

CriES Workshop @CLEF 2010

Cross-lingual Expert Search - Bridging CLIR and Social Media

Institut AIFB – Forschungsgruppe Wissensmanagement (Prof. Rudi Studer)

Organizing Committee:

Philipp Sorg

Antje Schultz

Philipp Cimiano

Sergej Sizov



Workshop Program

Time	
14:30	Introduction and Overview of the CriES Pilot Challenge <i>Philipp Sorg, Karlsruhe Institute of Technology</i>
15:00	HITS and Misses: Combining BM25 with HITS for Expert Search. <i>Johannes Leveling and Gareth J. F. Jones</i>
15:30	Identify Experts from a Domain of Interest. <i>Adrian Iftene, Bogdan Luca, Georgiana Cărauşu, and Madălina Merchez</i>
	<i>Coffee Break</i>
16:30	Multilingual Expert Search using Linked Open Data as Interlingual Representation. <i>Daniel M. Herzig and Hristina Taneva</i>
17:00	Expertise Retrieval: Tasks, Methods, Evaluation <i>Krisztian Balog</i>
17:50	Wrap up and Final Discussion

Overview of the CriES Pilot Challenge:
Dataset, Topics and Results

CRIES PILOT CHALLENGE

Outline

- (Brief) Introduction to Multilingual Expert Search
- CriES Pilot Challenge
 - Dataset
 - Topics
 - Evaluation
- Baseline Retrieval Approaches
- Results of Participants
- Lessons Learned

Motivation

- People want to ask other people to satisfy their information needs
 - Instead of searching themselves
 - Possibly more efficient for very specific information needs
 - Includes social aspects
 - Prominent examples are Question/Answer portals
 - Yahoo! Answers, WikiAnswers
- Many Community Portals are multilingual
 - Large networks of users from many countries
 - Communication only depends on common language (e.g. English)

Multilingual Expert Search

- Special Case of Entity Search
 - Entities = People (Experts)

- CriES Context
 - Topic = Information need of user
 - Experts are able to answer information need
 - No retrieval of the actual answers
 - Multilingual evidence
 - Assumption: All experts are able to communicate with all users
 - Expertise independent from language
 - Social features
 - Dataset from community portal

CriES Pilot Challenge

- Main Problem
 - Multilingual expert search in social media environments
- Key Research Challenges:

User characterization

- The use of multilingual evidence (including text) of social media for building expert profiles.

Community analysis

- Mining of social relationships in collaborative environments for multilingual retrieval scenarios.

User-centric recommender algorithms

- Development of retrieval and recommendation algorithms that allow for similarity search and ranked retrieval of expert users in online communities.

Related Challenges

- TREC
 - Enterprise Track 2005 - 2008
 - Entity Track 2009 – 2010
 - INEX

- What are the differences to CriES?
 - Multilingual Evidence
 - Profiles
 - Topics
 - Features from Social Community Portal
 - Relations between Users
 - (Ratings and Reputation)
 - No focus on property extraction

Yahoo! Answers crawl used for the CriES challenge,
Topics and Relevance Assessments

DATASET

Yahoo! Answers

- Community Question/Answer Portal
 - Users post questions
 - Other users answer questions
- Several Answers per Question
- Selection of Best Answers
 - By the questioner
 - Based on answer ratings of other users
- Features of a Social Community Portal
 - Ratings
 - Reputation
 - Personal contacts

Example from Yahoo! Answers



Resolved Question

Why do we 'yawn'?

sorry if this is the wrong section

1 month ago

[Report Abuse](#)



Emily
TOP CONTRIBUTOR

51%
Best answer
526 answers

TOP CONTRIBUTOR


Medicine
Biology

Member Since: August 02, 2010

Total Points: 4257 (Level 4)

Points earned this week: 28

[+ Add to My Contacts](#) [Block User](#)



Emily
TOP CONTRIBUTOR


Best Answer - Chosen by Asker

New research suggests that it doesn't have to do with the mouth, in the back is very thin. It's pretty much the same as the roof of your mouth.

