

----- REVIEW 1 -----

PAPER: 5

TITLE: Strengthening Topological Conditions for Relabeling Algorithms in Evolving Graphs

AUTHORS: Florent Marchand de Kerchove and Frédéric Guinand

----- REVIEW -----

The paper deals with dynamically changing graphs and distributed computation in networks that are modeled as such graphs. The paper is not very clearly written, and the precise contribution and its impact is not apparent. The abstract gives the reader only a vague idea about the contribution, and in general the presentation is not structured effectively. The references are very partial and the discussion of related work is parochial (the authors may want to consult Kuhn et al. in STOC'10). The counting problem is fine as an illustration, but more compelling applications of the contributions would go a long way towards convincing the reader that the presented approach is worthwhile.

----- REVIEW 2 -----

PAPER: 5

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The paper studies the framework of Cateigts et al. [2012] for relabeling algorithms in dynamic graphs. The main contribution is a tight sufficient condition for the completeness of a relabeling algorithm for counting that was introduced by Cateigts [2007].

Main criticism:

- Most of the paper is dedicated to the presentation of a known framework; very little room is left for new results.
- Although the new sufficient condition is nice, it is almost trivial to prove it.
- Some ambiguity in the definitions.

Comments:

- Page 2, left col, par 3: Note that  $L^*$  also includes the empty string (so not all strings have one or several labels).
- Page 2, left col: Although Section 2 is written in a very (perhaps over) formal way, the actual definition of a relabeling algorithm is missing (you just provide an example).
- Page 2, right col, par 1, 1st item: Do you mean that all elements in the sequence  $S_{\{T\}}$  are taken from  $T$ ?
- Page 2, right col, par 1, 2nd item:  $t_i$  and  $t_{i+1}$  are suppose to be two consecutive elements in  $S_{\{T\}}$ , right?
- Page 2, right col, par 1, 3rd item: A graph is not a set, so it's a little bit strange to talk about the union of graphs (the explanation appears only later).
- Page 3, left col, par 2: So  $t_k$  is also a (time) upper bound on the last relabeling operation?

- Page 3: While the "sufficient condition" is sufficient for completeness, that is, sufficient in the universal sense, the necessary condition is necessary in the existential sense. This is confusing and somewhat strange.
  - Page 3, right col, definition of progression hypothesis 1: change "is able to apply" to "applies".
- Page 3, right col, Conditions 1 and 2: I guess that you assume here that vertex  $u$  is the source of the propagation. This should be explicitly stated.

----- REVIEW 3 -----

PAPER: 5  
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----- REVIEW -----

The authors focus on relabeling the nodes of dynamic graphs, as a follow up of the 2007 PhD thesis by Casteigts.

The paper is not well written and not well positioned in the context of dynamic graphs. The authors seem to ignore the literature which is not directly related to the model in [Casteigts2007]. They do not provide any hints about why this model is interesting compared to the classical distributed computing models. As a consequence, the problem tackled in the paper lacks of motivations. For these reasons, the contribution of this paper seems to be very restricted.