Big Data

How many v’s?

Big data ≈ more data than you can (easily) handle
Big Data

How many v's?
Big Data

How many $v$'s?

Big data $\approx$ more data than you can (easily) handle
Big Data

Some examples (data/day):

followthedata.wordpress.com, june 2014
Big Data

Some examples (data/day):

followthedata.wordpress.com, June 2014

- Twitter: 100 TB
Big Data

Some examples (data/day):

followthedata.wordpress.com, june 2014

- Twitter: 100 TB
- Facebook: 600 TB

NSA: 29 PB

arstechnica, augusti 2013

Baidu: 10–100 PB

Google: 100 PB

Internet: 1,8 EB

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Big Data

Everyone “knows” that they need Big Data
Big Data

Everyone “knows” that they need Big Data

But for what?
Big Data
Big Data

Correlation: 99%
Sources: US OMB & CDC
tylervigen.com
Big Data

- Per capita consumption of cheese (US)
- Number of people who died by becoming tangled in their bedsheets

Sources: USDA & CDC

Correlation: 95%
Text Analysis
Text Analysis

Extract information from (raw) text data
Text Analysis

Extract *actionable* information from (raw) text data
Text Analysis

Extract *actionable* information from (raw) text data

= Information advantage
Text Analysis

Extract *actionable* information from (raw) text data

= Information advantage

Next generation information access
Medierna mest kritiska mot Löfven

"Det är inte Jimmie Åkesson utan Löfven som får mest negativa artiklar. 28 procent medan Åkesson ligger på 23 procent, säger medieanalysörer foaona Loebrant på Retriever till TT.

-Sam det ser ut just nu är det ganska håplöshåvtraende att Löfven framställs som den mest negativa partiledaren.

Medierna mest kritiska mot Löfven Göteborg S-ledaren Stefan Löfven är den av partierna som fått mest kritik efter partiledardebatterna.

-Löfven får ofta ta emot kritik från experter som inte tycker att han kommer fram bra, och så den där knuffen, som blir ödessläget mot honom"

Tätt mellan blocken

"SD blir vågmöstrare (TT) De tre rödgröna partierna får 45,8 procent och Alliansen 40,5 procent av väljarnäset i Novus TV:s senaste undersökning, den sista från från Novus förra valet.

Löfven: Det blir inte tätt Göteborg S-ledaren Stefan Löfven kan få leda en minoritetsregering med akart stöd i riksdagen om de rödgröna vinner valet.

Rösta om Löfven: Men blir Sverigedemokraterna vågmöstrare och Allianspartierna håller ihop i opposition väntar stora utmaningar för en rödgrön minoritetsregering.

Ingvar Carlsson tog inte ansvar för Carl Bildt utan för Sverige, säger Löfven.

Dagen före valdagen talade S-ledaren traditionserikt på Götaplatsen i Göteborg"

Valduell utan hetta

"Väljare i staden fick ställa frågor och de ville ha besked på områden där skiljefaderna mellan Socialdemokraternas Stefan Löfven och statsminister Fredrik Reinfeldt (M) inte är så stora"
Text Analysis
Holder Seid to Plan Resignation as U.S. Attorney General

Attorney General Eric Holder plans to resign his post at the end of the month, according to a source familiar with the plans.

Holder told President Barack Obama of his plans over the Labor Day weekend and they have been confirmed, according to the source, who asked not to be identified as the plans are not official.

Obama and the source did not say when Holder plans to announce his plans, according to the source, who asked not to be identified as the plans are not official.

Holder, 60, is one of the most visible members of Obama's Cabinet and he is widely viewed as a key member of the administration. He is currently serving his fourth and final term as a member of the Cabinet, which began in January 2009.

Holder's departure would leave a very large void in the Justice Department, and it is unclear who will replace him. His successor will be appointed by the president, according to the source, who asked not to be identified as the plans are not official.

Provide successors who have been talked about for the top job at the Justice Department include Solicitor General Donald B. Verrilli Jr., who is the top lawyer for the Justice Department and was a top aide to Holder when he served as a deputy attorney general.

Other Names

Two other powerful candidates who are frequently mentioned have suggested they won't seek the job.

Dana Nessel, the Michigan attorney general, said in a Facebook post that she was not interested in the job.

Michael A. Eruzione, the coach of the 1980 U.S. Olympic hockey team, told the Associated Press that he was not interested in the job.

