

1 We thank the reviewers for the valuable comments and discussions. Please find our clarifications below. We  
2 use [Narasimhan et al.'15] for Narasimhan H et al., Learnability of influence in networks, NeurIPS'2015.

3 - Reviewer 3: About the setting of online linear threshold model

4 Recall that in setting of the (offline) linear threshold (LT) model, the weight  $w(e)$  associated with each edge  
5  $e \in E$  is fixed and known and the threshold for each node is uniformly drawn from  $[0, 1]$ . The weights are  
6 model parameters while the thresholds are not model parameters. This setting was originally proposed in the  
7 seminal work by Kempe et al. [19], and most follow-up studies adopt this particular setup (e.g. [9,12,16]).  
8 The particular setting of using fixed and nonnegative weights on the edges (with the sum of weights of  
9 the incoming edges of each node at most 1) plus the uniform sampled threshold from  $[0, 1]$  enables the LT  
10 model to have an equivalent live-edge graph formulation, and unifies the LT and IC under the more general  
11 triggering model [19], which is in turn important for deriving a number of properties (such as submodularity)  
12 and algorithmic solutions (such as the reverse influence sampling approach [38]) for the LT model. Therefore,  
13 our online influence maximization (OIM) is directly on the classical LT model, turning model parameters  
14  $w(e)$  to be unknown (but fixed) and to be learned in an iterative manner. This is in parallel to the OIM for  
15 IC model [11,43,45], which also learns unknown edge probability parameters.

16 It is interesting that the reviewer brought up the frequentist versus Bayesian view on OIM-LT. Per our above  
17 discussion, we first want to clarify that the threshold on each node is not a model parameter of the classical  
18 LT model and our work is a frequentist approach for the online setting. Alternative Bayesian approach, such  
19 as Thompson sampling algorithm, is one of the future directions we plan to explore next. It is also possible to  
20 analyse Bayesian regret under Bayesian setting where the weights follow some prior distributions. The offline  
21 problem of including thresholds as model parameters, where both weights and thresholds are fixed and known,  
22 is the fixed threshold model [9,19] and has very different property and behavior, e.g. it is not submodular  
23 and is NP-hard to approximate to any nontrivial factor [9,19]. Also its diffusion process is deterministic for  
24 each seed set, while under IC and LT models the diffusions are random. So how to design its online setting  
25 and the corresponding Bayesian setting would be interesting future directions.

26 - Reviewer 1&2: About node-level feedback

27 First, we will clarify our naming by saying “full node-level feedback” as knowing the set of nodes activated at  
28 each time step, and “partial node-level feedback” as knowing only the set of nodes activated by the end of  
29 the diffusion process. This naming is consistent with [Narasimhan et al.'15], which also shows that these two  
30 types of feedback give different PAC-learnability results — the full feedback allows polynomial-time learning  
31 algorithm while the partial feedback may require an exponential-time learning algorithm.

32 Our paper studies the full node-level feedback. As reviewer 1 pointed out, it is possible to apply LinUCB-type  
33 algorithm to partial node-level feedback, but the difficulty is to analyze its regret. The key to bound the  
34 regret is to prove a similar GOM property (our Theorem 1) using the information that can be observed.  
35 Such a Lipschitz-type property is essential since we always use estimated weights to select seeds in the online  
36 setting and need to bound the difference caused by the estimation error. Thus, Theorem 1 is one of our main  
37 technical contributions, and extending it to the partial node-level feedback is unclear at the moment and is  
38 part of future research work. The probability  $1/2$  (line 12 of Algorithm 1) comes from the key GOM property  
39 (Theorem 1) and also addresses the correlation between  $E_{t,1}$  and  $E_{t,2}$ .

40 - Reviewer 1: The idea of using LinUCB and the importance of LT model

41 (a) Yes, the idea of using LinUCB is natural, since the diffusion process involves linear structure. As we stated  
42 above, the main difficulty is to analyze the regret for such a specific setting and feedback. (b) Although IC  
43 may be studied in the literature more than LT, LT is still a fundamental diffusion model and various aspects  
44 of LT has been studied (e.g. [9,12,16,19,20,38] and many other studies). For the online setting, existing  
45 work does focus on IC with edge-level feedback [11,43,45], and this is because the independence on edge-level  
46 propagation and edge-level feedback make the setting easier to analyze.

47 - Reviewer 2: Experiments and the definitions of  $E_{t,1}, E_{t,2}$

48 (a) We have shown experiments to compare LT-LinUCB and OIM-ETC in Appendix F. Since the algorithm  
49 of randomly selecting seeds does not learn good seed set, we did not include it. (b) For each diffusion,  $E_{t,2}(v)$   
50 denotes the set of incoming edges of active in-neighbors for node  $v$  at the time when  $v$  is activated; and  
51  $E_{t,1}(v)$  denotes the set of incoming edges of active in-neighbors for node  $v$  just one time step before  $v$  is  
52 activated, which are the edges just failing to influence  $v$ ; if  $v$  is not activated in the end,  $E_{t,1}(v)$  is the set of  
53 incoming edges of all its active in-neighbors, which is the largest edge set failing to influence  $v$ . We will add  
54 more descriptions for better understanding of these two terms.