmatrix}
\]

\[
\begin{align*}
y &= 1/3 & 1/3 & 5/12 & 3/8 & 2/5 \\
a &= 1/3 & 1/2 & 1/3 & 11/24 & \ldots & 2/5 \\
m &= 1/3 & 1/6 & 1/4 & 1/6 & 1/5
\end{align*}
\]

\[
(y \ a \ m) = (y \ a \ m)M \ M \ M \ M \ M \ \ldots \ M
\]
Google AdWords

- AdWords, Google’s pay-per-click (PPC) contextual advertising program (launched in 2000), is the company’s main source of revenue.
Google AdSense

- **Google AdSense for content** matches ads to your site's content, and you earn money whenever your visitors click on them.

- **AdSense for search** allows website publishers to provide Google web and site search to their visitors, and to earn money by displaying Google ads on the search results pages.
Other search engines

- **Yahoo!** was started in 1994 by Jerry Yang and David Filo (Stanford Ph.D. students) as a **web directory** rather than a search engine - expanded into other areas, becoming a popular provider of e-mail, user groups and more

- **MSN** search was created in 1998, a year after Google was launched (now called LiveSearch and then Bing)

- **Ask** (formally known as AskJeeves.com) launched a new search site, which includes a new design with a simple homepage default, customizable backgrounds, new video search (powered by **Blinkx**) and the ability to view video **previews** and listen to music clips.
Vertical search engines and LBS

- **Vertical search engines** are specialists (focusing on specific topics) in comparison to generalists (e.g., Google and Yahoo!)
  - Health and medicine: medstory.com
  - Travel sites: Kayak.com or Expedia.com
  - Real-estate: Zillow.com or Trulia.com (exploit location based search)
  - Job search: Indeed.com or Monster.com
  - Shopping search engines: Shopzilla.com and MySimon.com

- **Location-based search** uses geographic information about the searcher to provide more relevant search results.
Information that Matters™: click below to refine your search

Drugs & Substances
- Cey Protocol
- Oncovin
- Paraplatin
- Etopo
din
- Cisplatin

Conditions
- Retinoblastoma
- Eys Cancer
- Squamous Cell Ski...
- Lung Cancer
- Leukemia

Procedures
- Chemotherapy
- Radiation Therapy
- Tumor Markers
- External Beam Radi...
- Cryotherapy

Personal Health
- Genetic Predispos...
- Smoking
- Family History
- Aging

People
- Rodriguez-Galindo...
- Dunkel, Jra
- Kushner, Brian H
- Perentesis, John P
- Villablanca, Judi...

The Web
1 to 10 of about 1,030,000

1. Retinoblastoma International: Homepage
   Information about the disease aimed at parents and professionals. Lobbies for early eye exams in newborns.
   http://www.retinoblastoma.net/

2. Retinoblastoma Treatment - National Cancer Institute
   Retinoblastoma is a disease in which malignant (cancer) cells form in the tissues of the retina. ...
   After diagnosis of retinoblastoma in one eye, regular follow-up exams of the ...
   http://www.cancer.gov/cancerinfo/pdq/treatment/retnoblastoma/patient/
Retinoblastoma Treatment, Symptoms, Causes, and Recovery [Traduci questa pagina]
A set of questions and answers about retinoblastoma. ... What is retinoblastoma? Retinoblastoma is a cancer of the eye in children.

Retinoblastoma Innovations Finger's Slotted Eye Plaque for Treatment of...

Retinoblastoma (NRRSF) Information for parents by Peter Kaiser, MD, Ingrid Scott, MD, Joan O'Brien, MD and Timothy G. Murray, MD...

Childhood Eye Cancer Trust (CHECT) [Fighting retinoblastoma [Traduci questa pagina]
Please update your bookmarks/favorites ... The retinoblastoma Society has changed its name ...
Search Engine Optimization

- **Search Engine Optimization (SEO)** is the process of designing and tuning your website to maximize your *findability* and improve your rankings in organic (i.e., non-paid) search engine results.

- **White hat**: methods that are approved by search engines, do not attempt to deceive the search engines:
  - Examples: offering quality content, using proper metadata and effective keywords, and having inbound links from relevant high-quality pages.

- **Black hat**: methods are used to deceive search engines - these tactics could get your site banned by the search engines.
Link Building

- **Link building** is the process of increasing search engine rankings and traffic by generating inbound links to a particular website.

