Outline

• Deconstructing CLEF
• The user’s perspective
• User interface design
  – Transparent query translation
  – Selection and examination
• A modest proposal
Deconstructing CLEF

• What user process is modeled by the CLEF evaluation paradigm?

• Answer: **Interactive** retrospective search
  – User presents a previously unseen query
    • Expectation over “random” queries
  – System produces a ranked list
  – User scans the list from the top until satisfied
    • Expectation over potential stopping points
The User’s Perspective: IR is Only Part of the Story

- “Pull” Information systems
  - Search
  - Browse
- “Push” information systems
  - Filtering
  - Advertising
- Other people
  - Gatekeepers
Information Access Tasks

- **Real-time alerting**
  - Example metric: Error rate
- **Precision-biased retrospective search**
  - Example metric: Mean precision at 10 documents
- **Recall-biased retrospective search**
  - Example metric: Mean R-precision
- **Known-item retrieval**
  - Example metric: Mean inverse rank
- **Exploration**
  - Example metric: Aspectual recall
Some Fundamental Principles of Interactive IR System Design

• Machines are fast, but stupid
  – Partition the task so that operations requiring speed are assigned to the machine

• Humans are smart, but slow
  – Design the user interface to optimize the users performance at tasks that are beyond the capability of the machine
Supporting the Search Process

Source Selection

Query Formulation

Search

Selection

Examination

Document Delivery

IR System

Query

Predict

Nominate

Reject

Query Reformulation and Relevance Feedback

Source Reselection

Ranked List

Document

Predict
Transparent Query Translation

Enter Query:
bridge and tunnel construction for the Beijing-Kowloon railroad

Select term Meaning:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>bridge</td>
<td>a structure carrying a pathway or roadway over</td>
</tr>
<tr>
<td>bridge</td>
<td>to make a bridge over or across</td>
</tr>
<tr>
<td>tunnel</td>
<td>a subterranean gallery (as in a mine)</td>
</tr>
<tr>
<td>tunnel</td>
<td>a covered horizontal passageway through or under</td>
</tr>
<tr>
<td>construction</td>
<td>the act or result of constructing, interpreting,</td>
</tr>
<tr>
<td>construction</td>
<td>the process, art, or manner of constructing something</td>
</tr>
<tr>
<td>construction</td>
<td>the construction industry</td>
</tr>
</tbody>
</table>

Search on selected terms:

Searching on these terms:
Beijing railroad bridge(a structure ...) tunnel(a covered ...) construction(the process ...)

Search Results: (Select document to retrieve)
1. ANDES Partners Corporation
2. Building Material Directory
3. Chinese Business World
4. Economics of Networks Internet Site
5. Hong Kong Construction Industry
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Search on selected terms: Beijing railroad bridge(to make a ...) tunnel(a covered ...) construction(the proces ...)
Selection and Examination

Query bridge and tunnel construction for the Beijing-Kowloon Railroad
Title coal eastward
Date 99/07/07
User Study Results

• **Important:** Strong support for interactive relevance judgments can make up for less accurate nominations
  – [Hersh et al., 2000]

• **Practical:** Interactive relevance judgments based on imperfect translations can beat fully automatic nominations alone
Manual Cross-Language Classification

![Chart showing the mean distance from English decisions for different categories: English, Glossed from Japanese, Random. The chart includes error bars for each category.]
Is Off-the-Shelf MT Enough?

• Speed: An order of magnitude too slow
  – Goal: translate a screen in 100 ms

• Accuracy: Disfluencies cause slow recognition
  – Possible solution: display alternative word choices

• Cost: Developing language pairs is expensive
  – Compromise: Balance accuracy and cost
State-of-the-Art Machine Translation

shipmet 大通 道神 China engineering life line new moon yellow railroad high grade highly effectively will speed up construction god 肅 section next year in October 1 other day takes the lead to clear West coal eastward shipment 大通 道神 China engineering life line new moon yellow railroad high grade highly effectively will speed up construction god 肅 section next year in October 1 other day takes the lead to clear transports coal This 报讯 reporter 严冰 report: West our country coal eastward shipment second big channel, whole world focuses attention on steps in century engineering god China engineering life line —— new moon yellow railroad broad constructor hand, high grade, highly effectively constructs into has our country the ’90s end science and technology horizontal modernization railroad. West new moon yellow railroad god new moon line Shenchi south station, east to 黄骅 port port advance party, span 588 kilometers, total budgetary estimate invests 193 hundred million Yuan, province, Shanxi Province together invests construction by north god China group, ministry of railways, river, eliminates capital capital 50. Outside 3 hundred million Yuan, main fund originates at country develops bank and Japan overseas unites efforts fund loan. Presently has begun construction god (south Shenchi) 肅 (肃宁 north) section main line span 419. 6 kilometers, are double thread electric railway, country one level of skeleton lines, budgetary estimate invests 14 6. 2 hundred million Yuan. Line crosses 恒山, in the clouds sierra and 忻 decides trough, passes through Mount Taihang along Hutuo River river valley enters North China plain. Geology situation is along the route most complex, west section mountain high valley is deep, has occupies 2nd long Liangshan tunnel in our country double thread long big tunnel and is situated 4th and 5th Buddhist temple shop point tunnel, 水泉 bay tunnel, line 15 time surmounts Hutuo River river; Has pillar reaches as high as 61. In 5 meters villages, red cliff, dribbles 磚 3 hangs fills Liang big bridge, host steps most greatly reaches 30 meters. East section network of waterways interlocks, road is vertical and horizontal, population is dense, surmounts transports loses busy 北京 is broad, 北京 nine railroads road skeleton lines such as skeleton
Proposal: Interactive CLEF

• Collection
  – Single original document language
    • Users get translations in their preferred language
  – Everyone uses ranked lists from two systems
    • Best of CLEF 2000 and a below-median system

• Metric
  – Aspectual recall in a fixed time
    • Requires additional assessment effort
Conclusion

• Automatic techniques will eventually reach a diminishing return on investment

• An interactive track at CLEF can add insight
  – How sensitive are users to weak automatic search?
  – How should the selection and examination interfaces be designed?
For Further Information

- June 2000 Interactive CLIR workshop
  http://www.clis.umd.edu/conferences/hcil00/

- Interactive CLIR demo
  http://tides.umiacs.umd.edu

- Cross-language IR resources
  http://www.clis.umd.edu/dlrg/clir/
And now for something completely different…

Cross-language Speech Retrieval
Topic Detection and Tracking: Cross-Language Speech Retrieval

Development Collection: TDT-2

English text

- 17 topics, variable number of exemplars

Mandarin audio

- 2265 manually segmented stories

Mar 98

Evaluation Collection: TDT-3

- 56 topics, variable number of exemplars

- 3371 manually segmented stories

Oct 98

Exhaustive relevance assessment based on event overlap