



Connecting with the Customer

Speaker:

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Making Big Profits from Big Data

Opportunities and Challenges in Business

Lionel M. Ni

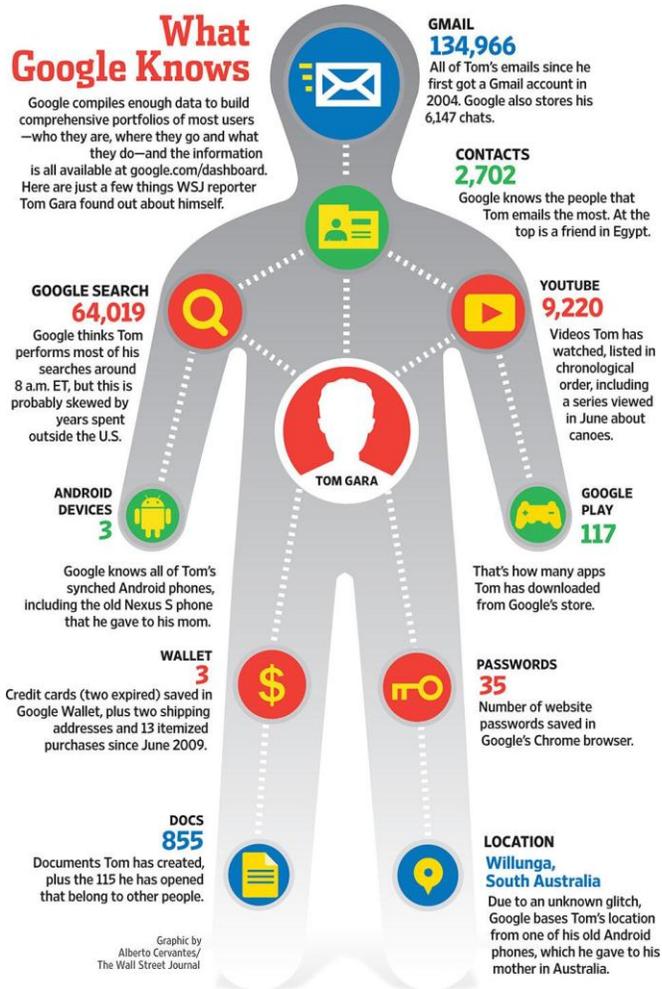
Hong Kong University of Science and Technology



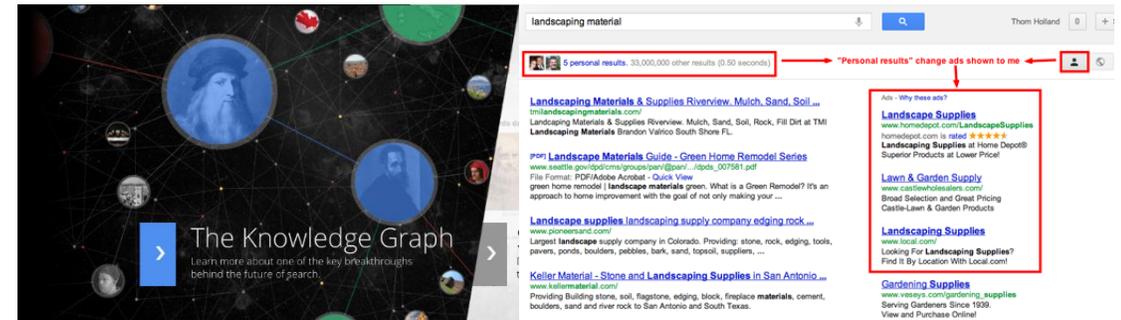
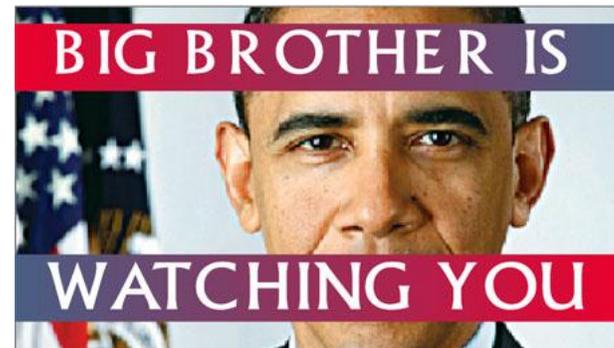
Google Knows You Better Than You Do

What Google Knows

Google compiles enough data to build comprehensive portfolios of most users—who they are, where they go and what they do—and the information is all available at google.com/dashboard. Here are just a few things WSJ reporter Tom Gara found out about himself.



