Author's response to reviews

Title: Boolean versus Ranked Querying for Biomedical Systematic Reviews

Authors:

Sarvnaz Karimi (skarimi@unimelb.edu.au)
Stefan Pohl (spohl@csse.unimelb.edu.au)
Falk Scholer (falk.scholer@rmit.edu.au)
Lawrence Cavedon (lcavedon@csse.unimelb.edu.au)
Justin Zobel (jz@csse.unimelb.edu.au)

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Author's response to reviews: see over
Response to the Reviewers Comments

We thank both reviewers for the feedback on our work. We have done our best to incorporate all the comments as explained below. The revised or added texts in the paper are highlighted by blue texts including typographical fixings.

Reviewer 1

Minor changes:

1. Conclusions in abstract: Outcomes of experiments suggest an interactive query-development process that uses a hybrid ranked and Boolean retrieval system has the potential for significant time-savings over the current methodology can used in the systematic reviewing process.
   Should be: Outcomes of experiments suggest an interactive query-development process that uses a hybrid ranked and Boolean retrieval system has the potential for significant time-savings over the current methodology used in the systematic reviewing process.
   Response: Fixed.

2. 3rd paragraph of the Introduction: Metadata is the citations include information on each abstract, such as date of publication, language, and index terms.
   Should this be: Metadata of the citations include information on each abstract, such as date of publication, language, and index terms.
   Response: Fixed.

3. 3rd paragraph of the Introduction: The current (late 2009) sizes of the major repositories are: approximately 18 million citations for medline and 11 million for embase, each growing by approximately 2,000 per day; and more than 2.6 million records for psycinfo. Update these figures for 2010, for instance Medline now has 20 million citations.
   Response: Fixed.

4. 2nd paragraph of Section 4: To perform ranked retrieval experiments, we used an open-source search engine called Zettair9 which has most popular ranking functions implemented.
   Should be: To perform ranked retrieval experiments, we used an open-source search engine called Zettair9 which has most popular ranking functions implemented.
   Response: Fixed.

5. 3rd paragraph of Section 5: Even without replacing the Boolean paradigm, we believe there are improvements that can be made to the search process by incorporating aspects of the ranked-retrieval search process; in particular, the simple query forms, and the use of a ranking schema to quickly determine potential of result lists in providing relevant information.
   Response: Completed the sentence to: “to quickly determine potential of result lists in providing relevant information.”

6. Legends for Figure 5 should be increased for readability.
   Response: Fixed.

Reviewer 2
Response:

I was disappointed that the authors felt unable to provide the same level of helpful descriptions of ranked querying as they have of Boolean searching. This is a paper that would be of great interest to searchers working with systematic reviewers and such detail would make it easier for readers to understand the authors’ methods and to appreciate the authors’ findings.

Response: We apologise for this. Although we also were in favour of providing more details than less, had to satisfy majority of the reviewers who found the manuscript too long.

Minor essential revisions

p2 para 2, ‘metadata is the citations...’ This sentence does not make sense at present.

Response: Fixed to “metadata of the citations”.

p3 Section 2. I suggest the authors introduce ‘might’, ‘may’ and ‘tend’ to soften some of their categorical statements in this section. The statements are all rather too definite at present and would better reflect the immense variation in systematic reviews if they were made more conditional.

Response: Incorporated this in the revised text.

p3 Section 2. Please note that the Cochrane Collaboration is a major and influential group of systematic reviewers but is not the only source of guidance or advice and not all reviewers take it as their gold standard.

Response: Reflected this in the revised paper.

p.4 para 1. I support the comment made by another reviewer of this paper that the references are rather old. Since 1994 major efforts have been undertaken by NLM and Cochrane Collaboration members to improve access to reports of RCTs on MEDLINE - so the Dickersin article is now of value only in providing a benchmark for how far indexing and access has improved. See our paper: How to identify randomized controlled trials in MEDLINE: ten years on. Glanville JM, Lefebvre C, Miles JN, Camosso-Stefinovic J. J Med Libr Assoc. 2006 Apr;94(2):130-6. Erratum in: J Med Libr Assoc. 2006 Jul;94(3):354. However, it would be fair to say that in other study types access has not improved.

Response: We added these information to the text.

page 5. In this section it is important to note that the search syntax (adj, $ and exp) are specific to ovid and will be different in other interfaces. The slash symbol (noted at the bottom of the page) is also specific to Ovid.

Response: We removed those symbols from that paragraph to make them general.

page 5. The authors should choose one term to refer to the MESH headings and use that consistently to avoid confusion. using ‘MeSH operators’ for example, is not helpful.

Response: Fixed.

page 5 last paragraph. I think the authors could clarify the information they have provided on explosion, major.minor MeSH and subheadings. The MeSH subheadings (or qualifiers) are listed on page 6, but not given their correct name. It would help to show an example of explosion with a heading which does explode such as ‘acupuncture therapy’: exp acupuncture therapy/ retrieves the following more specific terms: Acupuncture Analgesia Acupuncture, Ear Electroacupuncture Meridians Acupuncture Points Moxibustion As well as retrieving all the subheadings (or qualifiers) which have been attached to the individual headings as well.

Response: We added this information to the text.

page 6. it would be more helpful to cite the Ovid help pages (http://www.ovid.com/site/products/ovidguide/medline.htm) than a BMA training manual - the BMA manual may disappear and may not be totally current, but hopefully
the Ovid help pages will be updated and as current as possible.

Response: We cited both in the revised version.

page 7 para 5. Please clarify the sentence about 'richer operators' as it is ot clear what is meant.

Response: In the revised text we provided examples for both rich and simple operator.

page 9. para 3. This method of creating gold standards is known within systematic reviewing as a relative recall gold standard and you may wish to cite a recent paper which discusses the merits and disadvantages of the approach: An alternative to the hand searching gold standard: validating methodological search filters using relative recall. Margaret Sampson, Li Zhang, Andra Morrison, Nicholas J Barrowman, Tammy J Clifford, Robert W Platt, Terry P Klassen and David Moher. BMC Medical Research Methodology 2006, 6:33doi:10.1186/1471-2288-6-33

Response: Included these information in the revised paper.

para 11. figure 1. and accompany text. It would really help me as a reader to understand what is going on if I could see the next step represented. I can see the three levels of information in figure 1 and the text talks about a bag of words - please present the actual 'bag of words' so it is clear what is entered or selected.

Response: We entered the entire text (except the headings) in the figure as query, and that is called bag-of-words or ranked query in information retrieval. We added this information to the text. In general it's a search engine that later removes the punctuations and stopwords from the query and executes the remaining.

page 17. table 6. Despite the authors' feedback on this point I still don't understand why the adjacency operator has been 'simplified' to an 'OR' rather than an 'AND' operator. This is not a simplification and I suggest the authors consider another term for this exercise.

Response: We agree that OR does not correspond to adjacency. Our aim was to capture superset for adjacency rather than a subset. “Simplification” is the term we used for the whole process but the text explicitly says that we were after finding those supersets.

page 17. table 6. exp is an explosion and doesn't really 'exapnd MeSH subheadings'. The authors should explain if they have carried out another operation which relates to the subheadings rather than just exploding the subject headings.

Response: Removed the word expansion from there. What is called explosion in medical Boolean search domain is generally (in terms of undelying concept of what happens to the query) is known as expansion/query expansion in ranked information retrieval domain which is why we had left it there.