1301 66 [Report Abuse](#)

Asker's Rating: *********
So much information, thank you! :)

Other Answers (4)



Callum
(Bored as Hell)

Because we're tired

Source(s):
Yeah I have no idea...

1 month ago

395 360 [Report Abuse](#)

Dataset

- Yahoo! Research Webscope program
 - L6. Yahoo! Answers Comprehensive Questions and Answers (version 1.0)
- Features
 - Questions (with user ids)
 - Best answers (with user ids)
 - Other answers (without user ids)
 - Categories of questions
- Missing Features
 - Ratings for questions/answers
 - Most features from community portal

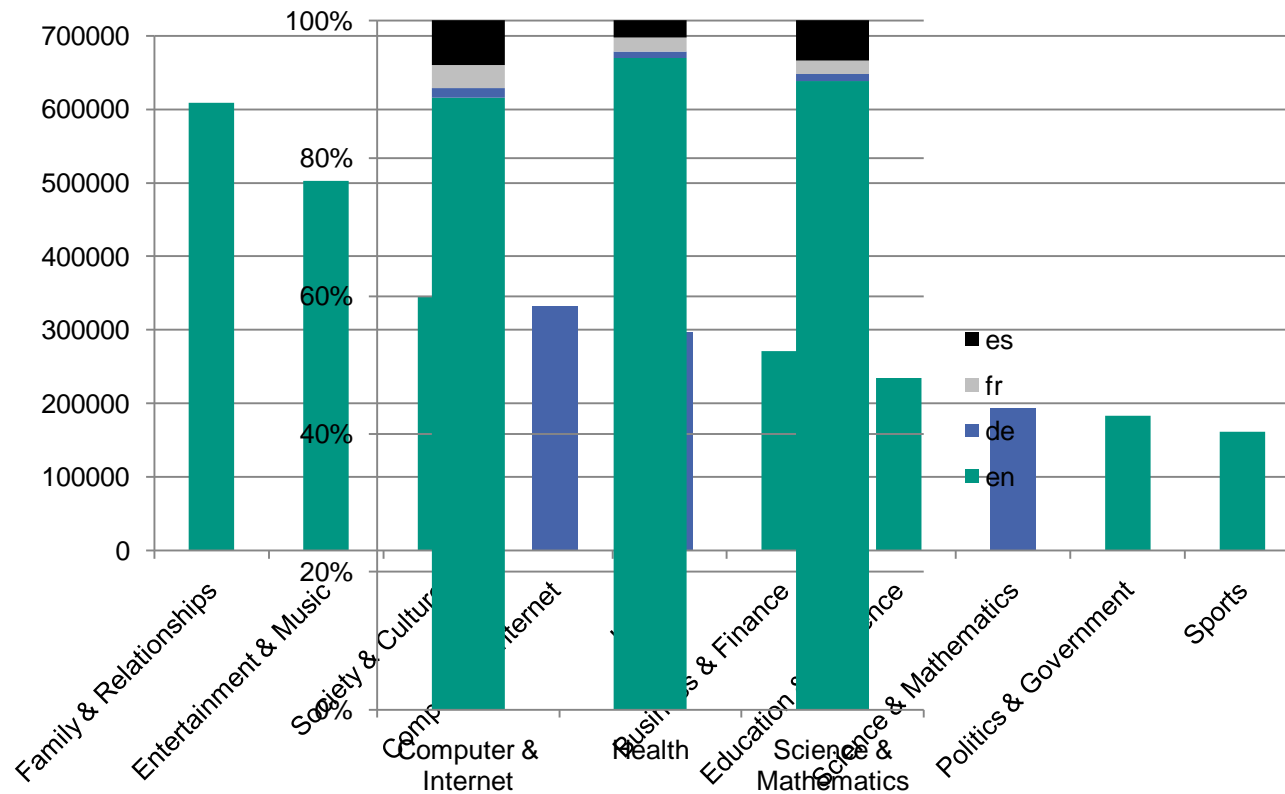
CriES Dataset

- Properties of the Yahoo! Answers Dataset
 - Many questions have purpose of diversion
 - Many questions ask for opinions
 - Problems for expert retrieval scenario
 - Noise in user profiles
 - Relevance assessment might not be objective
- Solution
 - Use subset with suitable properties
 - Selected subset
 - Technical Categories
 - Require domain expertise
 - Low share of questions with the purpose of diversion

Topic and Language Distribution

■ Selection based on Categories

- Computer & Internet, Health, Science & Mathematics
- Questions in English, German, French and Spanish



Topics

- Real User Needs
 - Usage of questions from dataset
- Multilingual Search Task
 - Select topics in all relevant languages
 - 15 topics each in English, German, French and Spanish
- Topics suitable for Retrieval Scenario
 - Definition of topic criteria
 - Selection process using manual assessments

Topic Selection Process

■ Criteria for Topics

- International domain
 - Why doesn't an optical mouse work on a glass table?
 - Why is it so foggy in San Francisco?
- Expertise questions
 - What is a blog?
 - What is the best podcast to subscribe to?

■ Selection Process

- 100 random questions in each language
- Manual assessment in respect to criteria
- Check for language coverage in dataset
 - Average number of matching answers (on term level)

Relevance Assessment

- Result Pool of Submitted Runs
 - Top 10 experts for each topic
- Manual Assessment
 - Using text profiles of experts
