

SIGMOD 2016**ACM SIGMOD Conference 2016**

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**Reviews For Paper**

**Track** Research, November 2015  
**Paper ID** 579  
**Title** Generating Preview Tables for Entity Graphs

**Masked Reviewer ID:** Assigned\_Reviewer\_1**Review:****Question**

Overall rating	Reject; I have serious concerns about this paper that cannot be addressed with a revision
Briefly summarize your review, and rationale for the chosen rating	This paper proposes a method to get preview tables for entity graphs (freebase, DBpedia, YAGO, etc.). Users can use the preview to decide which entity graph to use or explore the entity graph in detail before they use it. The optimization problem is shown to be NP Hard. A variety algorithms (Brute-force, Dynamic Programming, Apriori-style) are proposed to provide optimal performance, and are evaluated against a self-collected gold standard and user studies.
List at least 3 strong points, numbered S1, S2, S3, ...	<p>1. The writing is very clearly structured and straightforward to follow. It gives a clear problem statement, definition for concepts, psuedocode, etc. Different algorithms are proposed to optimize the performance.</p> <p>2. The performance experiments are very detailed. It talked about the time complexity of each algorithm. The experiments shows that the dynamic programming and apriori-style algorithms helps the performance.</p> <p>3. The notion of tight and diverse previews is interesting. The tight preview gives users a sense of coherence while the diverse preview allows users a more general overview.</p>
List at least 3 weak points, numbered W1, W2, W3, ...	<p>1. While the paper is extremely well thought out, the overall motivation for this problem needs to be fleshed out more. While this problem itself may be NP-hard, the authors do not articulate how common this problem is, or what the overall impact is. As the authors mention, "Freebase offers an entrance page showing 6 major entity domains" then perhaps first demonstrate that intuitive alternatives do not suffice, such as Pagerank representation of the graph (ObjectRank, Balmin @ VLDB 2004) and schema summarization etc? Alternatively, perhaps show that this method is *faster*(i.e. time-to-task* than human curation?</p> <p>2. The paper could do with more comparisons against reasonable baselines / comparable algorithms; the evaluations (Fig 6 &amp; 7) simply compare the two proposed algorithms, but do not compare this against a reasonable existing alternative.</p>
Paper review; use this section to provide authors with your detailed feedback, and suggestions on how to improve	<p>The details of the user study need to be fleshed out. Tor example, what does it mean to say "important" in "The workers were asked which of the 2 entity types in the pair is more important."; all responses are valid (no outliers) ?, etc.</p> <p>Other papers to look at, esp. in the context of search:  * "Qunits: queried units in database search", Nandi and Jagadish CIDR 2009  * "Query Biased Snippet Generation in XML Search", Chen et al SIGMOD 2009</p>

the paper. Comment on novelty, depth, presentation quality, and soundness and thoroughness of experimental evaluation.	
If you recommended a Conditional Accept, describe specific issues you would like to see addressed in a revision.	<p>The focus of this paper could be improved significantly if the authors focused on the qualitative aspects and the human curation aspects instead of the performance experiments. Conceptually, the task is not time-intensive since once the preview is generated, it won't change frequently even there is more new edits coming in considering the size of entity graph.</p> <p>The current user study is not enough to tell how this will indeed help users to make a decision to select the entity graph. It is only used to evaluate the ranking. The paper needs to show that the technique provided is a good qualitative alternative to the baseline / naive case.</p>

**Masked Reviewer ID:** Assigned\_Reviewer\_3

**Review:**

**Question**

Overall rating	Conditional Accept; I will fight for this paper if the authors address the concerns listed below in a revision
Briefly summarize your review, and rationale for the chosen rating	The paper addresses an interesting problem and presents a well-thought out and elegant solution. However, the quality evaluation section seems unsatisfactory, especially in comparison with the rest of the paper.
List at least 3 strong points, numbered S1, S2, S3, ...	<p>S1. Relevant problem. Well-defined problem formulation.</p> <p>S2. Algorithmic solution is novel and elegant.</p> <p>S3. Solution (brute-force -&gt; dynamic programming -&gt; apriori) is well-thought out and presented.</p>
List at least 3 weak points, numbered W1, W2, W3, ...	<p>W1. Selecting sample tuples is very likely an important part of the puzzle and it was disappointing to see the authors use random sampling.</p> <p>W2. User study and evaluation are weaker in comparison to the the rest of technical presentation.</p>
Paper review; use this section to provide authors with your detailed feedback, and suggestions on how to improve the paper. Comment on novelty, depth, presentation quality, and soundness and thoroughness of experimental	<p>The paper addresses an interesting problem and present a novel and elegant solution that makes for good reading. However, the user evaluation in Section 6 is underwhelming in comparison to the rest of the paper.</p> <ol style="list-style-type: none"> <li>1. It is hard to appreciate the quality comparison, when the Freebase schemas used are unknown (as the author suggests, the published pages are no longer accessible). At the very least the authors should list the entity types and the non-key attributes for a few of the tested domains.</li> <li>2. The authors assume that the six entity types and their attributes as published by Freebase can be used a golden set. Is there a justification for this? Freebase does not necessarily have the preview goals laid out in the paper. It would be more convincing if the paper included a evaluation in which the Freebase schema was also rated in the user study and then the overlap measure with the solutions generated by the different algorithms.</li> <li>3. The entity type importance correlation (Section 6.1.3) does not appear to necessarily relevant to the author's preview table goals. There has to be a</li> </ol>

