INEX-XER: Entity Ranking Overview Talk 2008

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Entity Ranking

- Many users search for specific entities instead of just any type of documents
Not relevant for XER…

• Articles *on topic* are not necessarily relevant entities
  – Actually, they are surprisingly often not!

  – INEX 2007 adhoc-derived XER topics show that only about 35% out of original relevant documents have been assessed as relevant
Example 2008 Topics

• Countries that have hosted FIFA Football World Cup tournaments: countries; football world cup

• Formula 1 drivers that won the Monaco Grand Prix: racecar drivers; formula one drivers

• Italian nobel prize winners: nobel laureates …

Many examples on http://www.ins.cwi.nl/projects/inex-xer/topics/
Entity Ranking

• Topical query Q
• Entity (result) type $T_X$
• A list of entity instances $X_s$

• Systems employ XML element text, structure, links
The user wants the dinghy classes that are or have been olympic classes, such as Europe and 470.

The expected answers are the olympic dinghy classes, both historic and current. Examples include Europe and 470.
Topic 60
Title
olympic classes dinghy sailing
Entities
470 (dinghy) (#816578)
49er (dinghy) (#1006535)
Europe (dinghy) (#855087)
Categories
dinghies (#30308)
Description
The user wants the dinghy classes that are or have been olympic classes, such as Europe and 470.
Narrative
The expected answers are the olympic dinghy classes, both historic and current. Examples include Europe and 470.
2008 Tasks

• Entity Ranking (ER)
  – Given Q and T, provide Xs
• List Completion (LC)
  – Given Q and Xs[1..m]
  – Return Xs[m+1..N]

• Pilot: Entity Relationship Search (ERS, explained later on…)

INEX XER Overview 2008
XER Assumptions

Last night: 2 hours later...

- Entities (Xs) are still represented as Wikipedia pages
- Binary relevance, MAP ($x_{\text{infAP}}$)
Runs

• Participation
  – >60 groups sign up
  – 11 groups submit topics
  – 6 groups submit 33 runs
  – 12 groups assess topics
Pooling by Sampling

• Approaches:
  – Random sampling
  – Relevance based sampling
  – Stratified sampling

• Collection
  – 24 XER2007 topics (pool size: 50)

• Comparison
  – IRSs ranking changes with less assessments
Relevance based Sampling

Probability of being relevant at rank X

Rank
Stratified Sampling

- \{ 1,8 \} 100%
- \{ 9,31 \} 70%
- \{ 32,100 \} 30%
IRSs Ranking comparison

Avg Kendall Tau correlation coefficient over all topics

Sampling Rate

Random

Relevance based

Stratified
Pool Contribution

• Random/Relevance based Sampling:
  – at 70%: 35 docs out of top 50

• Stratified Sampling:
  – 45 docs out of top 100 (30 docs out of top 50)

• XER 2007 pool: 50 docs
So… RESULTS!!!
Entity Ranking

- ER/1_FMITE_R_TC_nopred-cat-baseline-a1-b8: AP all 0.243326941228736
- ER/1_cirquid_ER_TEC_idg.trec: AP all 0.233202024909469
- ER/4_UAms_ER_TC_cats: AP all 0.226179832095729
- ER/2_UAms_ER_TC_catlinksprop: AP all 0.224540266234725
- ER/1_UAms_ER_TC_catlinks: AP all 0.222165511518068
- ER/3_cirquid_ER_TEC.trec: AP all 0.198151482470439
- ER/2_cirquid_ER_TC_idg.trec: AP all 0.195956981708847
- ER/2_500_L3S08_ER_TDC: AP all 0.189376490785161
- ER/1_CSIR_ER_TC_mandatoryRun: AP all 0.187349723227119
- ER/1_L3S08_ER_TC_mandatoryRun: AP all 0.182930576395362
- ER/3_UAms_ER_TC_overlap: AP all 0.180831755068589
- ER/4_cirquid_ER_TEC.trec: AP all 0.167776008664103
- ER/4_UAms_ER_TC_cat-exp: AP all 0.165395918333584
- ER/1_UAms_ER_TC_mixture: AP all 0.15835232612729
- ER/3_UAms_ER_TC_base: AP all 0.113264868377908
- ER/6_UAms_ER_T_baseline: AP all 0.0789630244068165

