



How Many Experts? A New Task for Enterprise Search Evaluation

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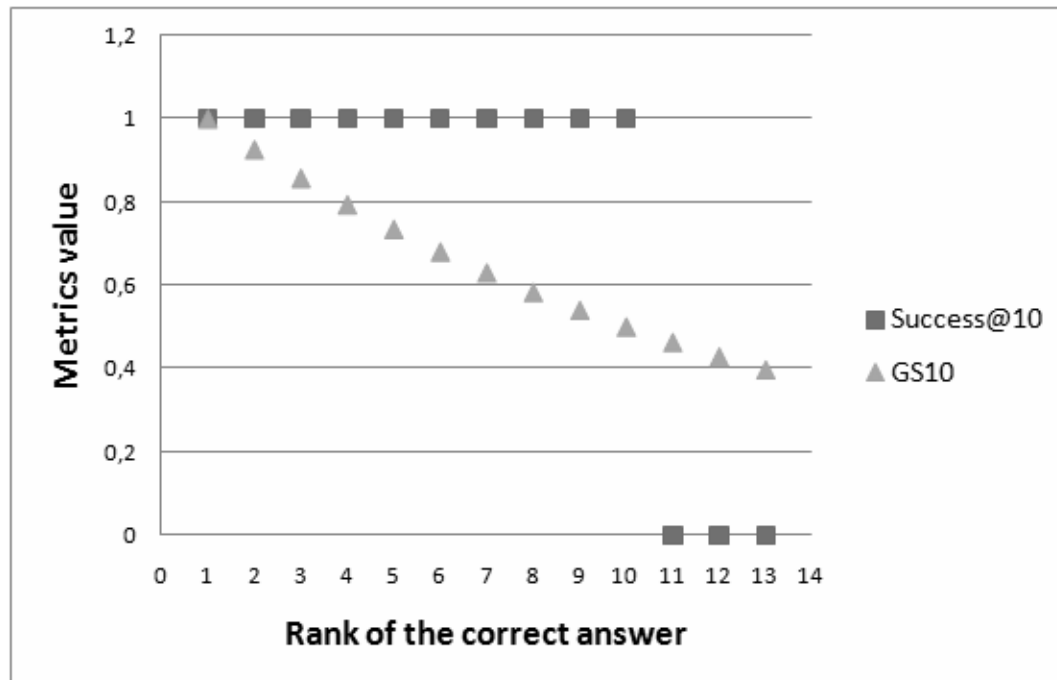
- Enterprise Search Evaluation
 - Past approaches
 - Tasks and metrics
- How Many Experts Are There?
 - Motivation
 - Evaluation
 - Possible approaches

- A TREC track for ES started in 2005 (TRECent)
- TRECent measures
 - Mean AP over expert
 - and reports bpref
- Different concepts for relevance have been proposed
- Privacy is the preeminent issue in PIM and Enterprise KM

TASKS AND METRICS

– Navigational tasks

- Known Item Search
 - Generalized Success@10 (GS10)
- Home Page Finding
 - GS10 or Mean Reciprocal Rank (MRR)



- Informational tasks
 - Document Search: MAP
 - Email Search: MAP
 - Entity Search: MAP, MRR, P@10
- Transactional tasks
 - Success@N
- People Search tasks
 - Expert Search task: R-Prec \approx MAP
 - Number of experts

- Enterprise Search Evaluation
 - Past approaches
 - Tasks and metrics
- **How Many Experts Are There?**
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 - Evaluation
 - Possible approaches

HOW MANY EXPERTS ARE THERE?



- Task: Find the ***Number of experts*** on a given topic, in the Enterprise
- Motivation:
 - HR managers can better understand the knowledge power available
 - well-conceived selection of new project types
 - move the core business of the enterprise
 - identification of need for new expert employees

HME? - Approach



- General topic: larger number of people with some expertise
- Very specific topic: only few people
- An IRS should:
 - understand the specificity of the topic
 - retrieve a reasonable number of experts

HME? - New Definition of Experts



- Look outside the Enterprise!
- Consider not only experts within the Enterprise but overall experts in the topic
- Compare the most knowledgeable people working for the enterprise with the current state-of-the-art knowledge in the world on the given topic

HME? - Evaluation of the task



- Measure the quality of the estimation made by the IRS
- Possible errors are overestimation / underestimation

$$H := 1 - \frac{|SNE - UNE|}{|C|}$$

HME? - Experiments

Collection	Avg Number of experts per topic
TRECent 2005	30.18
TRECent 2006	28.4
TRECent 2007	3.04

- TRECent 2006: computed H for 91 runs
- Computed correlation of H with standard metrics

HME? - H vs Gold Standard

- Correlation values of the IRSs rankings done according standard IR metrics and H, for the TRECent 2006 collection.

	Kendall τ	Spearman ρ
MAP	-0.25	0.005
R-Prec	-0.22	0.008
GMAP	-0.27	0.0006
P5	-0.1	0.30
P10	-0.15	0.09

IDENTIFYING HIGHLY EXPERT EMPLOYEES

- Thresholding the number of experts
- Thresholding on the average score
- Top N% thresholding on the average score

	Ex1	Ex2
1	0.9	0.5
2	0.2	0.4
3	0.2	0.3
4	0.2	0.2

Ex 3
0.3
0.3
0.2
0.2
0.2

- Thresholding the expertise score

CONCLUSIONS



- We have motivated and defined a new Enterprise Search task (Number of Experts)
- The evaluation focuses on the quality of the estimation made by IRS
- We listed some possible approaches for solving the task

- Investigate, evaluate, and compare possible ways of identifying highly expert employees
- Study the distributions of expertise over candidates and topics
 - Empirically finding the distribution of the expertise scores (from the RSVs)
 - Approximating and normalizing RSVs.

The End



Thanks