Social Networks in Web 2.0

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Billionaires’ Shuffle

Facebook in 2004.02

2008

at 23 and $1.5 billion later...
### Global Traffic Rankings

<table>
<thead>
<tr>
<th>Rank</th>
<th>2005 Web site</th>
<th>Rank</th>
<th>2007 Web site</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>yahoo.com</td>
<td>1</td>
<td>yahoo.com</td>
</tr>
<tr>
<td>2</td>
<td>msn.com</td>
<td>2</td>
<td>google.com</td>
</tr>
<tr>
<td>3</td>
<td>google.com</td>
<td>3</td>
<td>msn.com</td>
</tr>
<tr>
<td>4</td>
<td>ebay.com</td>
<td>4</td>
<td>youtube.com</td>
</tr>
<tr>
<td>5</td>
<td>amazon.com</td>
<td>5</td>
<td>live.com</td>
</tr>
<tr>
<td>6</td>
<td>microsoft.com</td>
<td>6</td>
<td>myspace.com</td>
</tr>
<tr>
<td>7</td>
<td>myspace.com</td>
<td>7</td>
<td>facebook.com</td>
</tr>
<tr>
<td>8</td>
<td>google.co.uk</td>
<td>8</td>
<td>orkut.com</td>
</tr>
<tr>
<td>9</td>
<td>aol.com</td>
<td>9</td>
<td>wikipedia.org</td>
</tr>
<tr>
<td>10</td>
<td>go.com</td>
<td>10</td>
<td>hi5.com</td>
</tr>
</tbody>
</table>

*Traffic rank is based on three months of aggregated historical traffic data from Alexa Toolbar users and is a combined measure of page views/users (geometric mean of the two quantities averaged over time).*

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(1) Rankings as of 12/31/05, excludes Microsoft Passport; (2) Rankings as of 10/15/07

Source: Alexa Global Traffic Rankings, Morgan Stanley Research
Internet Reach

Traffic History Graph for wikipedia.org

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Social Networks in Web 2.0 by Irwin King, Academia Sinica, 2008.03.11
Internet PageView
Web 2.0 Growth

Web 2.0 Two Year Growth

668% Growth

Social Networks in Web 2.0 by Irwin King, Academia Sinica, 2008.03.11
Navigation Bar

- The Web 2.0 Revolution...
- Social XXX
- What’s Cooking...
Web 2.0 Manifesto

Web 2.0 is the **network as platform**, spanning all **connected devices**; Web 2.0 applications are those that 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**.
Web 2.0 Defined

"Web 2.0 is the **business revolution** in the computer industry caused by the move to the **Internet as platform**, and an attempt to understand the rules for success on that new platform."

*Tim O’Reilly, 2004*

"Web 2.0 is a **knowledge-oriented** environment where human interactions generate content that is published, managed and used through **network applications** in a **service-oriented architecture**."

*Dario de Judicibus, 2008*
## Levels of Web 2.0

<table>
<thead>
<tr>
<th>Levels</th>
<th>Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level-0</td>
<td>Operate well offline as well as online</td>
<td>MapQuest, Yahoo! Local and Google Maps, etc.</td>
</tr>
<tr>
<td>Level-1</td>
<td>Operate offline and gain features online</td>
<td>Google Docs &amp; Spreadsheets, iTunes, etc.</td>
</tr>
<tr>
<td>Level-2</td>
<td>Operate offline and gain advantage online</td>
<td>Flickr, YouTube, etc.</td>
</tr>
<tr>
<td>Level-3</td>
<td>Exist <strong>ONLY</strong> on the Internet</td>
<td>eBay, Craigslist, Wikipedia, del.icio.us, Skype, AdSense, etc.</td>
</tr>
</tbody>
</table>
Web 2.0

- Web as a medium vs. **Web as a platform**
- Read-Only Web vs. **Read-and-Write Web**
- Static vs. **Dynamic**
- Restrictive vs. **Freedom & Empowerment**
- Technology-centric vs. **User-centric**
- Limited vs. **Rich User Experience**
- Individualistic vs. **Group/Collective Behavior**
- Consumer vs. **Producer**
- Transactional vs. **Relational**
- Top-down vs. **Bottom-up**
- People-to-Machine vs. **People-to-People**
- Search & browse vs. **Publish & Subscribe**
- Closed application vs. **Service-oriented Services**
- Functionality vs. **Utility**
- Data vs. **Value**

Social Networks in Web 2.0 by Irwin King, Academia Sinica, 2008.03.11
Web 2.0 Revolution

- **Glocalization** - think globally and act locally!
- **Weblication** - Web is the application!
- **3 Cs**
  - Connectivity
  - Collaboration
  - Communities
The Social Web
Organizational Chart
Social Network Chart
Social Networking
Social Search

• Social Search Engine

• Leveraging your social networks for searching
Social News/Tagging
Social Bookmarking

» all your bookmarks in one place
» bookmark things for yourself and friends
» check out what other people are bookmarking

Tags
A tag is simply a word you use to describe a bookmark. Unlike folders, you make up tags when you need them and you can use as many as you like. The result is a better way to organize your bookmarks and a great way to discover interesting things on the Web.

