



上海交通大学
SHANGHAI JIAO TONG UNIVERSITY



神经网络与机器学习

Lecture 1

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作业：

- 2到3次作业。
- 每次作业：仿真结果+结果陈述+代码。
- 作业展示



考核：

- 平时成绩（50%）+期末考核（50%）
 - 平时成绩：作业成绩+出勤成绩
 - 期末考核：课程报告
-

The Age of Big Data



CERN Collider
 320×10^{12} bytes/second



Personal Connectome
 10^{18} bytes/human

facebook

1 billion
messages/day

twitter

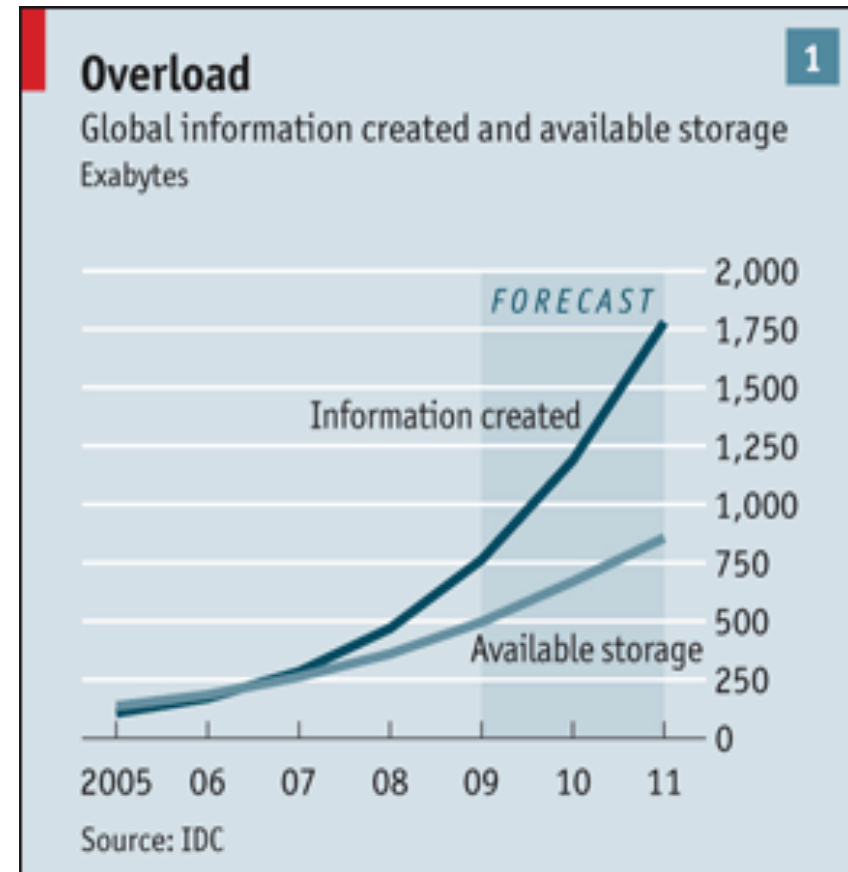
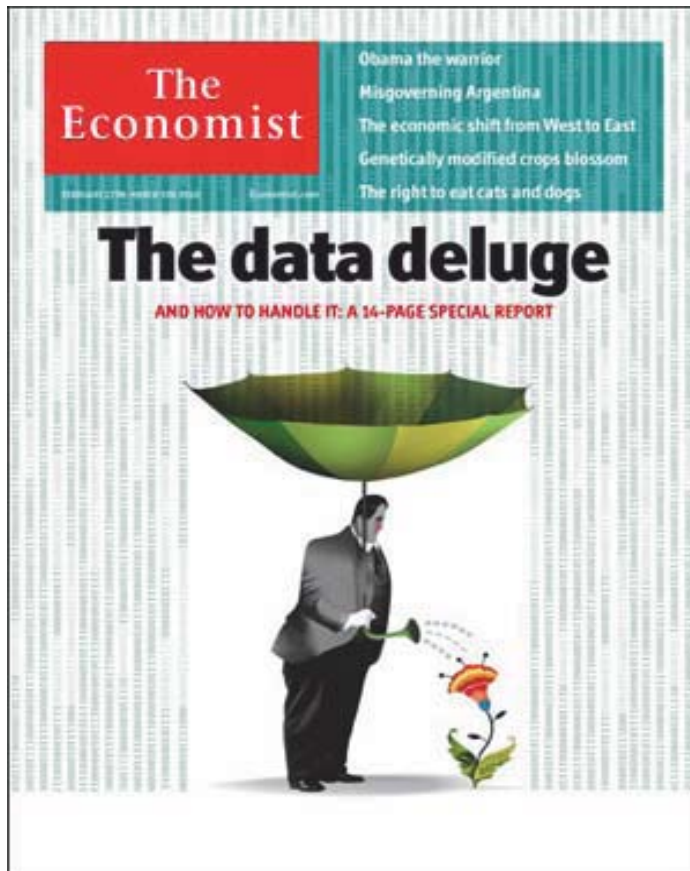