evaluation.	<p>justification for why that comparison is a reasonable one.</p> <p>4. Why is Precision@K a good measure for preview quality? At least an informal justification is necessary. Further, the charts in Figure 5 are hard to read and understand.</p> <p>5. There is no explanation for the non-key attribute scoring in Table 4 not described. In order to measure non-key attribute quality, you could fix the key attributes to be the same as in the gold standard and then let the algorithm only pick the non-key attributes. Then, you can the same metric used to measure quality of key attributes can be used to compare the precision of the non-key attributes.</p> <p>6. An alternate evaluation strategy might be a have a set of 10 experts (e.g., grad students with some data management understanding) independently create preview tables for the said datasets under the outlined design constraints (k tables, n attributes). These can be instead compared with the results of the algorithm (and correlation/overlap measured).</p> <p>7. Though the paper emphasizes the ability to obtain multiple variations of a preview schema (concise, concise + dense, and concise + diverse), the experimental section does not address the objective / subjective quality of the previews computed over the variations (except for the example in Table 6).</p> <p>The sample preview schemas in Table 5 and Table 6 do appear rather interesting and convincing, which makes the weakness of the rest of the evaluation, unfortunately, more pronounced. Also, the examples in Table 5 seem much more convincing than the motivating examples in Table 2.</p>
If you recommended a Conditional Accept, describe specific issues you would like to see addressed in a revision.	<p>* The user evaluation has be more convincing. Specially, it would make sense to quantitatively compare the preview tables computed by the algorithms against hand-crafted schemas created by a set of experts.</p> <p>* The differences between the variations in criterion (concise + diverse + dense) would ideally also be evaluated.</p>

**Masked Reviewer ID:** Assigned\_Reviewer\_5

**Review:**

**Question**

Overall rating	Conditional Accept; I will fight for this paper if the authors address the concerns listed below in a revision
Briefly summarize your review, and rationale for the chosen rating	<p>The authors study the problem of finding preview tables in entity graphs. The preview tables are supposed to help data workers to understand the purpose of a particular entity graph without spending too much time. The authors formally define this problem, and propose the definition of preview tables. They also justify why this particular definition makes sense in big entity graphs and how it leads to a good summary of the entity graph. They formally define the problem and prove that optimizing it is NP-hard. Then, they proposed a series of algorithms to find solutions. Although the problem is interesting and the paper is technically sound, I am not convinced that using the preview table instead of the schema graph (or summary of the schema graph) is necessarily better. If the authors can improve that part (specifically in the experiments), that would improve the paper greatly.</p>
List at least 3 strong points,	S1. The problem looks interesting and could be useful when dealing with entity graphs with big schemas.

numbered S1, S2, S3, ...	<p>S2. For the first time, the authors defined the problem formally and provide reasons for choosing such definitions.</p> <p>S3. The authors proved that the problem is NP-Hard and propose practical solutions to solve it.</p>
List at least 3 weak points, numbered W1, W2, W3, ...	<p>W1. In the experiments, there should be a direct comparison between the schema graph (or summary of the schema graph) and the preview tables from the usefulness and understandability of the users (i.e., data workers) point of view.</p> <p>W2. The schema graphs used in the experiments are not big. Considering the fact that preview tables are useful when users are dealing with big schema graphs, this is not acceptable.</p> <p>W3. The related work section is too short and shallow. The conclusion should include the possible future work.</p>
Paper review; use this section to provide authors with your detailed feedback, and suggestions on how to improve the paper. Comment on novelty, depth, presentation quality, and soundness and thoroughness of experimental evaluation.	<p>The problem studied in this paper looks interesting. The concept of preview tables are modeled mathematically and the right parameters to control the size of the preview tables are introduced. However, the motivation of using preview tables is not supported in the experiment.</p> <p>The contribution of this paper is that it claims providing preview tables is more useful than providing schema graph (or summary of the schema graph) for the purpose of understanding the entity graph. However, the authors fail to show this in the experiments. In the experiments, the accuracy of the solution is considered only by looking at the ranking orders of candidate keys. Even in the user study, users are asked to compare which pair of the 2 entity types are more important. However, the right experiment would show how useful the schema graph (or summary of the schema graph) is versus the preview tables. Instead of asking the users of AMT, actual data workers should be asked to evaluate the usefulness of the preview tables.</p>
If you recommended a Conditional Accept, describe specific issues you would like to see addressed in a revision.	<ol style="list-style-type: none"> <li>1. In the experiments, compare the usefulness of the preview tables vs schema graph (or summary of the schema graph). This can be done by a user study among data workers (and not AMT users).</li> <li>2. In the experiments, a sample of the schema graph summary should also be shown beside each preview table sample.</li> <li>3. The related work should be expanded. More discussions about similar work that has been done in the past should be added.</li> <li>4. Since the concept of the preview tables for entity graphs are introduced for the first time in this paper, the conclusion should include a thorough discussion about the possibilities of future work.</li> </ol>