Tags to watch
- illustration
- Cozi
- Comeeko - Creating comic strips from your photos
- Let's Have More Teen Pregnancy
- Family
- Home - tiny living
- Eartheasy homepage
- The Simple Dollar > Nourishment on a Desperate Income
- Cool
- Browse Goods
- rssWheel
- Laptop Stand By LapDawg - A Revolutionary, Ergonomic Laptop Holder
Social Media
Social Knowledge Sharing
Social Marketing

- Viral marketing
- Who are the brokers?
- Who can exert the most influence on buying/selling?
- How much should one advertise?
The Golden Rules

- Gives away valuable products or services
- Provides for effortless transfer to others
- Scales easily from small to very large
- Exploits common motivations and behaviors
- Utilizes existing communication networks
- Takes advantage of others’ resources
Social Management

- Who are the key persons in the organization and how are they connected?
- Who are under-utilized?
- What is the knowledge usage and sharing pattern?
- Innovation emerges from Interaction
Social/Human Computation

Security Check: Enter both words below, separated by a space. What's This? Can't read this? Try another. Try an audio captcha

discharge Carolina

Text in the box:

☐ I have read and agree to the Terms of Use and Privacy Policy

Sign Up

Problems signing up? Check out our help pages

Security Check: Enter both words below, separated by a space. What's This? Can't read this? Try another. Try an audio captcha
discharge text

Text in the box:

☐ I have read and agree to the Terms of Use and Privacy Policy

Sign Up

Problems signing up? Check out our help pages
Google’s Image Labeler
Games With A Purpose

- **Matchin**
  - Image search by aesthetic value
- **Babble**
  - Translate foreign language into English
- **InTune**
  - Tags songs with description text
- **Squigl**
  - Image segmentation
- **Verbosity**
  - Database of common knowledge description
What’s Cooking

- Link-based Similarity
- Negative Opinion
- Diffusion Rank
- Collaborative Filtering
- CUPIDE
Link-based Similarity

- How to find similar pages given a starting page?
- Compute only based on links
- Extended Neighborhood Structure (ENS)
  - Bi-directional
  - Multi-hop
Extend Co-citation and Bibliographic Coupling

- **Co-citation**
  \[ Sim(a, b) = |I(a) \cap I(b)| \]

- **Bibliographic coupling**
  \[ Sim(a, b) = |O(a) \cap O(b)| \]

- **ECBC**
  \[ Sim(a, b) = \alpha|I(a) \cap I(b)| + (1 - \alpha)|O(a) \cap O(b)| \]
Negative Opinions

• Links are positive reinforcements
• How about negative feedback?
• The enemy of my enemy is my friend!
Diffusion Rank

- Web spamming is a headache on the rise!
- Can we use the heat diffusion equation to model the flow of information in a graph?
- Heat diffusion flow on manifolds, e.g., DG, UDG, RDG

Advantages
- Closed-form solution
- Group-to-group relations
- Graph cuts
- Anti-manipulation
Collaborative Filtering

- Online recommendations are often quite sparse, e.g., MovieLens
- How can we use sparse data to predict missing data for recommendation?
CUPIDE

- Bilingual plagiarism detection
- Readability analysis
On-Going Research

- **Web Ranking/Classification Related**
  - MatchSim: link-based web page similarity measurements (WI’07)
  - Diffusion rank: Ranking web pages based on heat diffusion equations (SIGIR’07)
  - Web text classification (WWW’07)

- **Social Networks and Web/Opinion Mining**
  - Recommender system: accurate recommendation based on sparse matrix (SIGIR’07)
  - Feature-opinion association for sentiment analysis: “The quality is low” vs.“The noise level is low”
  - User credibility analysis: “the enemy of my enemy is my friend!” phenomena
  - Expert finding in DBLP bibliography database

- **Machine Learning**
  - Transductive Support Vector Machine (NIPS’07)
  - Global and local learning (ICML’04, JMLR’04)
Social Web and Knowledge Management

Social Web 2008 Workshop

Located at the 17th World Wide Web Conference WWW2008
April 22nd, 2008 (Workshop day)
Beijing, China

Supported by the EU projects KIWI and Active

The session on Social Web and Knowledge Management of the Social Web Workshop can be found here

Programme | Topics | Organisation committee | Program committee | Submission | Important dates
--- | --- | --- | --- | --- | ---

Objectives

The social web, the most interesting part of the Web 2.0, aims at bringing people together and facilitating richer interaction among them. It is characterized by a strong focus on communities where people share experiences, information and knowledge, meet and discuss, or do business together. The social web challenges will be studied in this workshop from two perspectives: knowledge management and social web search and mining.

Knowledge management systems focus on knowledge and experience sharing. They enhance organization capabilities by externalizing knowledge of its employees and combine them in novel forms. Therefore, there is a common interest in social structures as well as social computing in both fields. The social web can be the common underlying platform for novel and web-based knowledge management systems. It breaks up rigid processes and enables much richer interaction possibilities and creativity. In this workshop we will bring together people from the areas of social web technologies, semantic systems, and knowledge management. We would like to study synergies between social computing, social web, semantic systems, and knowledge management and provide a look at the current state of the art in the area.

This event is supported by the EU projects ACTIVE and KIWI.

Programme

To ensure a creative atmosphere during the workshop, the presenters will be selected based on their submitted papers and demonstrations. In order to obtain an intensive exchange of ideas between the participants, enough time for discussion will be ensured.

A programme will be published here upon notification of the authors and receiving the camera ready versions of the submissions.
On the Horizon...

- **CLOUD** (broadband + wireless)
- Web Services
- **Monetization** of Social Interactions
- Security & Privacy
Acknowledgments

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- Zhenjiang Lin (Ph.D.)
- Hao Ma (Ph.D.)
- Haiqin Yang (Ph.D.)
- Wei Wei (Ph.D.)
- Zenglin Xu (Ph.D.)
One More Thing...

"Don't worry about what anybody else is going to do... The best way to predict the future is to invent it. Really smart people with reasonable funding can do just about anything that doesn't violate too many of Newton's Laws!"

Alan Kay, 1971
References

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