Sentencing Guidelines

He has instructed federal prosecutors to reduce drug sentences in a way that triggered swift action to curb violence and reduce crime.

More From The Web

The story is over at the AP's website.

More From Bloomberg

- Texas: Avalanche As Apple Watch Sales Inch Forward
- The U.S. Economy: Chugging Along
- U.S. Economy: Chugging Along
- The U.S. Economy: Chugging Along
- The U.S. Economy: Chugging Along
- The U.S. Economy: Chugging Along
Holder Seid to Plan Resignation as U.S. Attorney General

Attorney General Eric Holder plans to resign his post, stepping down in office with a successor confirmed, a Justice Department official said.

Holder told President Barack Obama on Friday that he was ready to resign and that Obama had been considering his resignation, according to the official, who spoke on condition of anonymity because Holder’s decision had not yet been publicly announced.

Obama is expected to announce the news at a meeting of the United Nations on New York and the White House has emphasized that the decision to resign is Holder’s and not that of the president.

Holder, 61, is one of three veteran members of Obama’s Cabinet who are leaving the administration, having been confirmed in 2009, he is the first black attorney general and the fourth-longest serving U.S. Attorney. Holder has been discussing plans to leave the job for more than a year as he tends to complete the agenda on federal sentencing and civil rights.

Possible successors who have been talked about by congressional and administration officials include Seattle Mayor Mike McGinn, Deputy Attorney General James Cole, Colorado Governor John Hickenlooper, the state’s former attorney general, and Michelle Smith, the attorney general of Pennsylvania.

Other Names
Two other potential candidates who are frequently mentioned have suggested they won’t seek the job.

One notable possibility is Massachusetts Attorney General Maura Healey, who served a term to Massachusetts leading the state’s fight against federal laws, but this is a non-contender, according to the White House.

The magazine has used its connections with high-ranking officials, particularly those involved with “inner-city” issues, to promote its agenda of promoting rights for minorities. Holder’s support of the magazine has helped raise money for the organization, according to sources familiar with the situation.

Holder said the magazine was a “very good friend” of the Obama administration and that he would likely consider it as a potential venue for future political activities.

Sentencing Guidelines
He has ordered federal prosecutors to stop charging low-level drug offenders in a way that triggered a nationwide “sanctuary” for federal immigration sentences. He has also ordered a review of the nation’s immigration policies, according to sources, who said it was not clear when or how the review would be conducted.

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Bloomberg News

Recent Stories

Gavagai
Holder Seid to Plan Resignation as U.S. Attorney General

Attorney General Eric Holder plans to resign his post, staging his exit at the start of a successor confirmed, a Justice Department official said.

Holder and President Barack Obama are working on plans for a successor to replace the embattled attorney general after a stinging Justice Department report, the official said, speaking on condition of anonymity because he was not authorized to discuss the matter publicly.

Obama is planning the announcement meeting of the United Nations in New York and the White House has ordered no comment, senior administration officials said.

Holder, 61, is one of three original members of Obama’s cabinet still serving in the administration, having been confirmed in 2009 as the first black attorney general and the fourth-longest serving U.S. attorney. Holder has been discussing plans to leave the job for more than a year as he tried to complete his agenda on federal sentencing and civil rights.

Possible successors who have been talked about by congressional and administration officials include Sylvia MatthewsTescher, Deputy Attorney General James Cole, Kathryn Ruemmler, the top lawyer for the White House counsel’s office, as well as Robert Califf, the FDA commissioner, and Merrick Garland, Barack Obama's top choice for the Supreme Court. All three have said they would not succeed Holder.

Other Names

Two other potential candidates who are frequently mentioned have suggested they won’t seek the job.

D.C. Mayor, Vincent Gray of the District of Columbia, said at an event today in Massachusetts, that Brown is the best person for the job.

Gray said in his remarks that Brown was “not generally well known, but he’s a very smart man, and he’s a very tough man, and he’s a very good man.”

The Massachusetts Senate President, the U.S. attorney in Massachusetts, the Massachusetts attorney general, and the Massachusetts treasurer have all said they have not considered the job.

Holder positioned himself as the enforcer of protecting social and economic minorities and gaps and barriers in the criminal justice system, and he has kept a low profile on congressional affairs.

Last year, he asked North Carolina to remove some states’ new voter identification laws that he said unfairly targeted minorities.

Sentencing Guidelines

He has also been involved in efforts to make prison sentences harsher, although he said that the system must be aggressively reduced at the end of the U.S. Justice Center at the Prison Reform.

