Nine Real Hard Problems We’d Like You to Solve

Robin Li
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1. The OCR problem

- We were used to solve this
The OCR problem

- And this

![Diagram showing OCR process]

Bitmap

Classifier

q: X → Y

label

1 2 0 7 9 5
The OCR problem

• But now we deal with this
The OCR problem

- And this a lot more
2. The speech recognition problem

- **Traditional Applications: Limited vocabulary**
  - Voice dialing
  - Speech navigation
The speech recognition problem

- Descriptive information
  - T like in “Tom”, 弓长 “张”
- Adaptation - dialects/accents/pitch detection
- Background noise
- Dialogue management
- Mixed language input
Speech – Challenges: Examples

Standard Mandarin in Quiet Environment

Dialect and mixed language in noisy environment
3. Content based image retrieval

- Image search page views surpassed web search last year
- Qzone daily upload 320 million pictures
  - In less than a year, we have to index more pictures than web pages!
CBIR – An Unsolved Problem

Query Image

Expected result

Result by a state-of-the-art commercial system

[bolete]: any fungus of the family Boletaceae
[mushroom]: fleshy body of any of numerous edible fungi
[puffball, true puffball]: any of various fungi of the family Lycoperdaceae whose round fruiting body discharges a cloud of spores when mature
[earthstar]: any fungus of the family Geastraceae; in form suggesting a puffball whose outer peridium splits into the shape of a star
CBIR – But there is hope

- Geo information
- Inter-app information
- Semantic understanding of images
  - Object recognition
  - Scene understanding
  - Face recognition
4. Anti-Spam in Social

• Goal
  – Healthy ecosystem

• Problems
  – Content: false/indecent information
  – Means: Images / Martian language
Anti-Spam in Social

- Challenges
  - Motivation understanding
  - Real-time detection
  - Handling mechanism
5. Box computing – Open Data Platform

- The dark web
- The birth of the Open Data Platform
Open Data Platform – How far can we go?
6. Box computing – Open Application Platform
Open Application Platform

• System security and stability
• Inter-application resource scheduling on cloud
• Application resource distribution between cloud and clients
• User intent analysis
  — Connect users with applications
7. Box computing – Open Publishing Platform
Open Publishing Platform

• User publishing intent analysis
  – Need to publish?
• Audience and publishing site
  – Categorization of the content
  – Appropriate publishing site
  – Form of publication
8. Box computing – Personalized Homepage
Personalized Homepage

- Home page, no home page?
- Search without a query
- Personalized recommendation
  - User status
  - Temporal-spatial information
  - Scenarios
  - Tasks
- Integration of heterogeneous contents
- Personalization for mobile
Evolution of Box Computing

Transition of Web Content, User Req. and Behavior

Interface to Web Contents

Traditional Search Engine

Web Information Platform
  Open Data Platform
  (Direct Info Plug-in)

Web Application Platform
  Open App Platform
  (Instant App Plug-in)

Open and Personalized Platform
  Personalized Homepage
  Open Publishing Platform
  ("You" plug-in)

Box Computing

Meet user’s needs in most simple and reliable way

Baidu
9. Monetization for social

- Ads
  - Reach, relevancy, engagement, social context
- Commissions on a platform
- Subscription
And the 10th Problem is...

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