Reviewer #1: Revise   
  
OVERVIEW  
The authors have done some work in order to address the concerns I have raised and the manuscript's quality has been improved. However, the manuscript still shows some weaknesses, listed below.

1) LANGUAGE AND GRAMMAR  
The quality of the paper with respect to language and grammar is still far to be acceptable to be published on ESWA. This issue here has a heavy negative impact on the readability of the paper, thus on the overall evaluation. Some terms are used with a completely different meaning with respect to the actual context (e.g. page 5: does "horizon" mean "horizontal"?). Authors should really have paid more attention. This kind of issues \*must\* disappear if authors want the paper to be considered for publication. I will not review the paper again until this point is fully addressed. I am not going to list all the huge amount of typos found while reading. Just few examples:

- L. 98: exploitING  
- L. 123: 2-dimensionAL array  
- L. 130: "the bitmap of nodes are" -> either "bitmaps are" or "bitmap is"  
- L. 276 the end nodes ARE  
- L. 335 the above method NEEDS  
Answer: TODO

2) PRESENTATION AND BACKGROUND  
Sections dedicated to problem description, background and notation are still absolutely incomplete and not self-contained. Authors fail at unquestionably define the scenario and the assumptions they make. This issue has a negative impact on the whole paper.

Some examples of missing contents:  
- page 3: what does "monitoring shortest paths" mean? please clarify

Answer: Monitoring shortest paths deals with monitoring the changes of dynamic road networks and determining recent shortest paths between specified sources and destinations.

- HQF seems undefined

Answer: We have substituted HQF with highest-query-frequency. TODO  
- Static and dynamic caching are either undefined or defined in a sloppy way. In the literature (e.g. [2]), static and dynamic caching are two problems related to different strategies of caching when the graph is NOT allowed to change. In details, static caching aims at caching results of the most popular queries while dynamic caching aims at caching the results of the most recently accessed data. Here, authors ambiguously use terms like "dynamically" and "dynamic" for completely different purposes (i.e. to denote the problem of updating the cache when the graph changes, independently from the used strategy for caching)  
Answer: TODO

It could be useful to have a paragraph where everything is used through the paper is defined.  
  
3) NOVELTY  
I appreciated the effort made on the experimental part, I have been able to better get the newsworthiness of the presented results. Still I have few doubts on the whole, probably due to the poor quality of presentation. Please pay more attention to details. Some examples:  
  
- Theorem 1 is not a theorem. It's basically a tautology given the definition of affected shortest path. Plus, theorems 1-3 are just trivial corollaries of the sub-optimality property of shortest paths in general graphs. Please rephrase and highlight better this aspect.

Answer: We have substituted “theorem” 1-6 with “corollary” 1-6, and highlighted that these corollaries are based on the definition of affected paths.

- Adopting a bitmap as a data structure cannot be considered an innovative choice (has been done before, has been shown to be a good trade-off between time and space). I suggest the authors unquestionably clarify what it is taken from other previous works (citing them) and what it is introduced for the first time. For instance, the concept of affected paths has been used in several other papers, as well as the bitmap structure.

Answer: Thanks for the reviewer’s suggestion. Though we are talking about caching shortest paths, several key components like bit map structure and detecting shortest paths have been used in other applications.

For the bitmap, we state that we use a bitmap in the shortest path caching. And he bitmap structure was first developed for database use in the Model 204 product from Computer Corporation of America (O’Neil & Quass, 1997). Now bitmap is commonly used in databases and data warehouses (Wang et al., 2016). (First paragraph of Section 3.2)

For the affected paths, some works talk about how to detect one (or several) shortest path affected by the change of a graph and we have classified these works in the Literature Review. To the best of our knowledge, “affected paths” is only used by us.

4) SOUNDNESS   
Also here I appreciated the effort made by the authors to clarify some unclear aspects. However, there are still some concerns to be addressed.  
- I suspect that NEA should be executed symmetrically on both endpoints; otherwise some affected path could be left out.

Answer: It is not necessary to execute NEA on both endpoints. Assume that there exists an affected path Pst that is not detected, that is, Pst is not in Saff. Based on Corollary 2, we know that the new shortest path P’st between vs and vt must contain *e*. Hence P’st must be one of the following forms S1=<vs,…,va,vb,…,vt> or S2=<vs,…,vb,va,…,vt>= <vt,…,va,vb,…,vs>. Either S1 or S2 will be detected by NEA.

- In the description of the algorithms, please use proper terminology. A node does not "enter" a set, neither is appended. Perhaps, it is added to it.

Answer: From the code implementation perspective, the sets of nodes Cs and Ct are queues (refer to 3rd paragraph of Section 4.1). To guarantee the order of popping, we used “append” a node.

- Regarding comment 8 of the first review, it is not true that all other methods for detecting shortest paths require extra space.

Answer: We have reviewed related works and found that works of detecting affected shortest paths are classified into two streams. One is to detect affected paths in a predictable network and the other is to detect affected paths in an unpredictable network. For the research on a predictable network, the network changes based on a predictable pattern or distribution, so the shortest paths at different time are actually computed before-hand based on the predictable graph. For the research on an unpredictable network, our work belongs to this stream. For this stream, the extant research can be classified into two categories further: online and offline detection. For the offline detection, it needs extra space to store extra information. For the online detection, it does not need extra space. However, online detection is based on one specified node-pair, or at least one specified starting node. Our work needs to detect all affected paths without knowing paths of which node-pairs are affected. TODO cite.

- Regarding comment 9 of the first review, I am not fully convinced by the authors' answer. In particular, the number of requests to be performed to the server is a relevant parameter to evaluate the overall performance of a strategy. This could actually strengthen the proposed contribution. In fact, reloading the whole cache might happen to be slower on the whole with respect to smarter strategies, if server time were considered.

- The theoretical analysis is a bit sloppy. I agree with the authors that not all other works give theoretical bounds while I do not agree on the fact that this is a good reason for omitting them. A theoretical bound is much stronger than an experimental evaluation on the running time and could be used in the future to compare with the proposed approach. I appreciated the effort done, still there is room for improvement.

Some suggestions:  
- for instance, |psi| denotes both the size of the cache content and the size of the cache itself. Please clarify and revise the analysis accordingly  
- it is not true that the maximum number of shortest paths is N(N-1)/2 (suppose for instance that there exist two shortest paths between two nodes of the graph, easy example a cycle graph of 4 nodes)  
  
  
Reviewer #2: Revise  
  
The revised paper is still poorly written, and the writing is unacceptable. The authors MUST ask for professional editing service for proofing the entire manuscript prior to re-submission.