More From The Web

- The Justice Department of Virginia
- After A Long History of Disadvantage, This is What the Law Does When the Law Has
- Least 10 States Ban Smoking
- You Want More, Your Eyes Are These People
- More on Holder's Quick Fix
- "The Justice Department of Virginia"

More from Bloomberg

- Texas Attorney General kBurr Measures It’s Worth It
- Over 400 Million in New York, It’s
- Direct Democracy, Chief Marketing Officer
- "The Justice Department of Virginia"

Gavagai
Holder Seid to Plan Resignation as U.S. Attorney General

Attorney General Eric Holder plans to resign, his public-facing office on a successor confirmed, a Justice Department official said.

Holder, who President Barack Obama is in key positions, was the senior lawyer for holding his post confirmed, a Justice Department official said.

Holder was last seen in a meeting of the United Nations in New York and the White House has confirmed that he will continue to lead the department.

Holder, 52, is one of those regarded as New York's most important in the administration, having been confirmed in 2009. He is the first black attorney general and the fourth longest-serving U.S. Attorney. Holder has been discussing plans to leave the job for more than a year as he tried to complete the agenda on federal voting and civil rights.

Possible successors who have been talked about by congressional and administration officials include Solicitor General Donald Verrilli, Deputy Attorney General James Cole, U.S. Attorney for the District of New York Preet Bharara, and former U.S. Attorney for the Southern District of New York Andrew Napolitano.

Other Names

Two other powerful candidates who are frequently mentioned have suggested they won't seek the job.

Deval Patrick, a former governor of Massachusetts, said in an email today: "Massachusetts is the place for the job and I welcome the opportunity to lead the state."

The governor of Texas, Rick Perry, said: "I am not a candidate for the job."

The resignation of U.S. Attorney General Eric Holder, who has been widely regarded as a liberal, will leave the Justice Department in the hands of a new attorney general.

Holder resigned himself of the responsibility of protecting social and ethnic minorities and gay and lesbian rights at the Department of Justice.

Last year, he ordered North Carolina and Texas to overturn voter identification laws that he said unfairly targeted minorities.

Sentencing Guidelines

He has instructed federal prosecutors to stop charging low-level drug offenders in a way that shortcuts what he considers "overzealous" policies against sentences. He unequivocally sought to halt harsher sentences nationwide and the U.S. attorney general, on Sentencing Guidelines. Podiatry

More From The Web

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1. 谷歌翻译
2. 苹果新闻
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5. 财联社

More from Bloomberg

2. 更多从Bloomberg
3. 另外，Bloomberg
4. 另外，Bloomberg
5. 另外，Bloomberg

Gavagai
Obama is returning this afternoon from meetings at the United Nations in New York and the White House has scheduled an announcement for 4:30 p.m. Washington time. No successor to Holder will be named, according to an administration official.
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Text Analysis

Language

Sentences

Words

Part of speech

Parsing

Named Entity Recognition

Sentiment

Topics
Text Analysis

Language
Sentences
Words
Part of speech
Parsing
Named Entity Recognition
Sentiment
Topics
Text Analysis

Language
Sentences
Words
Part of speech
Parsing
Named Entity Recognition
Sentiment
Topics
Text Analysis

Language
Sentences
Words
Part of speech
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Topics

Gavagai
Text Analysis

Language
Sentences
Words
Part of speech
Parsing
Named Entity Recognition
Sentiment
Topics
Text Analysis

Language
Sentences
Words
Part of speech
Parsing
Named Entity Recognition
Sentiment
Topics
Text Analysis

Language
Sentences
Words
Part of speech
Parsing
Named Entity Recognition
Sentiment
Topics
Text Analysis

Predefined lexica, ontologies and rules
Text Analysis

Predefined lexica, ontologies and rules

Statistic learning from manually labelled examples
Text Analysis

Works great for small, static, editorial texts
Text Analysis

Works great for small, static, editorial texts

Language in social media is not like that in newsprint
oh shiet, nvm ud pwn me ��

w/e if i was on my main id pwn u, n00b

I... i just love the internet so much.

People who hate on this, are people who are jealous that they don't have real jobs in social media. This is amazing!!

Heh

had a kewl day morph?

ih, i'll slide the 126 main pics ��

w/e if i want one u gotta send him one first

P/S think u need to grow up x

i came home 2 am and i was like "i think i left the phone on the bed"

sum bastard woke me up @ 2pm

w.o.o. i h8 dat guy

=P

it's not like there's a lot of people in my dorm. like there's only like 12 people.