200 million
tweets/day

“Every day, people create the equivalent of 2.5 **quintillion** bytes of data from sensors, mobile devices, online transactions, and social networks:

The Huffington Post: Arnal Dayaratna: IBM Releases Big Data

The Age of Big Data



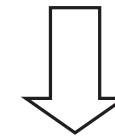
Data  Knowledge

From Data to Knowledge ...

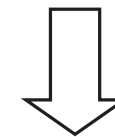
What is Machine Learning?



Data



Learning algorithm

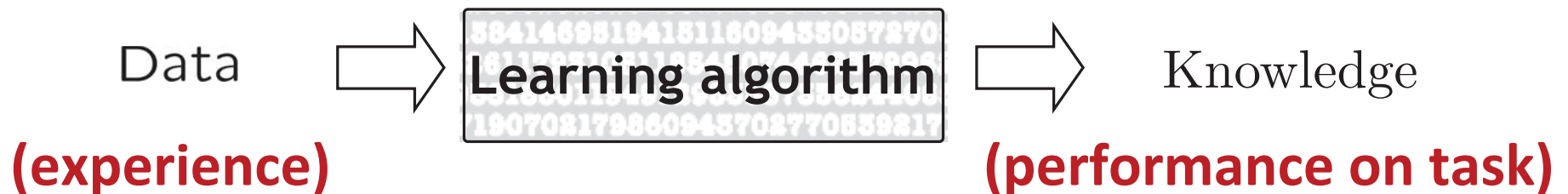


Knowledge

What is Machine Learning?

Design and Analysis of algorithms that

- improve their performance
- at some task
- with experience



Machine Learning in Action

Machine Learning in Action

- Document classification



Sports
Science
News

Machine Learning in Action

- Spam filtering

Welcome to New Media Installation: Art that Learns

Hi everyone,

Welcome to New Media Installation:Art that Learns

The class will start tomorrow.

Make sure you attend the first class, even if you are on the Wait List.

The classes are held in Doherty Hall C316, and will be Tue, Thu 01:30-4:20 PM.

By now, you should be subscribed to our course mailing list: 10615-announce@cs.cmu.edu.

Natural _LoseWeight SuperFood Endorsed by Oprah Winfrey, Free Trial 1 bottle, pay only \$5.95 for shipping mfw rlk Spam | X

=== Natural WeightLOSS Solution ===

Vital Acai is a natural WeightLOSS product that Enables people to lose wieght and cleansing their bodies faster than most other products on the market.

Here are some of the benefits of Vital Acai that You might not be aware of. These benefits have helped people who have been using Vital Acai daily to Achieve goals and reach new heights in there dieting that they never thought they could.

* Rapid WeightLOSS

* Increased metabolism - BurnFat & calories easily!