- Three main methods:
  - **Reciprocal linking** is an exchange in which two related websites link to each other, increasing the link popularity of both sites and adding value for site users.
  - **Link baiting** involves creating attention-grabbing web content specifically for viral (exponentially increasing) exposure through social media and social bookmarking websites (*so that readers will link to that*).
  - **Natural linking** is the process of building one-way outbound links by optimizing website content and user experience without the explicit solicitation of a backlink (*ex: see also this [link to page topic related]*).
Content Networks

- **Content networks** are websites or collections of websites that provide information in various forms (such as articles, wikis, blogs, etc.)

- These provide a way of filtering the vast amounts of information on the Internet, by allowing users to go to a trusted site that has already selected the best content

- Examples
  - **About.com**: a collection of information on a wide variety of topics (over 500 guides written by topic experts)
  - **HowStuffWorks**: articles explaining “how the world actually works.” - articles are written by freelance writers, and experts from Consumer Guide and Mobil Travel Guide.
User generated content

- **User-generated content** has been the key to success for many of today’s leading Web 2.0 companies, such as Amazon, eBay and Monster.

- The community **adds value** to these sites, which, in many cases, are almost entirely built on user-generated content.

- User-generated **content types:**
  - articles, reviews ([tripadvisor](http://tripadvisor.com))
  - home videos ([youtube](http://youtube.com))
  - photos ([flickr](http://flickr.com))
  - information that is gathered from the users’ actions online (e.g. in Amazon recommender system).
Recommender Systems

- In everyday life **we rely on recommendations** from other people either by word of mouth, recommendation letters, movie and book reviews printed in newspapers ...

- In a typical recommender system **people provide recommendations as inputs**, which the system then aggregates and directs to **appropriate recipients**
  - Aggregation of recommendations
  - Match the recommendations with those searching for recommendations

[Resnick and Varian, 1997]
Social Filtering
Welcome to MovieLens!

Free, personalized, non-commercial, ad-free, great movie recommendations. Have questions? Take the MovieLens Tour for answers. Not a member? Join MovieLens now.

Need a gift idea? Try MovieLens QuickPick!

New to MovieLens?

Join today!

You get great recommendations for movies while helping us do research. Learn more:

- Try out QuickPick: Our Movie Gift Recommender
- Take the MovieLens Tour
- Read our Privacy Policy
- See our Browser Requirements
- Learn about Our Research

Hello MovieLens Users!

Please log in:

Username: 
Password: 
Save login: 

Log into MovieLens

Forgot your password?
New member? Join now

MovieLens is a free service provided by GroupLens Research at the University of Minnesota. We sometimes study how our members use MovieLens in order to learn how to build better recommendation systems. We promise to never give your personal information to anyone; see our privacy policy for more information.
Welcome to the new MovieLens!

Existing MovieLens users: We'd like to welcome you back to MovieLens, and let you know we have a new MovieLens FAQ you might want to read. We hope you like what you will see!

Take me to MovieLens!

New MovieLens users: Thank you for joining MovieLens! In order to generate personalized movie recommendations, we need to know a little about what movies you have already seen. MovieLens will now display several lists of movies. If you have seen any of the listed movies, please rate them using the rating scale shown below.

Ratings are on a scale of 1 to 5:

★ ★ ★ ★ ★ = Must See
★ ★ ★ ★ ★ = Will Enjoy
★ ★ ★ ★ ★ = It's OK
★ ★ ★ ★ ★ = Fairly Bad
★ ★ ★ ★ ★ = Awful

Remember: the more movies you rate, the more accurate MovieLens' predictions will be.

To rate a movie, just click on the pulldown next to the title of a movie you have seen. Blue stars will appear to indicate that your rating has been received.

This image shows that the movie ‘Dude, Where's My Car?’ was rated 1.5 stars.

I'm ready to start rating!
So far you have rated 0 movies.
MovieLens needs at least 15 ratings from you to generate predictions for you. 
Please rate as many movies as you can from the list below.

<table>
<thead>
<tr>
<th>Your Rating</th>
<th>Movie Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>★★★</td>
<td>3.0 stars</td>
</tr>
<tr>
<td>★★★★★</td>
<td>4.0 stars</td>
</tr>
<tr>
<td>???</td>
<td>Not seen</td>
</tr>
<tr>
<td>???</td>
<td>Not seen</td>
</tr>
<tr>
<td>???</td>
<td>Not seen</td>
</tr>
<tr>
<td>★★★★★★</td>
<td>4.5 stars</td>
</tr>
<tr>
<td>★★★★</td>
<td>3.5 stars</td>
</tr>
<tr>
<td>???</td>
<td>Not seen</td>
</tr>
</tbody>
</table>

To get a new set of movies click the next > link.
Welcome fricci@unibz.it (Log Out)

You've rated 47 movies.
You're the 18th visitor in the past hour.