Google is watching



Personalized ads based on **YOUR** data



Enhanced click-through rate =
MORE profits!



Brand Recommendation in Tmall.com (Alibaba)

天猫推荐总体情况

推荐产品 超过**40+**推荐产品
每天服务 **10M+**用户, 双11当天服务**36M+**用户

推荐算法 **User2Items** **Item2Items** **Personalized Ranking** **Others**

推荐实体

- 品牌推荐
- 商品推荐
- 促销活动
- 等等

- Serving **10 million+** users every day, **36 million+** users at the busiest day
- **40+ recommended commodities for each user**
- Predicting user preferences from behaviors data

Due to better models, the revenue of Tmall.com increased by 20%+



Alibaba Big Data Competition

User behavior data from Tmall.com (Alibaba)

| User | Brand | Date | Behavior |
|-------|--------|------------|----------|
| Alice | Lenovo | 2014-04-18 | Click |
| Bob | Sony | 2014-04-20 | Click |
| Bob | Sony | 2014-04-20 | Buy |
| ... | ... | ... | ... |

- Alibaba organizes a competition to look for **even better prediction models**
- Given the log of user behaviors (including **CLICK, BUY, BOOKMARK, and ADD-TO-CART**) of a certain period
- Predict which users **will buy** which brands at a later time

天池 大数据科研平台

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排行榜

每天凌晨更新 (第一赛季周排行榜只展示TOP500的成绩, 更多成绩请至个人中心查看)

| 队名 | 所在组织 | F1评分 | 准确率 | 召回率 | 最优成绩提交日 | 排名 |
|-----------|----------|-------|-------|-------|-------------|----|
| HKUST | 香港科技大学 | 8.02% | 8.13% | 7.91% | 2014年04月20日 | 1 |
| StayAwake | 中国科学技术大学 | 7.86% | 7.83% | 7.88% | 2014年04月18日 | 2 |
| Goahead | 中国科学院大学 | 7.82% | 7.65% | 8% | 2014年04月18日 | 3 |
| wuyang | 香港科技大学 | 7.79% | 7.62% | 7.97% | 2014年04月18日 | 4 |
| 只有这点程度吗 | 复旦大学 | 7.77% | 8.31% | 7.29% | 2014年04月20日 | 5 |

We are the No.1 out of 7000+ teams in season 1.

Smart Tour in Canton Tower



A mobile phone app with **augmented reality**



Smart Shopping Mall

Your smartphone will accompany you go shopping

- Indoor navigation
- Personalized and location-based recommendation
- Finding your cars in big parking lots



Better shopping experience with very low cost!



Fraud Detection for Automobile Insurance



- It is estimated that there are **more than 2500** false insurance claims each year in UK.
- **Each** false claim could cause a loss of **up to \$300,000 HKD**.
- In the market, there are **old and expensive** anti-fraud solutions by FICO, SPSS, etc.
- Our solution uses **new machine learning technologies**.

Our solution detects more frauds while cuts the cost by more than a half.



Data-as-a-Service: Revitalizing Payment Transaction Log

FB: \$16B

>\$10B



New IT Business



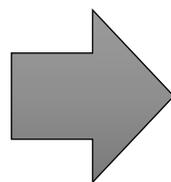
Smart Shopping Mall



Microfinance Companies



Data Center Infrastructure



Data-based Precise Marketing



Credit Scoring Service

It requires new information technologies



Big Data Collection



Large-scale Data Mining



Advanced Machine Learning



Data



Knowledge



Insight

The point of Big Data is to make sense of it





Challenges of Harnessing Big Data for Business Value

Data Collection

- Extracting siloed data
- **Understanding metadata**
- Mixed structured and unstructured data
- Data cleaning
- **Data calibration**
- Data integration
- ...