You're officially a stranger.

But there are like 3 other dudes who live in this room.

So i'll probably see them in the next few days.

If you see me in the next few days, say hi.

-brika


Yeah, it's so retarded. :D :D :D

I... i just love the internet so much.

Yeah, it's so retarded. :D :D :D

I... i just love the internet so much.

Yeah, it's so retarded. :D :D :D

I... i just love the internet so much.

Yeah, it's so retarded. :D :D :D

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Yeah, it's so retarded. :D :D :D

I... i just love the internet so much.

Yeah, it's so retarded. :D :D :D

I... i just love the internet so much.
### New Text

<table>
<thead>
<tr>
<th>recommend</th>
<th>good</th>
<th>bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>recomend</td>
<td>0.972</td>
<td>great</td>
</tr>
<tr>
<td>reccomend</td>
<td>0.968</td>
<td>prefect</td>
</tr>
<tr>
<td>reccommend</td>
<td>0.941</td>
<td>perfect</td>
</tr>
<tr>
<td>looove</td>
<td>0.870</td>
<td>pristine</td>
</tr>
<tr>
<td>loooove</td>
<td>0.863</td>
<td>stable</td>
</tr>
<tr>
<td>lurve</td>
<td>0.850</td>
<td>grat</td>
</tr>
<tr>
<td>love</td>
<td>0.846</td>
<td>fantastic</td>
</tr>
<tr>
<td>looooooove</td>
<td>0.836</td>
<td>flawless</td>
</tr>
</tbody>
</table>
I urge a special session of Parliament during the Chinese New Year to deal with matters facing the Prime Minister Najib Razak, and the country's Weltkrisis crisis.

In fact, if someone is responsible for the current situation, that person is Mahathir. He misjudged that it is the Chinese who want to control politics and the economy who are causing the country's leadership crisis.

The former Prime Minister Dr. Mahathir has pointed out that the weak Gerakan government is making racial relationships worse.

Is it the responsibility of the Inspector General of Police? The Inspector General of Police now has the task of fulfilling his role of protecting the people,

For so many irresponsible elements to instigate racial and religious hatred, why is the Inspector General of Police Tan Sri Khalid completely silent?

This is a捏造act of provoking racial and religious hatred, conflict and tensions. These are the latest proof that a group of traitors are plotting to destabilize the country and heat up the racial and religious issue.

These irresponsible elements are becoming increasingly involved in provoking racial and religious hatred, conflict and tensions, to create a situation of racial and religious conflict.

I urge the Chinese to rally together, to boycott the Chinese New Year, to show our strength as a people.

Prime Minister, you must stand up to my appeal.
Top Ten Languages in the Internet
2010 - in millions of users

- English: 536.6
- Chinese: 444.9
- Spanish: 153.3
- Japanese: 99.1
- Portuguese: 82.5
- German: 75.2
- Arabic: 65.4
- French: 59.8
- Russian: 59.7
- Korean: 39.4
- All the rest: 350.6

Estimated Internet users are 1,966,514,816 on June 30, 2010
Copyright © 2000 - 2010, Miniwatts Marketing Group
Internet Users in the World
Distribution by World Regions - 2013 Q4

- Asia: 45.1%
- Europe: 20.2%
- North America: 10.7%
- Lat Am / Caribb: 10.8%
- Africa: 8.6%
- Middle East: 3.7%
- Oceania / Australia: 0.9%

Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 2,802,478,934 Internet users on Dec 31, 2013
Copyright © 2014, Miniwatts Marketing Group
Challenges for Text Analysis
Challenges for Text Analysis

Quality
Challenges for Text Analysis

Quality

Quantity
Challenges for Text Analysis

Quality

Quantity

Cost
Challenges for Text Analysis

Quality

Quantity

Cost

New challenges call for new technologies
Spin-off from SICS
+10 years of research on semantic memories
Gavagai

Spin-off from SICS
Gavagai

Spin-off from SICS

+10 years of research on semantic memories
Semantic Memories

Word Spaces, Distributional Semantic Models, Semantic Vector Spaces
Semantic Memories

*Word Spaces, Distributional Semantic Models, Semantic Vector Spaces*

Autonomous systems that learn the meanings of linguistic entities by reading large amounts of text data
Semantic Memories