New Movies

- Simpsons Movie, The (2007)
- Sunshine (2007)
- 3:10 to Yuma (2007)
- Superbad (2007)
- Stardust (2007)
- Hot Rod (2007)
- Death at a Funeral (2007)
- Hairspray (2007)

New DVDs

- I Love You Again (1940)
- Hot Fuzz (2007)
- Ace in the Hole (a.k.a. The Big Carnival) (1951)
- Zodiac (2007)
- Sweet Land (2005)
- They Live by Night (1948)

421 new movies have been added since you last visited. See the newest additions.

News and Updates (archives)

11 Jan 2007: We've added the ability to rate tags.

1 Dec 2006: We've recently launched some new features. You can find more information about movie groups and profiles on the new features page.
Welcome fricci@unibz.it (Log Out)
You've rated 47 movies.
You're the 15th visitor in the past hour.

There are 9089 movies matching your search:
Movies without a prediction are Not Shown
Movies you've rated are Not Shown
You've sorted by: Prediction

Show Printer-Friendly Page | Download Results | Suggest a Title

Tags Related to Your Search: classic (516), 70mm (439), action (419), comedy (397), dvd (332), (about tags)

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<table>
<thead>
<tr>
<th>Predictions for you</th>
<th>Your Ratings</th>
<th>Movie Information</th>
<th>Wish List</th>
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<tr>
<td>⭐⭐⭐⭐⭐ Not seen</td>
<td>Yojimbo (1961) DVD VHS info</td>
<td>imdb  Action, Crime, Drama - Japanese</td>
<td></td>
</tr>
</tbody>
</table>

[add tag] Popular tags: Toshiro Mifune | Japan | Best Performance: Toshiro Mifune as Sanjuro Kurosawa

| ⭐⭐⭐⭐⭐ Not seen      | Lives of Others, The (Das Leben der Anderen) (2006) DVD | info| imdb  Drama - German |

[add tag] Popular tags: ClearPlay | toplist67 | Germany |

| ⭐⭐⭐⭐⭐ Not seen      | Third Man, The (1949) DVD VHS info| imdb  Film-Noir, Mystery, Thriller |

[add tag] Popular tags: Oscar (Best Cinematography) | AFI #57 | Vienna |


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Bridge on the River Kwai, The (1957)

Starring: Alec Guinness, Jack Hawkins, Sessue Hayakawa, William Holden
Directed by: David Lean
Genres: Adventure, Drama, War
Languages: English, Japanese, Thai
Available on: DVD, VHS
Average rating: ★★★★☆ (4.1 stars)
Rated by: 11061 users
Links: IMDb, Rotten Tomatoes

Forum Posts
These posts mention Bridge on the River Kwai, The (1957)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re: What is everyone's Favorite War movie...</td>
<td>(mod)</td>
</tr>
<tr>
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<td>(Oymkata)</td>
</tr>
<tr>
<td>Re: What is everyone's Favorite War movie...</td>
<td>(Ellipsis)</td>
</tr>
<tr>
<td>Re: What is everyone's Favorite War movie...</td>
<td>(dispenser)</td>
</tr>
<tr>
<td>Re: What is your favorite historical film...</td>
<td>(Duderman)</td>
</tr>
</tbody>
</table>

Related Forum Posts
These posts mention movies similar to Bridge on the River Kwai, The (1957)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re: ML top picks</td>
<td>(memasa)</td>
</tr>
<tr>
<td>Re: What's your favorite drama?</td>
<td>(Ryuukuro)</td>
</tr>
<tr>
<td>Re: Which classics are you looking for?</td>
<td>(Tongue)</td>
</tr>
</tbody>
</table>
Matrix of ratings

| Users | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| a     | 1 | 4 | 5 | 4 | 3 | 2 | 4 | 2 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| b     | 4 | 3 | 5 | 1 | 3 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| c     | 5 | 4 | 4 | 3 | 5 | 4 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| d     | 3 | 5 | 4 | 5 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| e     | 3 | 5 | 4 | 5 | 5 | 1 | 5 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| f     | 4 | 1 | 3 | 5 | 4 | 1 | 5 | 4 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| g     | 2 | 4 | 2 | 5 | 1 | 4 | 5 | 4 | 2 | 4 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| h     | 2 | 1 | 4 | 3 | 5 | 4 | 2 | 5 | 4 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| i     | 1 | 3 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| j     | 4 | 4 | 5 | 1 | 5 | 4 | 4 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| k     | 5 | 4 | 2 | 5 | 1 | 5 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| l     | 3 | 3 | 4 | 1 | 4 | 4 | 2 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| m     | 5 | 3 | 5 | 3 | 4 | 5 | 5 | 3 | 4 | 4 | 5 | 4 |    |    |    |    |    |    |    |    |    |    |    |
| n     | 1 | 4 | 5 | 4 | 5 | 1 | 5 | 4 | 3 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| o     | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 2 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| p     | 4 | 5 | 5 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| q     | 3 | 3 | 1 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| r     | 1 | 4 | 2 | 2 | 5 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| s     | 2 | 4 | 4 | 5 | 1 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| t     | 1 | 4 | 3 | 4 | 5 | 5 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| u     | 2 | 1 | 4 | 3 | 1 | 5 | 4 | 2 | 4 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| v     | 4 | 5 | 4 | 3 | 5 | 2 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| w     | 2 | 2 | 3 | 5 | 4 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| x     | 4 | 5 | 3 | 3 | 4 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| y     | 1 | 3 | 2 | 3 | 4 | 5 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
Collaborative-Based Filtering

