

The Future Belongs to Data

Tim O'Reilly

O'Reilly Media, Inc.
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Database Summit
May 30, 2008



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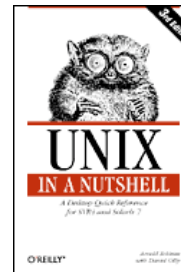
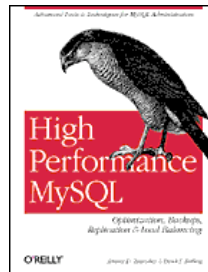


What We Do At O'Reilly

*Change the world by spreading the
knowledge of innovators*

How we do it

- Find interesting technologies and people innovating from the edge
- Amplify their effectiveness by spreading the information needed for others to follow them.
- Books



How we do it

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- Amplify their effectiveness by spreading the information needed for others to follow them.
- Books, Conferences

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How we do it

- Find interesting technologies and people innovating from the edge
- Amplify their effectiveness by spreading the information needed for others to follow them.
- Books, Conferences, Online



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Make:

technology on your time



“Martha Stewart
for Geeks”
-- *Newsweek*

Foo Camp



O'Reilly AlphaTech Ventures (OATV) is in the business of funding disruptors, innovators, and hackers of the status quo. From open source to the early days of the web and its recent resurgence, O'Reilly Media has played a key role as trend spotter and advocate for putting world-changing technologies on the map. OATV is our effort to bring the legacy, resources, and relationships of O'Reilly to each investment we make.



Profile: Eric Wilhelm, Instructables

"When people ask what they should post to Instructables, I tell them to share something they're passionate about."

— Eric Wilhelm, Co-Founder and CEO of Instructables



[Learn more >](#)

Watch the Alpha Geeks

- New technologies first exploited by hackers, then entrepreneurs, then platform players
- Three examples
 - Wireless community networks predict universal Wi-Fi
 - Screen scraping predicts web services and the internet as platform
 - “The pedal powered internet” predicts new focus on energy

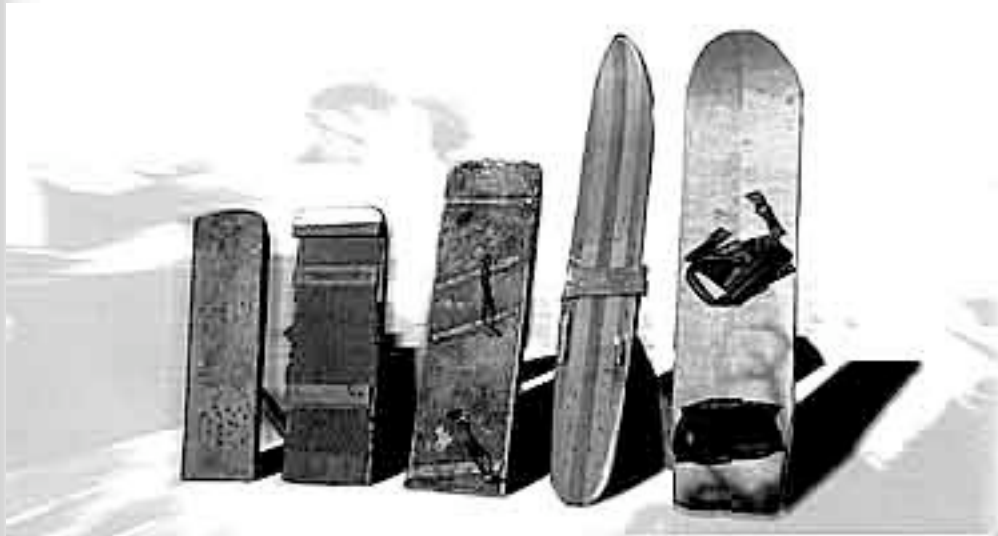


Rob Flickenger and his potato chip can antenna

This is not new



Nor is it limited to technology...



Topics include:

LG RD3330 - Logitech Mouse
NetGear's 802.11n Router - Home Automation



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Maker Faire Austin: October 20-21, 2007, Travis County Fairgrounds

Build, CRAFT, hack, play, MAKE.

