

# 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  $Xs$
  
- Systems employ XML element text, structure, links

Q

**Title**

olympic classes dinghy sailing

Xs

**Entities**

[470 \(dinghy\)](#) (#816578)

[49er \(dinghy\)](#) (#1006535)

[Europe \(dinghy\)](#) (#855087)

T<sub>x</sub>

**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.

## 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.

Predicted Items
<a href="#">49er</a>
<a href="#">470</a>
<a href="#">europe</a>
<a href="#">laser</a>
<del><a href="#">optimist</a></del>
<a href="#">finn</a>
<del><a href="#">420</a></del>
<a href="#">tornado</a>
<a href="#">ynqing</a>
<a href="#">star</a>
<a href="#">laser radial</a>
<del><a href="#">29er</a></del>
<del><a href="#">snipe</a></del>
<del><a href="#">mistral</a></del>
<del><a href="#">contender</a></del>

# 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...)



# XER Assumptions

Last night: 2 hours later...

- Entities (Xs) are still represented as Wikipedia pages
- Binary relevance, MAP (`xinfAP`)

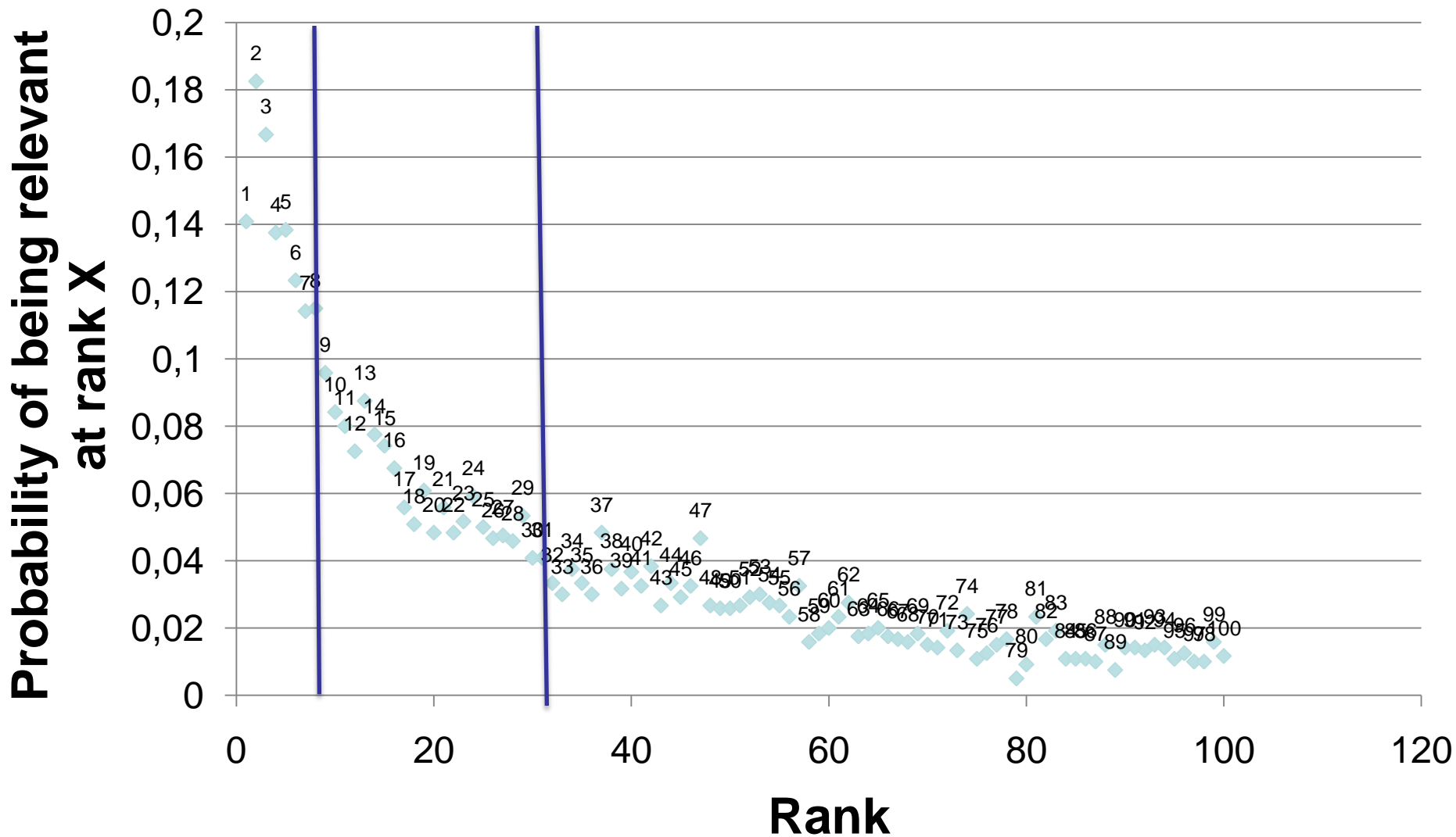
# Runs

- 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

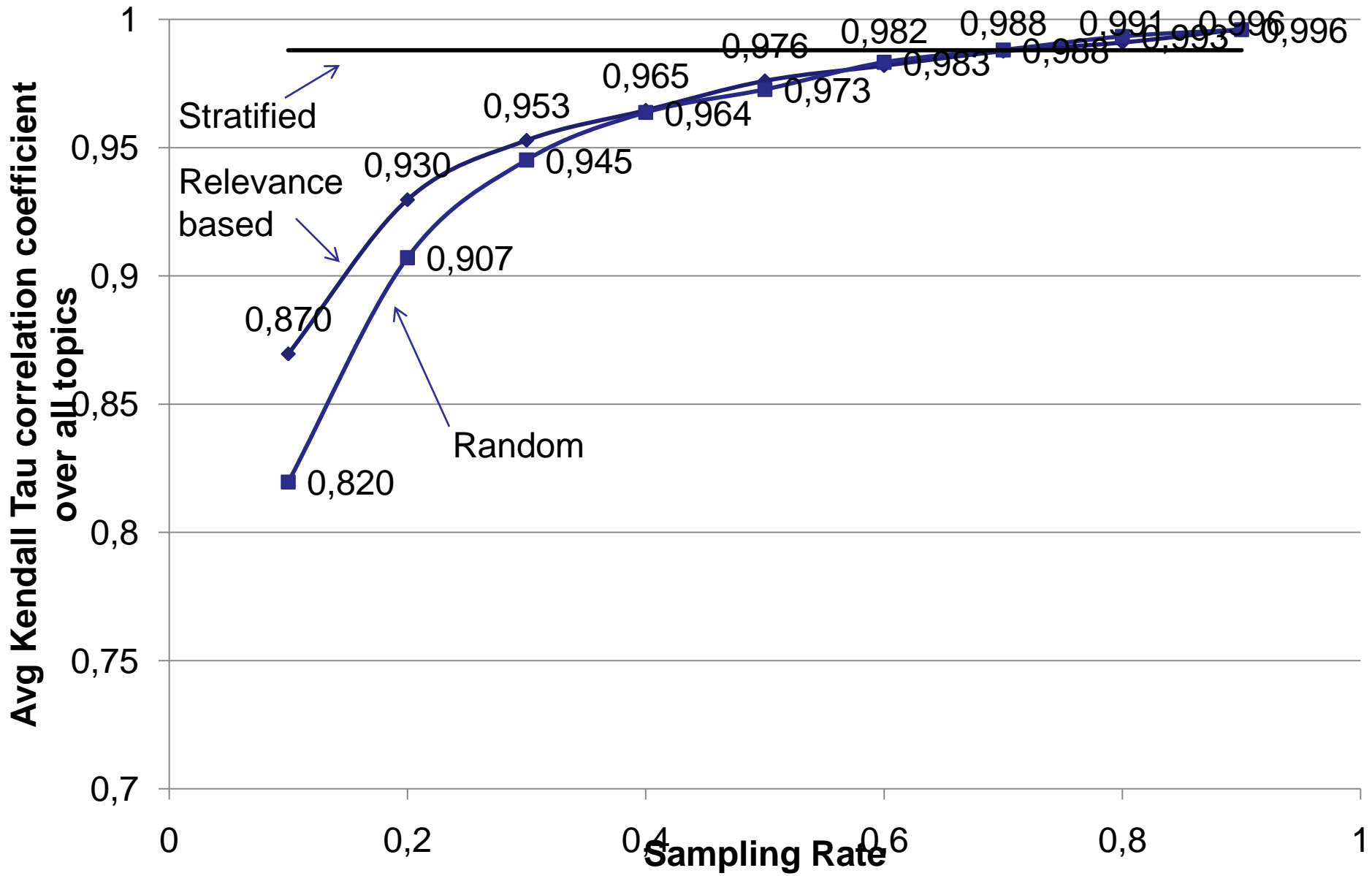
# Relevance based Sampling



# Stratified Sampling

- { 1,8 } 100%
- { 9,31 } 70%
- { 32,100 } 30%

# IRSs Ranking comparison



# 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\_FMIT\_ER\_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\_TC.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

# 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\_mandatoryRun: 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 0.0949866866896919

# Entity relation search pilot

- Tuple
  - `<query, category,`  
`relation-query, target-category>`
- Two stages:
  - Entity ranking stage → main entities