- A collection of $n$ user $u_i$ and a collection of $m$ products $p_j$
- A $n \times m$ matrix of ratings $v_{ij}$, with $v_{ij} = ?$ if user $i$ did not rate product $j$
- Prediction for user $i$ and product $j$ is computed as

$$v_{ij}^* = v_i + K \sum_{v_{kj} \neq ?} u_{ik} (v_{kj} - v_k)$$

- Where, $v_i$ is the average rating of user $i$, $K$ is a normalization factor such that the sum of $u_{ik}$ is 1, and

$$u_{ik} = \frac{\sum_j (v_{ij} - v_i)(v_{kj} - v_k)}{\sqrt{\sum_j (v_{ij} - v_i)^2 \sum_j (v_{kj} - v_k)^2}}$$

- Similarity of users $i$ and $k$

- Where the sum (and averages) is over $j$ s.t. $v_{ij}$ and $v_{kj}$ are not “?”. 

[Breese et al., 1998]
Tweets: 140-character microblog posts sent out by Twitter members

The key is to identify "reputed followers," -Twitterers "follow" the comments of other Twitterers they've selected, and are themselves "followed."

You earn reputation, and then you give reputation

If lots of people follow you, and then you follow someone-- then even though this [new person] does not have lots of followers, his tweet is deemed valuable

One user following another in social media is analogous to one page linking to another on the Web. Both are a form of recommendation ...
Wikis

- **Wikis**: allow users to edit existing content and add new information, are prime examples of user-generated content and collective intelligence.

- **Wikipedia (English)** started in 2001, it currently (Jan 2008) contains **2,157,021** articles.

- **Wikipedia** trusts its users to follow certain rules, such as not deleting accurate information and not adding biased information.

- In 2005, an experiment comparing 42 entries from Wikipedia and Britannica showed only slightly more inaccuracies in the Wikipedia articles.

- The Wikipedia entries were **promptly corrected**, though, whereas errors in Britannica entries cannot be corrected until the book’s next printing and will remain in already printed copies.
055 - Learn to Speak German - Sich Vorstellen

In today's lesson we will talk about different ways to introduce oneself. Different names, jobs and hometowns provide a good opportunity to learn some new words.

Furthermore a big Dankeschön an D'arcy for the large donation via PayPal.
If you want to support me, just follow this link:

[PayPal]

Enter the amount of money you want to donate and send it off. :-)

Monday, December 31, 2007

Luzern, 29.12.2007
Stephan Wiesner

Learn German free online
Basic German course with 300 free questions and answers

A Secret To Speak German?
I struggled for years to learn German until I found this 1 secret.

Learn English On-line
International on-line school of English, 180 lessons for 80£

Intensive German courses
in Freiburg - Germany
begin every monday

Learn German
Blogging

- **Blogs** are websites consisting of entries listed in reverse chronological order.
- The term “blog” evolved from **weblog**, a regularly updated list of interesting websites.
- These blogs consisted of **short postings**, in reverse chronological order, that contained links to other web pages and short commentaries or reactions.
- Some blogs still follow the traditional format of links and small amounts of text, while others consist of essays, sometimes not containing any links.
- Blogs can also now incorporate media, such as music or videos.
Blogging (cont.)

- **Blog Components**
  - **Reader comments:** create an interactive experience, allowing readers to react to blog entries
  - **Permalink:** is a URL that points to a specific blog entry that persists after the entry has passed from the front page into the blog archives (ex. [http://www.techcrunch.com/2006/08/08/web-20-the-24-minute-documentary/](http://www.techcrunch.com/2006/08/08/web-20-the-24-minute-documentary/)) (This is a permalink to a post on TechCrunch)
  - **Trackbacks:** tell bloggers who is linking to their posts - a trackback is an acknowledgment sent via a network signal (ping) from the link originating site to the receiving site (so he can know who is linking to him)
  - **Blogroll:** is a list of the blogger’s favorite blogs

- **Blogging and Journalism**
  - Encouraged citizen journalism
  - Significant news resource
  - Many bloggers are recognized as members of the media
Blogging (Cont.)