- 3 Relevance Classes
 - Expert is likely able to answer. (*Strict evaluation*)
 - Expert may be able to answer. (*Lenient evaluation*)
 - Expert is probably not able to answer.
- Additional Automatic Assessments
 - Questioner (non relevant) and answerer (relevant) of the questions used as topics

Assessment User Interface

- Question: Is there a cure for malaria?

Matching answers of this user:

All answers of this user, that match at least 1 query term.

[Evaluation All answers](#)

Matching Categories	Matching	Answers				
+Science & Mathematics +Medicine		<h3>All answers of user</h3> <p>This is a complete list of all answers of this user. Answers that match query terms are listed both for specific queries as well as in this list.</p> <p>Top</p> <table border="1"> <thead> <tr> <th>Answers</th> </tr> </thead> <tbody> <tr> <td> Question: i have been to the doctor and had a buch of test done but they say nothing is wrong with my heart? but i dont under stand y it keeps palpitating it is very aggerivating and scarey Answer: It could be you are having anxiety attacks. That can cause the heart rate to change. Talk to a Doctor to see if that could be it. </td> </tr> <tr> <td> Question: I have Hall and Oates' "Private Eyes" stuck in my head. How do I get it out? Answer: Listen to another song. Dang it! Now I have it stuck in mine! Thanks a lot! </td> </tr> <tr> <td> Question: When do 80% of all tornadoes occur? </td> </tr> </tbody> </table>	Answers	Question: i have been to the doctor and had a buch of test done but they say nothing is wrong with my heart? but i dont under stand y it keeps palpitating it is very aggerivating and scarey Answer: It could be you are having anxiety attacks. That can cause the heart rate to change. Talk to a Doctor to see if that could be it.	Question: I have Hall and Oates' "Private Eyes" stuck in my head. How do I get it out? Answer: Listen to another song. Dang it! Now I have it stuck in mine! Thanks a lot!	Question: When do 80% of all tornadoes occur?
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Question: When do 80% of all tornadoes occur?						