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Maker Faire is a two-day, family-friendly event that celebrates arts, crafts, engineering, science projects and the Do-It-Yourself (DIY) mindset. It's for creative, resourceful folks who like to tinker and love to make things. We call them Makers.

[Tickets for Maker Faire Austin available now!](#)

New! [Maker Faire Auditions: Sunday September 16 at The Children's Museum of Houston.](#)

Maker Faire Austin: Call for Makers! Are you a maker or crafter who would like to show off your project at Maker Faire Austin, October 20-21? [The call for makers is open!](#) Deadline for entries extended to Thursday, September 6, 2007. [Read more.](#)

Appearing at Maker Faire Austin

Four-Player Tabletop MAME Cabinet



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"The future is here. It's just not evenly distributed yet."

--William Gibson

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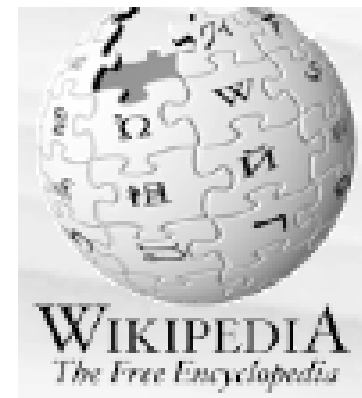
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What Makes Them Interesting To Me

- The Internet, not the PC, is their platform
- Built on top of open source, but not themselves open source
- Services, not packaged applications
- Exploring how to become platform players via web services APIs
- Data aggregators, not just software
- Network effects from user contributions key to market dominance
- The most successful are “semantic learning systems”, leveraging implicit metadata

Infoware, not software

Web 2.0

*web*2.0

Desktop Application Stack



Proprietary Software
(Control by API)

System Assembled from
Standardized
Commodity Components

Hardware Lock In
By a Single-Source
Supplier

OpenOffice.org



Free and Open Source Software



Cheap Commodity PCs



Intel Inside

Internet Application Stack



Proprietary
Software As a Service

Integration of Commodity
Components

Subsystem-Level Lock In

Web 2.0

*web*2.0

Collective Intelligence

Harnessing network effects to build applications that get better the more people use them

Turning 1.0 into 2.0

	Web 2.0	Phone Co
Massive Data Centers	Yes	Yes
Software as a service	Yes	Yes
Data from customers	Yes	Yes
Data gets better all the time	Yes	Yes
Data mining of customer behavior	Yes	Yes
Real time user-facing services based on that data	Yes	No

How Ridiculous Is This?

- Dialed calls (last 10)
- Received calls (last 10)
- Missed calls (last 10)



My phone company remembers every call. Why don't they remember it for me?

My phone and my email already know who my friends are.

**Web 2.0 is about finding *meaning*
in user-generated data,
and turning that meaning into real-time
user-facing services**




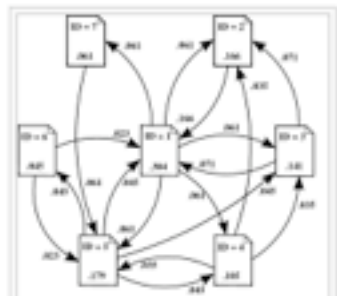
PageRank

From Wikipedia, the free encyclopedia

PageRank is a [link analysis](#) algorithm that assigns a numerical weighting to each element of a [hyperlinked](#) set of documents, such as the [World Wide Web](#), with the purpose of "measuring" its relative importance within the set. The [algorithm](#) may be applied to any collection of entities with [reciprocal](#) quotations and references. The numerical weight that it assigns to any given element *E* is also called the *PageRank of E* and denoted by *PR(E)*.

PageRank was developed at [Stanford University](#) by [Larry Page](#) (hence the name *Page-Rank*^[1]) and later [Sergey Brin](#) as part of a research project about a new kind of search engine. The project started in 1995 and led to a functional prototype, named Google, in 1998. Shortly after, Page and Brin founded [Google Inc.](#), the company behind the [Google search](#) engine. While just one of many factors which determine the ranking of Google search results, PageRank continues to provide the basis for all of Google's web search tools.^[2]

The name PageRank is a [trademark](#) of Google. The PageRank process has been [patented](#) ([U.S. Patent 6,285,999](#) ). The patent is not assigned to Google but to Stanford University.