* Better Mood and Attitude

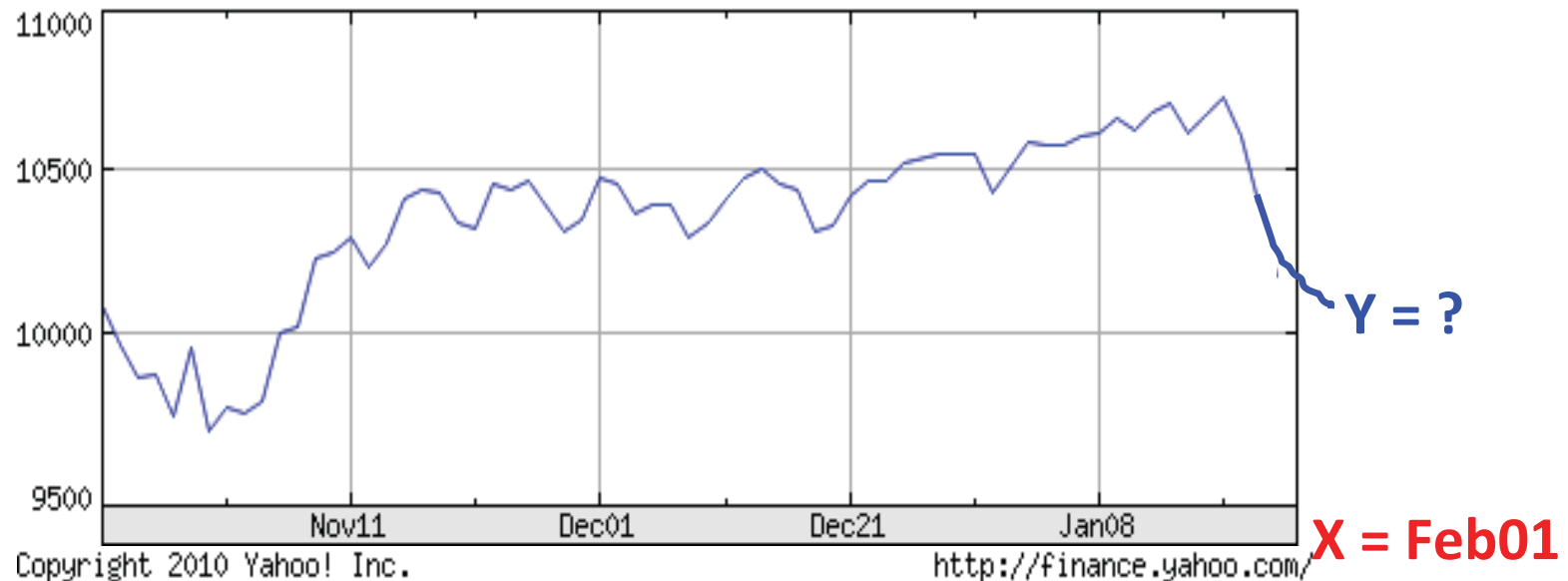


Spam/
Not spam

Machine Learning in Action

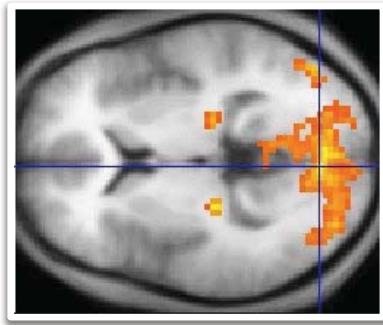
- Stock Market Prediction

DJ INDU AVERAGE (DOW JONES & CO)
as of 22-Jan-2010



Machine Learning in Action

- Decoding thoughts from brain scans



Rob a bank ...

[Home](#) » [Health & Wellness](#)

Brain Scans: Are You a Criminal?



Published February 07, 2007 by:

Andrea Okrentowich

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MRI Scans as Courtroom Evidence

The average Joe's MRI scan can show a brain abnormality, do we proceed to check him into the nearest mental institution or prison? That would make about as much sense as trying to prove a defendant innocent of a violent



Machine Learning in Action

- The **best** helicopter pilot is now a computer!

<http://heli.stanford.edu/>

Jibo: The first family robot

Machine Learning in Action

- Many, many more...

Speech recognition, Natural language processing

Computer vision

Robotics

Web forensics

Medical data analysis

Computational biology

Sensor networks

Social networks

...

ML is trending!

- Wide applicability
- Very large-scale complex systems
 - Internet (billions of nodes), sensor network (new multi-modal sensing devices), genetics (human genome)
- Huge multi-dimensional data sets
 - 30,000 genes x 10,000 drugs x 100 species x ...
- Software too complex to write by hand
- Improved machine learning algorithms
- Improved data capture (Terabytes, Petabytes of data), networking, faster computers
- Demand for self-customization to user, environment