[Evaluation All an](#)

Statistics of Relevance Assessment

■ Assessors

- 6 assessors
- Students at KIT
- Evaluation of 7,515 pairs of topics and expert profiles

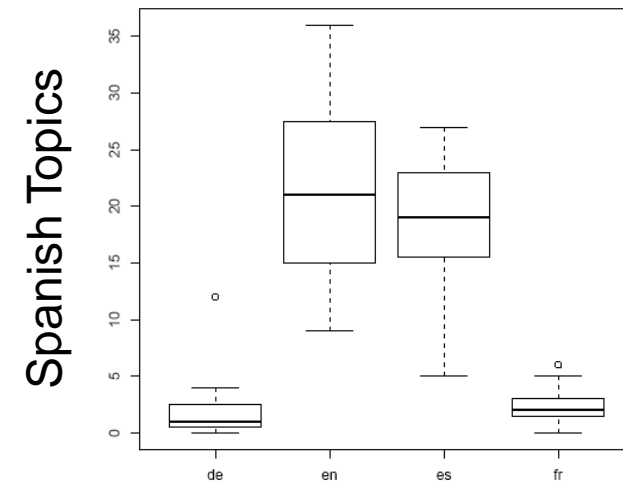
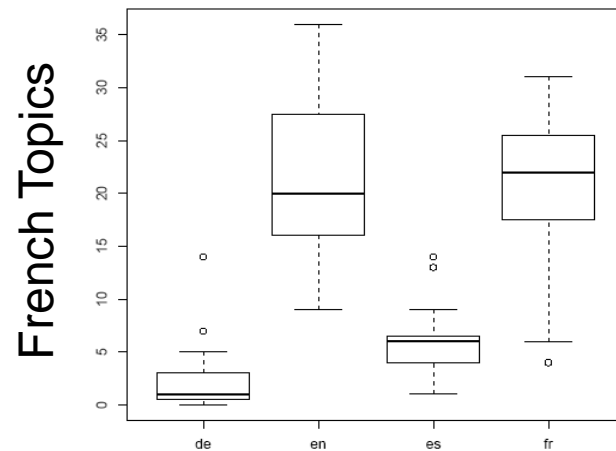
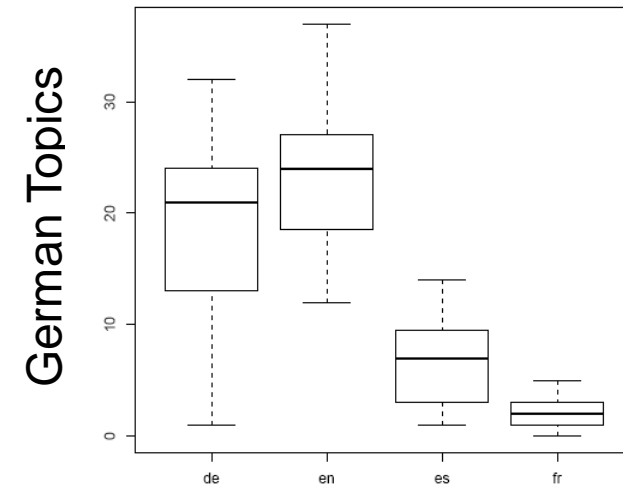
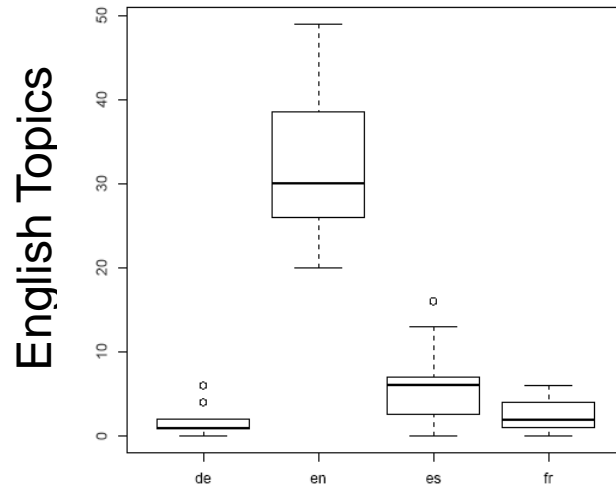
■ Distribution

