Multilingual Image Search from a user’s perspective

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QUAERO-Image CLEF workshop, 16/09/08
Finding is a matter of two

smart slow

fast stupid

great potential for interaction
Finding is a matter of two

(often) smart
Slow
(often) do not know what they are looking for

Great potential for interaction

fast stupid
Research in user-oriented CLIR

More than 80% by CLEF-related groups
iCLEF methodology: hypothesis-driven

- Reference system + contrastive system
- Sample tasks (topics)
- set of users
- latin-square pairing between system/topic/user to detect system effects and avoid undesired correlations.

Features:
- Controlled (vs. ecological)
- Hypothesis-based (vs. operational)
- Deductive (vs. inductive)
- Sound methodology from a scientific perspective
iCLEF 2001-2005: tasks

On newswire
- Cross-Language Document Selection
- Cross-Language query formulation and refinement
- Cross-Language Question Answering

On image archives
- Cross-Language Image search.
iCLEF 2001-2005: problems

- Unrealistic search scenario, user sample opportunistic
- Latin-square design not cost-effective
  - Only one aspect of CLIR at a time
  - High cost of recruiting, training, observing users.
- High cost of entry, Low participation
Goals for iCLEF 2006 - 2008

- Find **realistic scenarios** where multilingual search arises naturally.
- Reduce the **cost of entry** for new participants.
- Explore **new experiment designs**.
Flickr
iCLEF 2006

Topics

- **Ad hoc**: find as many photographs of (different) european parliaments as possible.
- **Creative**: find five illustrations for this article about saffron in Italy.
- **Visual**: What is the name of the beach where this crab is lying on?

Methodology

- Participants must propose their own evaluation measures and experiment design.
Explored issues

- **user’s behaviour**
  - How users deal with native/passive/unknown languages?
  - Do they actually use CLIR facilities when available?

- **user’s perceptions**
  - Satisfaction (all tasks)
  - Completeness (creative, ad-hoc)
  - Quality (creative)

- **search effectiveness**
  - How many facets were retrieved (creative, ad-hoc)
  - Was the image found? (visual)
Example result:
choice of target languages along time.
iCLEF 2008

- Cost of entry still high → move to a search log analysis task.
- We need more users → make the task an online game and engage some user community.

Flickling challenge
iCLEF 2008 task

- Log analysis task.
- Data: logs from an online game (known item retrieval in Flickr) which implies searching in six languages simultaneously.
- Known item retrieval: see this image? Find it!
- Game interface implements reasonable baseline facilities for MLIA.
- Registered users with language profiles (native, active, passive, unknown languages)
Simultaneous search in six languages

Flickling - An online game for searching Flickr across language boundaries - Mozilla Firefox

http://soporte1.is.uned.es/flickling/index.html?locale=es#

Tal vez quieras intentar con: music, concert, instrument, strings, musician, fiddle, guitar, live, bw, street... [mostrar todo]
Boolean search with translations

Flickling - An online game for searching Flickr across language boundaries - Mozilla Firefox

 Tal vez quieras intentar con: music, concert, instrument, strings, musician, fiddle, guitar, live, bw, street... [mostrar todo]

 Strauss

vienna, park, parque, music, classic, austria, golden, violin, viena, música... [mostrar todo]

P4302599

vienna, wien, 2005, park, statue, austria, golden, europe, violin, violinist... [mostrar todo]
Relevance feedback

Tal vez quieras intentar con: music, concert, instrument, strings, musician, fiddle, guitar, live, bw, street... [mostrar todo]
Assisted query translation

Flickling - An online game for searching Flickr across language boundaries - Mozilla Firefox

julio.gonzalo@gmail.com | Mi perfil | Mostrar puntuaciones | Ayuda | Config

Flickling
An online game for searching Flickr across language boundaries

Encuentra esta imagen
monolingüe multilingüe

Buscar

violin strauss estatua

Escribe en traduce mi consulta a

Español DE EN ES FR IT NL

Resultados 1-16 de 16 para violin strauss estatua (Mostrar consulta a Flickr)

Tal vez quieras intentar con: music, concert, instrument, strings, musician, fiddle, guitar, live, bw, street... [mostrar todo]

Strauss

violist, viol, violspeler 
[escribir una traducción]

http://soporte1.si.uned.es/flickling/index.html?locale=es#
User profiles
User rank (Hall of Fame)
Group rank
Hint mechanism
Harvested logs

- 312 users / 41 teams
- 5101 complete search sessions
- Linguistics students, photography fans, IR researchers from industry and academia, monitored groups, other.
Geographic distribution of users

- 312 users, 41 teams, 43 countries

1,428 visits came from 43 countries/territories
Language skills

Native Languages

Interface Languages

- DE
- EN
- ES
- FR
- IT
- NL
- Other
Language skills

Language Skills: English
Language Skills: French
Language Skills: Spanish
Language Skills: Dutch
Image was annotated in a language that for the user was:
Participation

- 15 registered groups, 6 submissions
- Plus more than 30 CLEF groups collaborated as users
User’s behaviour according to language skills

<table>
<thead>
<tr>
<th>competence</th>
<th>success</th>
<th># hints</th>
<th># queries</th>
<th>refinements</th>
<th>ranking exploration</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>mono</td>
<td>multi</td>
<td>mono</td>
</tr>
<tr>
<td>active</td>
<td>82%</td>
<td>2.13</td>
<td>3.96</td>
<td>3.8</td>
<td>3.91</td>
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<tr>
<td>passive</td>
<td>81%</td>
<td>2.18</td>
<td>4.32</td>
<td>4.05</td>
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</tr>
<tr>
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<td>72%</td>
<td>2.15</td>
<td>4.5</td>
<td>4.38</td>
<td>4.41</td>
</tr>
</tbody>
</table>

Table 1: User’s behaviour according to language skills

Success: ACTIVE ≈ PASSIVE › UNKNOWN
Effort: ACTIVE › PASSIVE ≈ UNKNOWN
# Use of cross-language refinements

<table>
<thead>
<tr>
<th>Competence</th>
<th>Flickr related terms</th>
<th>Usage of personal dictionary</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>new query</td>
<td>query refinement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>mono</td>
<td>multi</td>
<td>mono</td>
</tr>
<tr>
<td>active</td>
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<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>passive</td>
<td>1%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>unknown</td>
<td>2%</td>
<td>1%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Table 2: Usage of Specific Cross-Lingual Refinement Facilities
Do users learn to use CL facilities?

Success rate & #hints keep constant, interactions go down

Figure 3: Average direct refinements per sessions performed.
Usefulness of interface facilities

- Perceived usefulness much higher than actual use!
- Conclusion: occasional use may have a strong impact on user perception

Figure 8: Which interface facilities did you find most useful?
Conclusions

- Flickr is an excellent playground for multilingual image search experiments... And it would be better if we had the data!
- In order to harvest large search logs, (online) game-like tasks work.
- Interface facilities are perceived as very useful in multilingual image search. But logs do not provide perceptions!
- No matter how much we lower the cost of entry, we’ll never get participants ;)

CLEF