Data Processing

- Data loading
- Building large indexes
- **Parallel algorithms design**
- **Fault-tolerance**
- Adapt to new hardware
- Data compression
- **Real-time response**
- ...

Data Mining

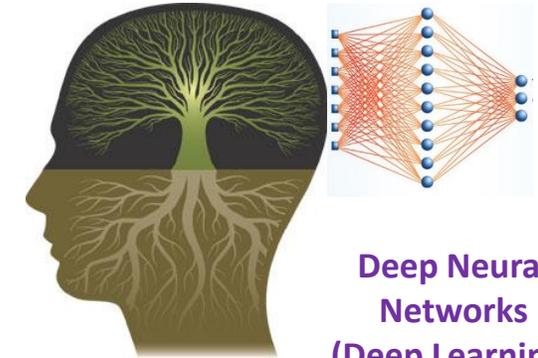
- Statistical analysis
- Data clustering
- **Predictive modeling**
- Ensemble of models
- Abnormal detection
- **Unsupervised learning**
- Data visualization
- ...



“Big Data is a Revolution that Will Transform How We Live, Work, and Think”

Winners in the Big Data era would be those who:

- Have **as much as possible data**
- Have a creative mind of what the data can do (**the value of the data**)
- Know how to **extract knowledge and gain insight from data**
- Have the computation resources and know how to **process huge amounts of data**

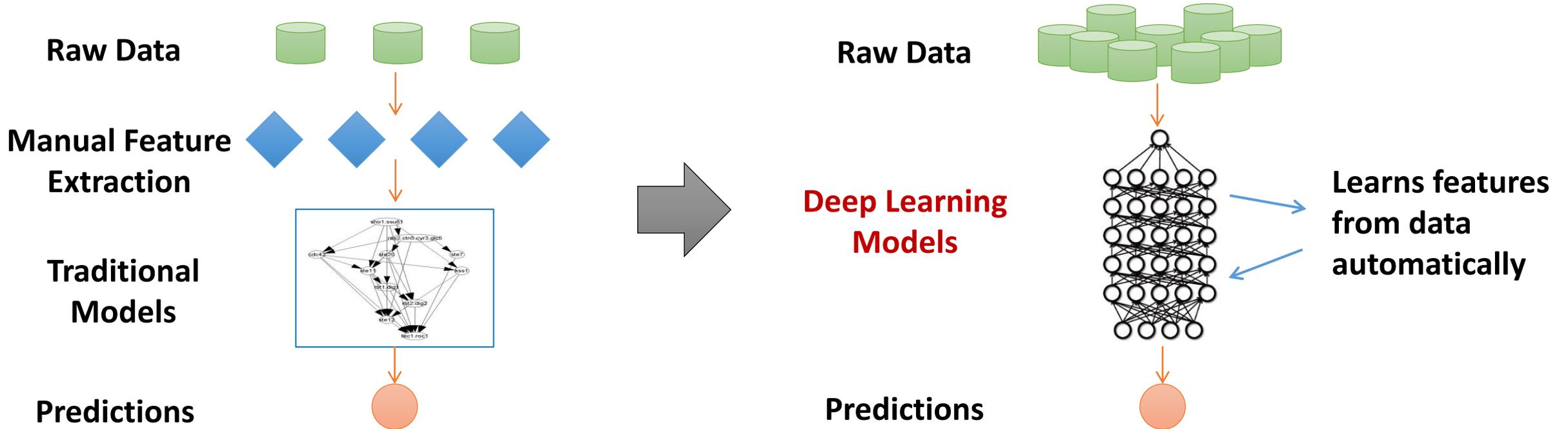


Deep Neural Networks
(Deep Learning)





Deep Learning: A Frontier of Today's Artificial Intelligence



Amazing accuracy (> 85%) for image recognition; yet many works remain to be done to apply it for business data.