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List Completion

- LC/1_FMIT_LC_TE_nopred-stat-cat-a1-b8: AP all 0.286897420671293
- LC/1_FMIT_LC_TE_pred-2-class-stat-cat: AP all 0.272852692304109
- LC/1_FMIT_LC_TE_nopred-stat-cat-a2-b6: AP all 0.259142806119578
- LC/1_FMIT_LC_TE_pred-4-class-stat-cat: AP all 0.252080676791407
- LC/1_CSIR_fixed: AP all 0.239955757701729
- LC/5_UAms_LC_TE_LC1: AP all 0.232243493200444
- LC/6_UAms_LC_TEC_LC2: AP all 0.230389397906149
- LC/2_UAms_LC_TCE_dice: AP all 0.228136165118533
- LC/5_cirquid_LC_TE_idg.trec.fixed: AP all 0.217632851524678
- LC/1_L3S08_LC_TE_mantadoryRun: AP all 0.205598133259403
- LC/2_L3S08_LC_TE: AP all 0.204518922088608
- LC/5_cirquid_LC_TE_idg.trec: AP all 0.195453875103596
- LC/6_cirquid_LC_TE.trec.fixed: AP all 0.194585187775904
- LC/1_CSIR_LC_TE_mandatoryRun: AP all 0.183874665382473
- LC/6_cirquid_LC_TE.trec: AP all 0.177867887897393
- LC/5_UAms_LC_TE_baseline: AP all 0.094986686896919

INEX XER Overview 2008
Entity relation search pilot

• Tuple
  \(<\text{query, category, relation-query, target-category}>\)

• Two stages:
  – Entity ranking stage \(\rightarrow\) main entities
  – Relation search stage \(\rightarrow\) target entities
    • Retrieve further details about main entities
  – Relations:
    • 1 to 1, 1 to \(n\) \((n>1)\), or \(n\) to 1 \((n>1)\)
  – Results: pairs of main and target entities
Example of ERS

<title>Impressionist art in the Netherlands</title>
<description>I want a list of art galleries and museums in the Netherlands that have impressionist art.</description>
<narrative>Each answer should be the article about a specific art gallery or museum that contain impressionist or post-impressionist art works.</narrative>
<categories>
<category id="10855">art museums and galleries</category>
</categories>
<entity-relation>
<relation-title>located in</relation-title>
<relation-description>I want the cities where these art galleries and museums are located.</relation-description>
<relation-narrative>Each answer should be a city where a specific art gallery or museum that contain impressionist or post-impressionist art works is located.</relation-narrative>
<target-categories>
<category id="2917">cities</category>
</target-categories>
</entity-relation>
Evaluation of ERS results

• Pages for both main and target entities used for evaluators to judge
  – More difficult than entity ranking
• Two stage evaluation to simplify the process
Evaluation of ERS results

1. Main entity judged relevant to original query
2. Main entity of correct category
3. Target entity of correct category
4. Relation match relation topic
Open Issues

• Other types of relation search
  – Relationships between main entities
    • Find pairs of impressionist artists who influenced each other
    • Find experts in an organization who worked together on a project
  – Issues:
    • How to define relations, e.g., “influence”
    • How to evaluate relations
    • How to define scope of relations
Q: Assessor’s Topic Knowledge not in Collection?
What *could* be new in 2009?

- Entity representation in corpus
  - Allow passages instead of articles
    - Q: How useful is the passage without further info? Require support evidence?

- New tasks?
  - Leave out desired entity type
  - Identify the entities in the corpus that do not have their page yet