

Reviews For Paper**Track** Research -> March 2016**Paper ID** 883**Title** Orion: Enabling Suggestions in a Visual Query Builder for Ultra-Heterogeneous Graphs**Masked Reviewer ID:** Assigned_Reviewer_1**Review:**

Question	
Submission Category [as indicated by authors]	Regular Research
Relevance to PVLDB	High
Overall Rating	Reject
Justification of your overall recommendation (one paragraph)	The authors present Orion, which is a visual interface for querying ultra-heterogeneous graphs. It helps users construct queries by making suggestions using machine learning methods. User studies have shown that on an average, users have a 70% success rate in constructing complex query graphs as opposed to 58% without suggestions. A new classification technique of RDP is presented to handle imbalanced classes. While the idea itself is well-motivated, the novel components of the paper were hard to gauge, and the human studies do not clearly / completely articulate the advantages of the system proposed.
List major strong points of the paper (if any)	S1. Visual query builders and suggestions for graph queries is an interesting topic. S2. RDP is an interesting algorithm, although I have questions about its feasibility as mentioned below.
List major weak points of the paper (if any)	W1. There is a lot of work in the classifier literature on handling imbalanced classes. The authors could compare RDP designed to handle this imbalance against them. W2. Constructing RDPs online will start getting infeasible with increasing session size. On the other hand, Orion seems to be more helpful with bigger query sessions. Where is the inflection point where infeasibility due to RDP construction is higher than the help due to Orion? W3. The manner of construction of negative edges implies the number of negative edges to vastly outnumber the number of positive edges. Is this phenomenon observed? What are the metrics for this? W4. Table 5 obscures information about individual conversion rates for medium and high. This information should be disclosed. W5. What is the reasoning behind 9:easy, 6: medium, 6:hard. This affects

	<p>the running time numbers and effectiveness through user studies? Can we get numbers for random 6 queries out of 9 for easy? This is straightforward without needing additional experiments.</p> <p>W6. "We observe that despite the steeper learning curve..." This statement needs to be strengthened significantly, esp. since the authors are trying to sell recommendation system for graph builders. Also, why is the learning curve steep since the users only need to select a suggestion?</p> <p>W7. I am not sure why naive bayes should take 3.9 seconds compared with RDP. Naive Bayes performs a simple calculation and should be intuitively extremely efficient.</p>
Significance	Incremental value
Novelty	Interesting Approach
Technical Merit	Acceptable
Presentation	Needs improvement
Detailed Evaluation (Contribution, Pros/Cons, Errors); please number each point	<p>Typo:Page 1 : without being triggered by an user action"s"</p> <p>The authors consider items in a session to be sets and lose the order information. How can this information be incorporated in RDP?</p> <p>A video of Orion will be extremely helpful.</p> <p>The authors repeat their motivations at numerous places which can be trimmed</p> <p>Does the rank of a suggestion amongst the top-k suggestion help, or is simply being part of the top-k good enough?</p>
Revision Recommendation (Do you think the submission can meet PVLDB standards with a limited revision?)	No

Masked Reviewer ID: Assigned_Reviewer_2

Review:

Question	
Submission Category [as indicated by authors]	Regular Research
Relevance to PVLDB	High
Overall Rating	Weak Reject
Justification of your overall recommendation	<p>The authors propose to provide edge suggestions when the user is building a query graph. They propose an edge ranking method that leverages query log to rank the candidate edges. However, the main limitation is that in their implementation/experiments, there is no query log! Since the main</p>

(one paragraph)	premise of the paper is that the authors can provide high quality suggestions using query log, the contribution loses its credibility if it has been done without any query log.
List major strong points of the paper (if any)	<p>S1: Visual query building and suggestions for visual query building are important problem</p> <p>S2: The ranking algorithm used, namely random decision paths, seems technically sound</p>
List major weak points of the paper (if any)	<p>W1: One of the main weak points of the paper is the lack of query log. The main premise is to produce effective query suggestion using query log but there is no query log is the implementation/experiments. They use data statistics and co-occurrence of entities in Wikipedia to simulate positive edges -- then this paper should be about trying to use data statistics to produce effective edge suggestions, not query log! The goal of the paper is misleading and confusing.</p> <p>W2: The motivation of the paper is not that compelling. It is not clear to me who uses a visual query builder to build a query graph by manually adding nodes and edges to the query graph. We know that graphs like Freebase and Yago is common and search engines use them to answer keyword search/natural language queries (e.g., who is the director of 'Titanic'). But note that no one is building a query graph using a visual query builder. The authors do not clarify the user scenario in the paper</p>
Significance	High impact
Novelty	Interesting Approach
Technical Merit	Acceptable
Presentation	Clear
Detailed Evaluation (Contribution, Pros/Cons, Errors); please number each point	See 5 and 6
Revision Recommendation (Do you think the submission can meet PVLDB standards with a limited revision?)	No

Masked Reviewer ID: Assigned_Reviewer_3

Review:

Question	
Submission Category [as indicated by authors]	Regular Research
Relevance to	

PVLDB	Should submit to alternative forum
Overall Rating	Reject
Justification of your overall recommendation (one paragraph)	<p>The paper first proposed an auto-completion tool for visual query builder, called Orion. This tool provides suggestions of candidate edges when users are generating query via visual query builder. The suggestions are provided by a machine learning algorithm on query log. The main challenge is that query session contains relatively few edges compared to the number of edge types(training data), which make standard random forest model not work. The author propose a variant of random forest model to deal with this problem. When they get a query Q, they train a RF classier which is only relevant to Q on-the-fly. Although the application of this paper, visual graph query builder, is a database tool, the under-lying challenge, enormous training labels, is a classic machine learning (ML) problem which has been extensively studied. The technique merit of this paper is irrelevant to VLDB. As not an expert in ML, I have consulted with experts from ML. Enormous training labels (edge types in this paper) do cause problem in training. There are many existing solutions, but this paper's baseline did not consider any of them. The solution proposed in this paper, training data on-the-fly, cannot solve the problem of enormous training labels. As even you only choose labels that is relevant to your query, the average amount of training data for each label remains very small. I suggest to submit the paper to machine learning venues for professional reviews.</p>
List major strong points of the paper (if any)	1. Propose an interesting supportive tool for visual query builder.
List major weak points of the paper (if any)	<p>1. Irrelevant to VLDB</p> <p>2. Missing existing baselines for solving enormous training label problem.</p> <p>3. Proposed method (RDP) is not technically sound.</p>
Significance	Incremental value
Novelty	Interesting Approach
Technical Merit	Questionable
Presentation	Clear
Detailed Evaluation (Contribution, Pros/Cons, Errors); please number each point	Not arranging the figures by order of appearance. Figure 2 is cited in page 1 and 2 but Figure 1 is cited in page 3. Swap Figure 2(b) and (c), page 2 para 1 cited (c) earlier than (b).
Revision Recommendation (Do you think the submission can meet PVLDB standards with a limited revision?)	No