- 1678 (relevant)
- 1864 (probably relevant)
- 3973 (non relevant)

■ Distribution over Languages

- Bias towards topic language

Relevant Expert Language Distribution



Baselines and Submitted Runs

RETRIEVAL APPROACHES

Baseline Retrieval Approaches

- Multilingual IR
 - Language specific indexes
 - Text profiles of experts
 - Former answers in each language
 - Standard retrieval model and aggregation
 - BM25
 - Z-Score normalization

- Category Baseline
 - Informed approach
 - Category of question is known
 - Measure „importance“ of experts in categories
 - Number of answers
 - Pagerank based on questioner / answerer relation
 - Return experts ranked by importance in question category

Summary of Approaches

■ MLIR Approach

- Query translation
 - Using Machine Translation Systems (e.g. Google Translate)
- IR models used for ranking
 - Vector Space Models
 - Probabilistic Models (e.g. BM25)

■ Matching Runs

- Adrian Iftene et al.
 - Run0 and run1
- Johannes Leveling and Gareth J. F. Jones
 - BM25 with various translation strategies

Summary of Approaches (2)

- Approaches based on Social Features
 - Building of social graph from dataset
 - Questions and answers
 - Categories
 - Questioners and answerers
 - Scoring functions for nodes
 - HITS
 - Degree of nodes

- Matching Runs
 - Adrian Iftene et al.
 - Run2
 - Johannes Leveling and Gareth J. F. Jones
 - Combination of HITS with BM25 scoring model

Summary of Approaches (3)

■ Resource Indexing

- Inter-lingual concept space
 - Allows for multilingual retrieval
- Mapping of experts to concept space
 - Based on expert profiles
- Mapping of topics to concept space