How PageRank Works

Contents

- 1 General description
- 2 PageRank algorithm
 - 2.1 Simplified PageRank algorithm
 - 2.2 PageRank algorithm including damping factor
- 3 PageRank variations
 - 3.1 Google Toolbar
 - 3.2 Google directory PageRank
 - 3.3 False or spoofed PageRank
 - 3.4 Manipulating PageRank
 - 3.5 Other uses of PageRank
- 4 Google's "rel=nofollow" proposal
- 5 See also
- 6 References
- 7 Further reading
- 8 External links

General description

Google describes PageRank^[2]

PageRank relies on the uniquely democratic nature of the web by using its vast link structure as an indicator of an individual page's value. In essence,

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[Accounts Summary](#)
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Wells - Personal

[Edit](#)
[Show all](#) | [unedited \(1\)](#) | [untagged \(17\)](#) | [add transaction](#)
[<< Earlier](#)

 Showing **March 12th to April 15th**

Tuesday, April 15th

ATM Withdrawal

-\$200.00 \$13,606.92

Tags: cash

7 tips available, including Using cash for discretionary spending.

Friday, March 28th

T Mobile

-\$31.97 \$10,096.47

Tags: communications

Friday, March 28th

Comcast Cable

-\$81.48 \$10,128.44

 Rating: **Captive** Tags: cable_tv

1 tip available: Students: Take advantage of Comcast's sharply discounted student rate.

Thursday, March 27th

Weatherford BMW

-\$964.00 \$10,209.92

Tags: auto

7 tips available, including vs. Bavrian Pro

Monday, March 24th

Crate & Barrel

-\$43.35 \$10,309.92

Tags: household

10 tips available, including Recent recalls prove: Generic foods/items often the same as Name Brands.

Monday, March 24th

The Mon

-\$46.60 \$10,353.27

Monday, March 24th

Bi Rite Market

-\$266.00 \$10,399.87

 Rating: **Fan** Tags: birthday

1 tip available: Personalize everything!

Friday, March 21st

Stem Florist

-\$63.21 \$10,665.87

 Rating: **Fan** Tags: birthday

1 tip available: Personalize everything!

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[books](#) [cable_tv](#) [car](#)
[cash](#) [cat](#) [cca](#)
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Bavarian Pro vs. Weatherford BMW

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yelp:

\$611.65

per visit

on [repairs](#) \$593.70
on [auto](#) \$603.98
on [car](#) \$300.43

33%

visit often

68% visit a few times
9% never return

96%

recommend it

4% don't
1004 votes

vs.

Weatherford BMW

yelp:

\$1327.29

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on [auto](#) \$1244.29
on [repairs](#) \$1318.18
on [car_repair](#) \$924.01

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5% visit a few times
65% never return

17%

recommend it

83% don't
810 votes

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Bavarian Pro (1)

Weatherford BMW (1)



debbie says:



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Mashup Directory

Total Mashups Listed

3077

Past 7 Days: 21

Past 30 Days: 87

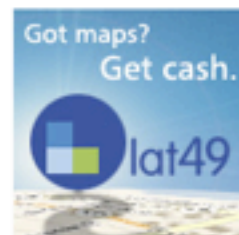
Mashups/Day

3.13

7 Days Avg.: 3.00

30 Days Avg.: 2.90

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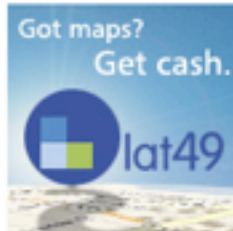
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Over 100

Subsystems

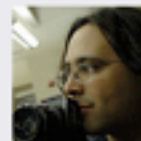
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What do we need to do differently?

- To support this future?
- To make sure that the future internet OS continues to work like today's (i.e. mostly open and interoperable)
- To make data mashups less of a hack and more of a truly composable set of data services?

Web 2.0 is Sharecropping

I gave a 5 minute talk at Ignite Boston this evening. The basic premise, for those of you who don't do flash or don't feel like clicking through is this: **If you don't own your tools, you're going to be in a whole mess of trouble.** Maybe not today. Maybe not tomorrow. But one day, you're going to be very, very unhappy with the fact that you've given up your right to software self-determination.



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1 / 55



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