- **Growth of Blogging**
  - Doubling about twice a year
  - Large number of abandoned blogs
  - Companies are reaching out to the blogosphere, or blogging
  - Increased use of mobile devices has also lead to moblogging, or mobile blogging (*see* Nokia lifeblog)

- **Blogging and RSS Feeds**: Let readers know when new content is posted

- **Blogging Software**: WordPress, TypePad, Blogger, Movable Type, Textpattern

- **Blog Networks**: Corante, Weblogs, Inc., 9rules, b5media and Gawker Media

- **Blog Search Engines**: Technorati, Google Blog Search, Feedster, IceRocket, Blogdigger
Posts relating to “sarkozy” (30)

Page: 1 2 3

Look up "sarkozy" at The Free Dictionary

France To Internet: G8 Will Talk To You, For a Price
GigaOM — Authority 769
president Nicolas Sarkozy — was actually a scheme to push his agenda on censorship, copyright and privacy. After all, heavy [...] regulation of the Internet is a subject close to Sarkozy’s heart, since he’s the main backer of the controversial Hadopi laws [...] affair being put together on Sarkozy’s behalf by Maurice Levy, the media magnate who runs the world’s third
3 weeks ago

French Pundits Saying Dominique Strauss-Kahn Was Set Up -- Sarkozy Allies ... 
Business Insider — Authority 771
deeply unpopular President Nicolas Sarkozy in next year's elections. After all, the personal lives of many French [...] the IMF and his candidacy are, as you say, toast," laments another close friend of Strauss-Kahn. And President Sarkozy [...] being Sarkozy, with a reputation for ruthlessness that knows few bounds, conspiracy theories are certain to proliferate
1 week ago

Jeff Jarvis asks Nicolas Sarkozy to take a "Hippocratic Oath" regarding ... 
Business Insider — Authority 771
Social Networking

- **Social networking sites**: allow users to keep track of their existing interpersonal relationships and form new ones.

- **Network Effects**
  - Increased value of a network as its number of users grows.
  - *Metcalf’s Law* states that the value of the network is proportional to the square of the number of users.
  - *Example*: eBay, the more buyers and sellers that use the site, the more valuable the site becomes to its users.
  - Network effects make it difficult to break into markets already claimed by successful companies.
    - For example, a photo’s tags (created by the community) on Flickr are lost if the photo is taken to a different site.
MySpace

“an online community that lets you meet your friends’ friends,”

Was the most popular social networking site (beating Google by 1.5%) – now it is Facebook

Pages are personal: can contain general info, pictures, blog entries, a message board and more.

Pages are customizable: changing the background or adding music, give users an easy way to create their own unique web page

Also features a private messaging system and special sections for film, music, videos, classifieds, etc

News Corp, which acquired MySpace in 2005 for $580 million.
MySpace example

Lonely Planet Europe, Middle East & Africa

"a place for travel writers of the future!"

Male
35 years old
United Kingdom

Mood: cheerful

Lonely Planet Europe, Middle East & Africa's Latest Blog Entry [Subscribe to this Blog]

Encounter Column: Ida's lucky day. (view more)

Encounter column: Warml story for cold times. (view more)

Larit in Antarctica & messages in bottles, travel news gets stranger! (view more)

I'm filling in this weeks Encounter column. (view more)

New columnist: Pinar writes her first Encounter column! (view more)

Lonely Planet Europe, Middle East & Africa's Blurbs

About me:
This page is for anyone who wants to be a travel writer.

Each month we have one of our friends write 4 columns, one for each Monday in the month.
They receive professional feedback on their words as well as from you!

Lonely Planet Europe, Middle East &
Faculty of Computer Science, Free University of Bozen / Bolzano

The Erasmus Mundus Experience – Courtesy of Dana Tifrea (artistic direction) and of our EM students.

http://media.unibz.it/unibz/FacultyComputerScience/Faculty/EMNOMusic.wmv
media.unibz.it

735 Impressions - 0.54% Feedback
April 15 at 10:15am - Like - Comment - Share

4 people like this.