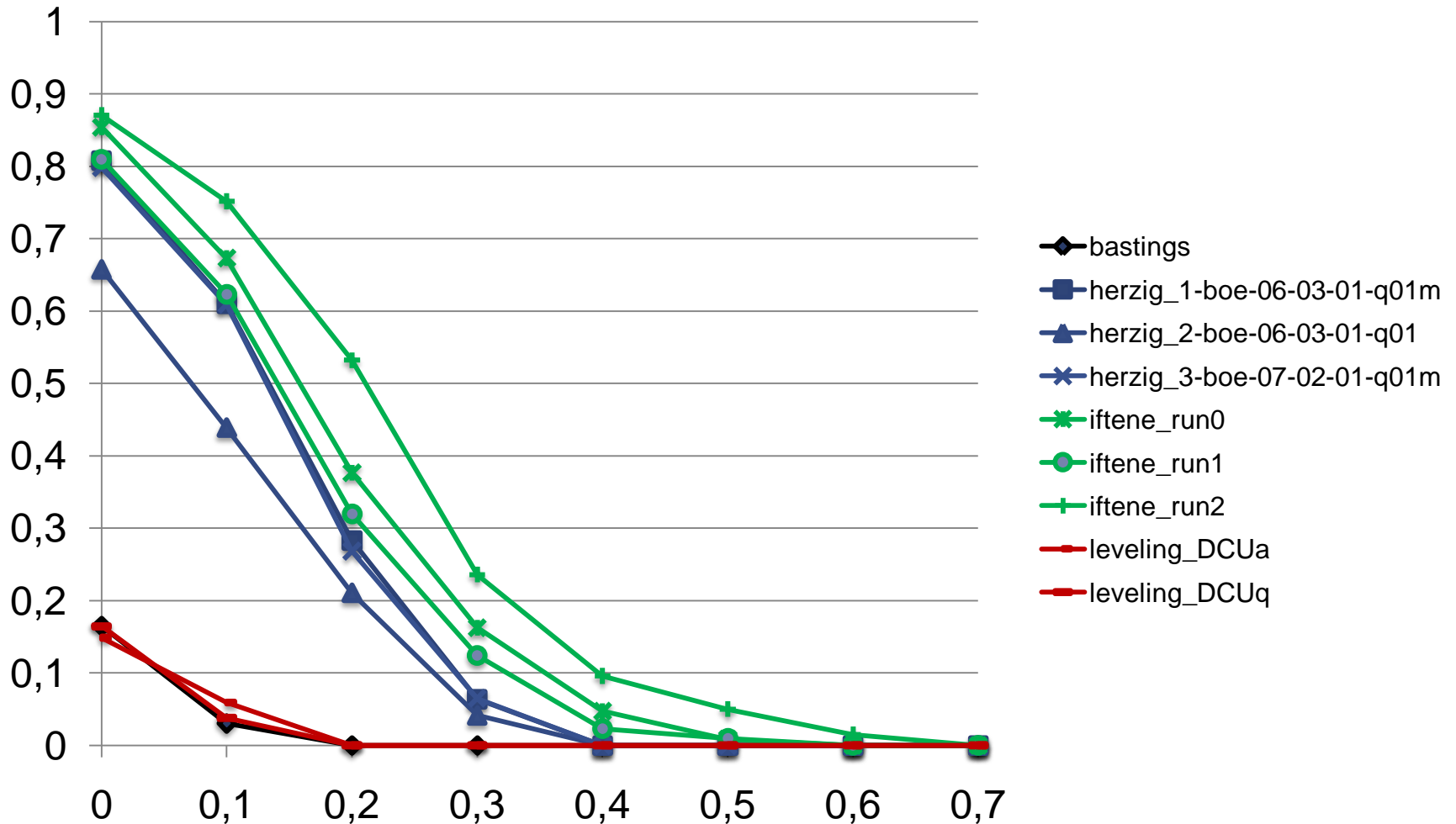
■ Matching Runs

- Daniel M. Herzig and Hristina Taneva
 - Wikipedia as concept space
 - Different approaches to build expert profiles
 - Manual and automatic mapping of topics