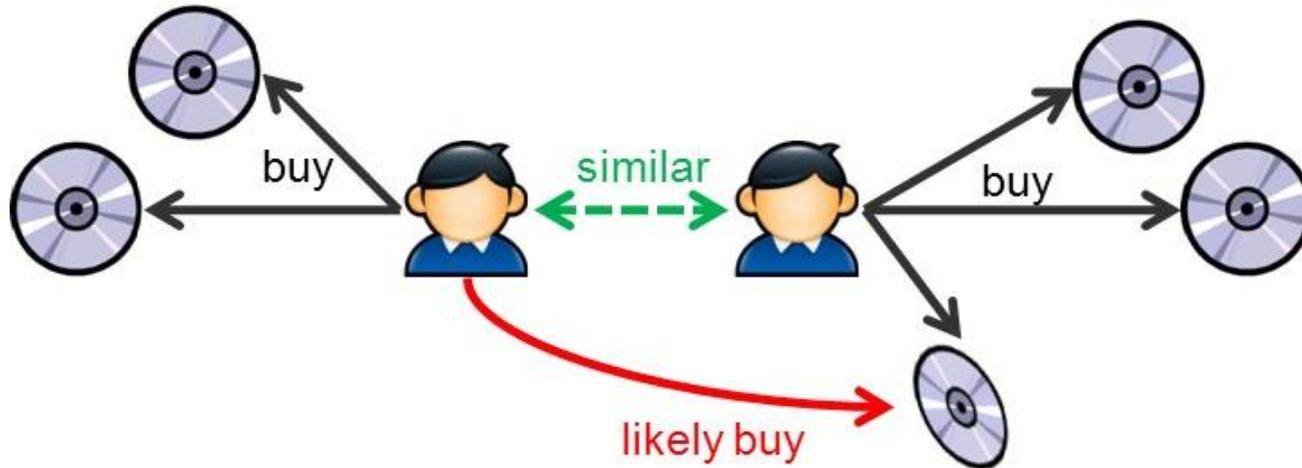
Alibaba Big Data Competition Revisited

Models are no secret

- They are all textbook knowledge.
- Alibaba even let the players know what models they use.

The point is how to well use them

- How similar is similar?
- How many similar users/brands to use?
- How to tune the parameters?
- ...



**Rocket science?
No! It's all art!**



What Companies Should Do

To collect more data

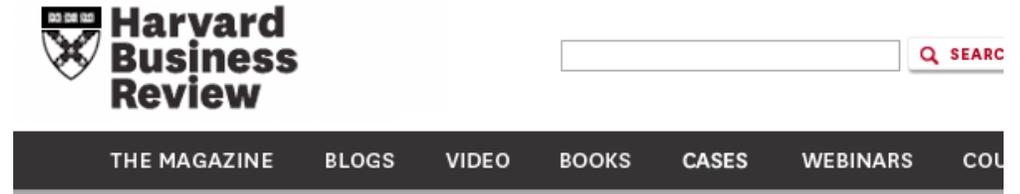
- “Data will become more valuable than you thought when you collect it.”
– Dr. Jian Wang, CTO of Alibaba Corp.

To profit from data

- Treating big data as profitable assets
- Figuring out how data will help the business

To hire experienced data scientists

- Data science is more of an art than a science.



Data Scientist: The Sexiest Job of the 21st Century

by Thomas H. Davenport and D.J. Patil

Comments (87)



Newsroom \ Announcements \ Gartner Says Big Data Creates Big Jobs: 4.4 Million IT Jobs Globally...

Press Release

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ORLANDO, Fla., October 22, 2012

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Gartner Says Big Data Creates Big Jobs: 4.4 Million IT Jobs Globally to Support Big Data By 2015

Analysts Discuss Key Issues Facing the IT Industry During Gartner Symposium/ITxpo 2012, October 21-25, in Orlando

- New technologies do bring other concerns, such as privacy. **We should face them and solve them, other than escape from them.**
- Technologies will move the world forward, and **there is no way back.**
- The history has told us that those companies **who overlook the technology advances will be out of business, faster than you thought.**



**Do You Still
Remember Kodak?**

Big Data Will Change Business

In the near future:

**Big Data Should Be and Could Be
A Core Competency of Your Enterprise**

Thank You !