  - Relation search stage → 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?

The screenshot displays a presentation slide titled "The History of Sailing in the Olympics" in Mozilla Firefox. The slide content includes:

- As was still the case until recently, Australians suffered in the light conditions and were missing the development going on in Europe and the USA.
- Victorians M after showin
- Crown Princ
- Again Elvstr
- 1964
- What a Go
- Australia's y 29
- In unmis take
- Medal and s
- The Australi
- But with Am
- Games. As a
- But Sergean
- Radios were
- 1968
- The World
- Cuneo, Ferg
- Star were 6
- Ryves and S
- Mexico's gap
- This time a n

The Wikipedia article "Sailing at the 1964 Summer Olympics" is also visible, featuring a medal summary table:

Event	Gold	Silver	Bronze
5.5 metre class	Australia (AUS) <i>Barrenjoey</i> William Northam Peter O'Donnell James Sargeant	Sweden (SWE) <i>Rush VII</i> Lars Thorn Sture Stork Ame Karlsson	United States (USA) <i>Bingo</i> John J. McNamara Francis Scully Joseph Batchelder
Dragon class	Denmark (DEN) <i>White Lady</i> Ole Baunton Christian van Bulow Ole Poulsen	Germany (EUA) <i>Mutaro</i> Peter Ahrendt Ulrich Mensa Wilfried Lorenz	United States (USA) <i>Aphrodite</i> Lowell North Charles Rogers Richard Deaver
Flying Dutchman class	New Zealand (NZL) <i>Pandora</i> Eagle Helmer Pedersen	Great Britain (GBR) <i>Lady C</i> Franklyn Musto Arthur Morgan	United States (USA) <i>Widgeon</i> Harry Melges William Bantzen
Finn class	Wilhelm Kuhweide <i>G-10</i> Germany (EUA)	Peter Barrett <i>US-40</i> United States (USA)	Henning Wind <i>D-7</i> Denmark (DEN)
Star class	Bahamas (BAH) <i>Gem</i>	United States (USA) <i>Glider</i>	Sweden (SWE) <i>Humbug V</i>



# 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