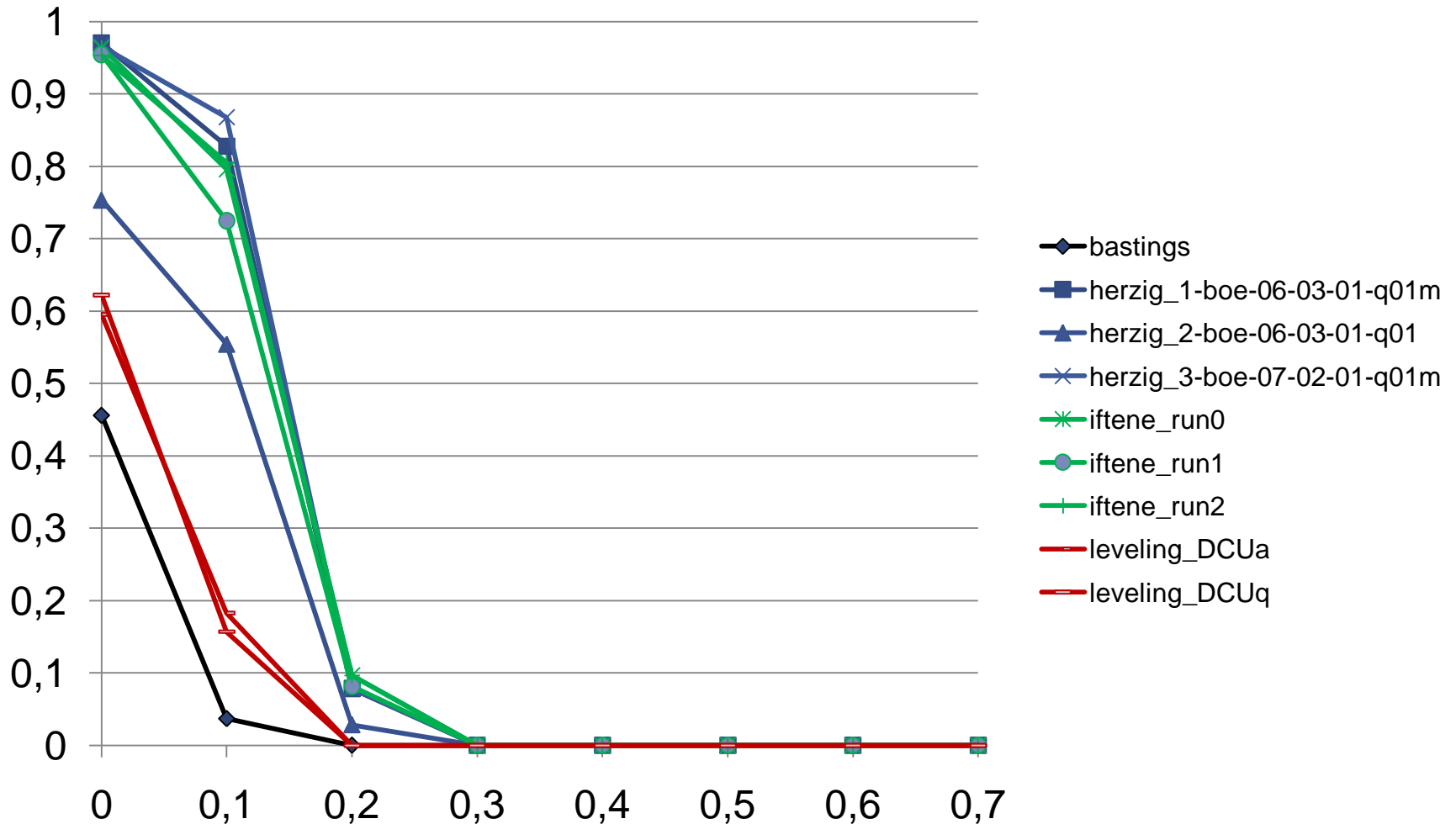
Results

Run Id	Strict		Lenient	
	P@10	MRR	P@10	MRR
<i>Social Features</i>				
Iftene (run2)	.62	.84	.83	.94
Category Baseline	.67	.89	.79	.96
<i>Multilingual IR</i>				
Iftene (run0)	.52	.80	.82	.94
Bastings	.07	.15	.25	.43
BM25 + Z-Score	.19	.40	.39	.63
<i>MLIR + Social Features</i>				
Leveling (DCUq)	.08	.16	.42	.54
<i>Resource Indexing</i>				
Herzig (3-boe-07-02-01-q01m)	.49	.76	.87	.93

Results of Participants (Strict)



Results of Participants (Lenient)



Lessons Learned and Outlook

SUMMARY

Lessons Learned

■ Observations

- Assessors may be biased to positively judge experts with many answers
 - High evaluation values of category baseline

■ Possible explanation

- Design of user interface for assessments
 - Complete expert profiles
 - Could be “overwhelming”