Write a comment...
Network Updates

Today

Rocchi Cesare has just added 9 new connections

Yesterday

Floriano Zini has just added 4 new connections
Davide Martinenghi has just added 3 new connections
Andrew Frew has just added 4 new connections
Gianni Lazzari has just added 3 new connections

2 weeks ago and older

Manuel Mazzara is now Research Associate at University of Newcastle
Manuel Mazzara has an updated profile
Carlo Tasso has a new profile photo

Chiara Ghidini is now Senior research scientist at FBK - inst

74,994 new people in your network since December 11

People in your network are hiring

Java Script/Ajax/DOM Client Side Engineer at PromptHire Inc.
Web Developer/ Front End Engineer (ALL EXPERIENCE LEVELS) at PromptHire Inc.
Software Engineer - Algorithms & Systems at PromptHire Inc.
Social Networking (Cont.)

- **Facebook**
  - The “preferred network among college students - 85% market share of four-year U.S. universities

- **LinkedIn**: Business-oriented social networking site
  - stay in touch with professional contacts
  - network with new contacts
  - check references
  - find a job or a potential employee
  - privacy concerns are more

- **Second Life**
  - Second Life, developed by Linden Labs, is a 3D virtual world with millions of inhabitants
  - Users create avatars, digital representations of themselves that they can use to meet other users with similar interests, conduct business, participate in group activities, ...
  - Users can create objects and add scripts (to animate the objects) in the virtual world.
Social Media

- Any media shared online (e.g., videos, music, photos, news, etc).
- **YouTube**
  - Launched in late 2005 and is the leading Internet video site.
  - Entire site is based on user-generated content.
  - Can browse videos by category, tag, or by following “related video” links.
  - Users can subscribe to other users’ content, share videos with friends by e-mail, or embed videos directly into their blogs or other websites.
  - YouTube was acquired by Google for $1.65 billion.
- **Digg**
  - Features news, videos and podcasts, all posted and rated by users.
  - Gained popularity by allowing users to “digg” or “bury” posts and user comments.
  - Digg uses collaborative filtering.
- **Last.fm**
  - Last.fm is an Internet radio website that uses Web 2.0 concepts to make music recommendations and build communities.
Bob Dylan (read more)

23,467,984 plays scrobbled on Last.fm

Bob Dylan (born Robert Allen Zimmerman on May 24, 1941 in Duluth, Minnesota) is an American singer-songwriter, musician and poet, whose place in American and European culture is marked through his protest songs. Born into a middle-class Jewish family, much of Dylan's best known work is from the 1960s, when he became an informal documentarian and reluctant figurehead of American unrest. Some of his songs, such as "Blowin' in the Wind" and "The Times They Are A-Changin'", became anthems of the anti-war and civil rights movements. His song "(read more)" (read more)

Listen Now

Listen Now

<table>
<thead>
<tr>
<th>Track</th>
<th>Time</th>
<th>Listeners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Like a Rolling Stone</td>
<td>0:30</td>
<td>159,227</td>
</tr>
<tr>
<td>Blowin' in the Wind</td>
<td>0:30</td>
<td>107,893</td>
</tr>
<tr>
<td>Mr. Tambourine Man</td>
<td>0:30</td>
<td>95,134</td>
</tr>
<tr>
<td>Subterranean Homestead Blues</td>
<td>0:30</td>
<td>92,645</td>
</tr>
</tbody>
</table>

Videos (see all 200)

Video Player

Bob Dylan - Like a Rolling Stone

Bob Dylan - Blowin' in the Wind

Bob Dylan - Mr. Tambourine Man

Bob Dylan - Subterranean Homestead Blues

Bob Dylan - Just Like A Woman

User Tags (see more)

blues classic rock folk folk rock

Tag this artist

Rock Photos - Rare

Famous iconic photos from Rock's Greatest Photographers

Uyghur Music

Hear the Uyghur Masters Purchase handmade instruments

Listeners (see more)

644,731 listeners total

Top Listen

Top Listener

Top Listener

Top Listener

Top Listener

Top Listener

Top Listener

Top Listener

Top Listener

Top Listener
Find your people.

Use our search tools, or visit someone listening right now:

Everybody’s talkin’ at me.

Check out some recent journals on Last.fm:
Tagging

- Tagging, or labeling content, is part of the collaborative nature of Web 2.0
- Tag is any user-generated word or phrase that helps organize web content and label it in a more human way
- **Tag Clouds:** Visual displays of tags weighted by popularity
- **Folksonomies**
  - Classifications based on tags
  - Formed on sites such as Flickr, Technorati and del.icio.us
- **Flickr**
  - Flickr—a popular photo-sharing site—was launched in February 2004 and acquired by Yahoo! in 2005
  - Key content-tagging site
- **Technorati**
  - Social media search engine that uses tags to find relevant blogs and other forms of social media
Tag Cloud