*Word Spaces, Distributional Semantic Models, Semantic Vector Spaces*

Autonomous systems that learn the meanings of linguistic entities by reading large amounts of text data

Handles the dynamics and noise by constantly learning
Semantic Memories

*Word Spaces, Distributional Semantic Models, Semantic Vector Spaces*

Autonomous systems that learn the meanings of linguistic entities by reading large amounts of text data

Handles the dynamics and noise by constantly learning

..and also forgetting!
Semantic Memories
Semantic Memories
Semantic Memories
Semantic Memories
Semantic Memories
Semantic Memories
Semantic Memories
Semantic Memories

Concepts rather than keywords
Semantic Memories

Concepts rather than keywords

Live thesaurus (for all languages)
Semantic Memories

Concepts rather than keywords

Live thesaurus (for all languages)

Replicate human results on vocabulary tests
Semantic Memories

A generic semantic text representation
Semantic Memories

A generic semantic text representation

(cf. *deep learning*)
Semantic Memories
Semantic Memories
Semantic Memories

State of the art in computational semantics
Semantic Memories

State of the art in computational semantics

...but
Semantic Memories

State of the art in computational semantics

...but tend to be computationally expensive
Random Indexing

Computational framework for semantic memories

Designed to emulate human information processing

Our brains do not grow when we learn new things
Random Indexing

Computational framework for semantic memories
Random Indexing

Computational framework for semantic memories

Designed to emulate human information processing
Random Indexing

Computational framework for semantic memories

Designed to emulate human information processing

Our brains do not grow when we learn new things
Random Indexing
Random Indexing

**Scalable:** we can learn semantic memories from Big Data
Random Indexing

**Scalable:** we can learn semantic memories from Big Data

**Incremental:** we never have to stop learning
Gavagai Semantic Memories
Gavagai Semantic Memories

Gavagai operations (per second):
Gavagai Semantic Memories

Gavagai operations (per second):

- Incoming documents: 200 (7 of which are in Swedish)
Gavagai Semantic Memories

Gavagai operations (per second):
- Incoming documents: 200 (7 of which are in Swedish)
- Semantic Memory updates: 5 500
Gavagai Semantic Memories

Gavagai operations (per second):

- Incoming documents: 200 (7 of which are in Swedish)
- Semantic Memory updates: 5 500
- Sentiment measurements: 500

Similarity calculations: 16 000 000 (GPUs)
Gavagai Semantic Memories

Gavagai operations (per second):

- Incoming documents: 200 (7 of which are in Swedish)
- Semantic Memory updates: 5 500
- Sentiment measurements: 500
- Similarity calculations: 16 000 000 (GPUs)
Gavagai Monitor

**Telia - October 02**

- Linköpings Tidning/Kinda-Posten - Besked om ny operatör i dag
  - Det kommunala Vimmerby fiber och Telia.
  - Telia har också runt 10 leverantörer i sin fiber.
  - Samtidigt tittar tiden för Telias kampanjer som är den 40 smarta telefoner.
  - Samtidigt redovisas Telia att första målet är uppståt med kampanjen.
  - De fyra stora ones är Boxer, Vissat, Alltele och Telia, som alla erbjuder ett trippel-playpaket, säger Henrik Forsell.

**di.se - Nyheter**

- TeliaSonera ager 25 procent av Megafon.

**Pingproblem/frystagg - Counter-strike - Sweclockers.com**

- tog ju in telefonin-bredband bara för att det är billigare så hos telia.
- Ring och be dom ställa av det (kan inte telia, men det borde vara en välbitable vanlig begäran).

**3G/4G Hastighet centrala Stockholm? | Mobiltelefoner**

- Telenor och Tele2 avvänder samma GSM nät och 4G, Tele2 och Telia delar 3G nät men det verkar som att Telia har helt eget 4G.
WyWallet - August 2014

Minus för operatörernas betalbolag

- De stora mobiloperatörernas gemensamma betalningstjänst Wywallet gjorde i fjol en förlust på 71 miljoner kronor samtidigt som omsättningen stängde på knappt 22 miljoner, skriver Computer Sweden.
- Wywallets vd Jakob Söderbaum säger till tidningen att ekonomin utvecklas helt enligt plan.

Wywallet dyrt för operatörerna | Digitalt

- Jakob Söderbaum känner inte igen sig i Brodgaards bild av att Wywallets marknadsföring har varit för aggressiv.