■ Alternative

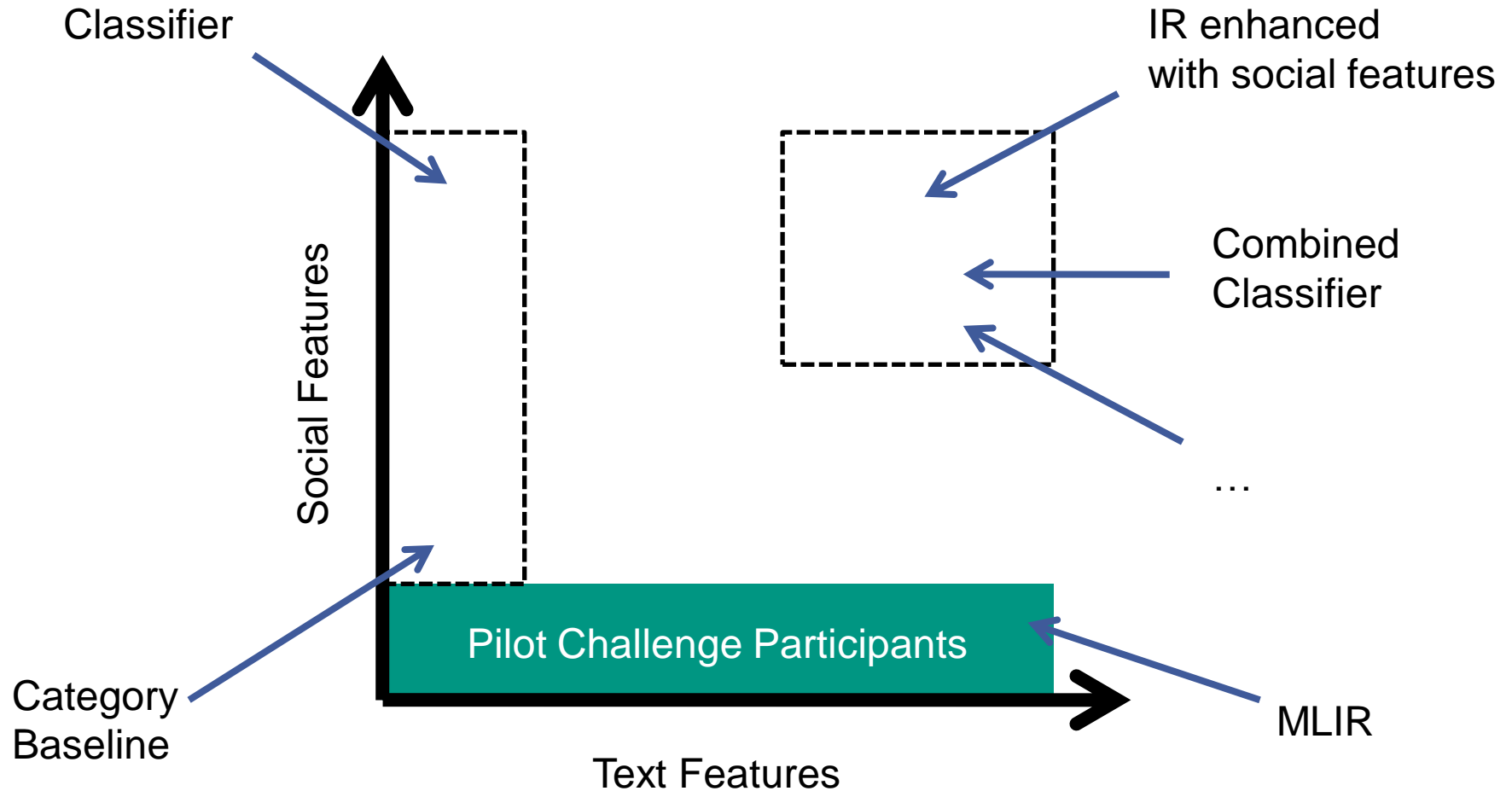
- Compare single answers of experts to topics
- Problem: Expertise in context of several answers

Lessons Learned (2)

- Social features only used by some participants
 - Maybe dataset doesn't support this approach?

- More features needed
 - Ratings of answers
 - Identify helpful answers
 - Use alternative answers for retrieval
 - Social profiles of users
 - History of best answers
 - Status in portal
 - Explicit relations to other users

Outlook



The End

Thank you for your attention!

Questions?

■ Acknowledgements

- Multipla Project
 - <http://www.multipa-project.org>
- Monnet Project
 - <http://www.monnet-project.eu/>