AdSense™  AdWords™  affiliate programs  agile development
Ajax  Amazon®  Mechanical Turk  Amazon®  Web Services™  APIs
architecture of participation  Attention Economy  blog
search engines  blogging  blogosphere  broadband  Internet  citizen
journalism  collaborative filtering  collective intelligence  contextual
advertising  Craigslist®  Creative Commons¹  default to shure  Deitel®  del.icio.us™
democratization of media  Digg™  Digital Millennium Copyright Act  Dojo  DotNetNuke™  DRM
eBay®  Facebook®  Federated Media™  Feedburner™  findability  Firefox®  2  flash®
Flex™  Flickr™  folksonomies  Getting Real  globalization  Google Maps™
Google™  Google™  Gears  GPS  housingmaps.com  Internet advertising
Internet business models  Internet Explorer®  7  Internet TV  Internet video  iPhone™
iTunes®  JavaServer™  Faces  Joose™  JSON  last.fm*  lightweight business models  link popularity
linkedIn®  location-based services  mashups  Metcalfe's law  microformats  Microsoft®  adCenter
moblogging  monetization  Mozilla's  Mozlib®  MSN®  MySpace®  MySQL®
network effects  O'Reilly®  Media  ontologies  open source  outsourcing
permalink  perpetual beta  PHPNuke  podcasting  premium content  ProgrammableWeb.com™  RDF
recommender systems  remixing  reputation systems  RIA.s  RSS/Atom  Ruby on Rails™
Salesforce.com®  Script.aculo.us  Search Engine Marketing (SEM)  Search Engine
Optimization (SEO)  Second Life®  Semantic Web  Silverlight™  Skype™
social bookmarking  social media  social networking
Software as a Service (SaaS)  tag clouds  tagging  TechCrunch
Technorati™  The Long Tail  TIME Person of the Year  trackbacks  trust  Twitter
user-generated content  vertical search  virtual worlds  vlogging  VoIP
Web 2.0  Web 2.0 Internet Business Initiative  Web 2.0 Summit  Web
3.0  web as a platform  web services  web-scale computing  webtop  widgets and gadgets
Wikinomics  Wikipedia®  wikis  wisdom of crowds  XML®  Yahoo!®
Yahoo!® Publisher Network  Yahoo!® Search Marketing  YouTube
venice 5 mins later
Uploaded on 28 November 2006
By Ron Layters
See more photos, or visit his profile.

venice, sunset, red, italy ...

Venice
Uploaded on 11 June 2007
By Rickydavid
See more photos, or visit Rickydavid's profile.

carnival, venice, italy, italia ...
Social Bookmarking

- **Social bookmarking sites**: share your Internet bookmarks (e.g., your favorite websites, blogs, and articles) through a website.

- **Examples**: del.icio.us, Ma.gnolia, Blue Dot, StumbleUpon, Simpy, Furl

- Users can add a bookmark by going to the site or by using the del.icio.us downloadable browser buttons.

- When bookmarking a website, users can add notes and tags to describe the site.

- Users can find the content they want – links tagged with a particular tag - based on what other users have recommended (by bookmarking).
Search for tag "SLR"

Your bookmarks

Nikon D60 brief hands-on
Nikon D60 brief hands-on: We've had a little bit of a chance to play around with and handle the Nikon's latest digital SLR, the D60. Here we line it up against the camera we suspect it replaces: the D40X and see what...

to Nikon digital SLR ... 1 min ago

Everyone's bookmarks → related tags: photography camera canon photo nikon lens digital slr cameras dslr

Digital SLR cameras; Canon Digital Rebel and Nikon D70s
Digital SLR cameras; Canon Digital Rebel and Nikon D70s...Save this to photography camera slr digital tips...

Canon Digital SLR Camera and Lens Reviews at The-Digital-Picture.com
Canon Digital SLR Camera and Lens Reviews at The-Digital-Picture.com...Save this to photography reviews canon camera lens ...

Mike Davidson - A Rookie Guide to Digital SLR Cameras
Mike Davidson - A Rookie Guide to Digital SLR Cameras...Save this to photography camera dslr guide slr ...

= Enjoy! Digital SLR camera =
= Enjoy! Digital SLR camera = Save this to photography tutorial canon camera howto ...

Camera Labs: Digital Camera, Digital SLR and Lens Reviews, Workshops, News
Camera Labs: Digital Camera, Digital SLR and Lens Reviews, Workshops, News...Save this to photography reviews camera cameras photo ...

Lensbabies >>> Selective Focus SLR camera lenses
Lensbabies >>> Selective Focus SLR camera lenses Save this to photography camera lens lenses photo ...

5 Things You Need to Know About SLR Lenses - Articles / Reviews | TheTechLounge
5 Things You Need to Know About SLR Lenses - Articles / Reviews | TheTechLounge...Save this to photography camera lenses slr dol ...

Building a digital SLR system: Looking at the Canon Digital Rebel XTi, Nikon D40, Nikon D80, and EOS 5D cameras - photo.net
Building a digital SLR system: Looking at the Canon Digital Rebel XTi, Nikon D40, Nikon D80, and EOS 5D cameras - photo.net...Save this to photography camera tutorial house photo ...

Buy Digital SLR Cameras
Buy Digital SLR Cameras...We Have 800+ Digital Cameras, Digital SLR Cameras on Sale.
www.NexTag.com

SLR Products on CatalogLink
SLR products on CatalogLink.
www.CatalogLink.com

For SLR
For SLR: Shop for Camera Lenses. Find, Compare and Buy.
www.Dealme.com

SLR - Sale Prices
SLR - Sale Prices...Save on Electronics Now. Buy SLR Fast.
www.Callbex.com/electronics

SLR Products
SLR Products at SHOP.COM. Search our free shopping offers.
www.SHOP.com

Buy SLR
Buy SLR...Great Deals at Winbuyer.com
Save on Digital Cameras.
winbuyer.com/digital-cameras
Software Development

- **Key to Web 2.0 software development**
  - KIS - keep it simple; keep it small
  - Important given the “attention economy” (too much information, too little time)

- **The Webtop**
  - Web has now become an application, development, delivery, and execution platform
  - Webtop, or web desktop, allows you to run web applications in a desktop-like environment in a web browser (OS indipendence)

- **Software as a Service (SaaS)**
  - Application software that runs on a web server rather than being installed on the client computer
  - Many benefits
    - Fewer demands on internal IT departments
    - Increased accessibility for out-of-the-office use
    - Easy way to maintain software on a large scale
    - Examples: Most Google software and Microsoft’s Windows Live and Office Live.
Software Development

- **Perpetual Beta and Agile Development**
  - Shift away from the traditional software release cycle (i.e., new software releases take months or years)
  - Now a greater focus on agile software development, which refers to development of fewer features at a time with more frequent releases

- **Open Source**
  - Not always free, but the source code is available (under license) to developers, who can customize it to meet their unique needs
    - Linux operating systems Red Hat or Ubuntu
  - Because the source code is available to everyone, users can look to the community for bug fixes and plug-ins
  - Over 150,000 open source projects are under development
    - Examples: Firefox web browser, the Apache web server, the MySQL database system, DotNetNuke and PHPNuke.
Incorporating **web services** into new programs allows people to develop new applications quickly.

Provide applications with access to external services and databases.

**Mashups**

- Combine content or functionality from existing web services, websites and RSS feeds to serve a new purpose.
  - Housingmaps.com
  - **Yahoo! Pipes**
  - Java Portlets

**Widgets and Gadgets**

- Mini applications designed to run either as stand-alone applications or as add-on features in web pages.
- Ex: displaying real-time weather conditions, aggregating RSS feeds, viewing maps, receiving event reminders, providing easy access to search engines and more.
Web 2.0 Meme Map

Strategic Positioning:
- The Web as Platform

User Positioning:
- You control your own data

Core Competencies:
- Services, not packaged software
- Architecture of Participation
- Cost-effective scalability
- Remixable data source and data transformations
- Software above the level of a single device
- Harnessing collective intelligence
Web 2.0 overview

GET
- Population stats
- Satellite maps
- TV programs, iTunes
- ISBN, Apple trailers
- Blogs, Wikipedia
- Amazon review
- IMDB feedback
- Podcasts, Flickr
- Craigslist

User data
- Blogs & social software
- Photos, audio, video

Aggregated data
- Ranking, public calendar

Metadata
- Tags, geourl, links/trackback, session

REMX
- Official data
  - Census, government, traditional media
- Aggregate
  - Annotate
  - Convert
  - Filter
  - Index
  - Map
  - Rank
  - Transform
  - Creative Commons
  - Perpetual Beta
  - “Release early, release often”
  - Hacking is OK
  - Trust your Users
  - Service – no software

DELEVER
- Interface:
  - REST
  - RPC
  - SOAP
- Format:
  - RSS
  - Atom
  - KML
  - iCal/hCal
  - JSON
  - BitTorrent
- Address:
  - Permalink
  - Granular
  - Loosely joined

Rich UI:
- AJAX
- DHTML
- Flash

VISUALIZE:
- Maps
- Calendar

SELF-SERVICE:
- Contextual Advertising
- Payment (“long tail”)

DEVICES:
- PDA, Phone

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http://blog.forrester.com

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http://www.flickr.com