Review of Paper # DS-17-1086

The paper presents design of a distributed Bayesian filter using measurement dissemination for a group of networked UGVs with changing topologies.

1. The main contribution of the paper is design of a protocol which allows a compute-simple algorithm to estimate the position of a target by a group of UGVs.
2. The paper is technically sounds. However, most of the technical points presented are not author's original idea or a direct consequence of work presented in this paper. For example, theorem 1 and corollary 1 is not a consequence of the work presented in this paper and is direct result from graph theory. Similarly, theorems 2 and 3 are of little trivial and can't be suggested as major findings under proposed work.
3. The crux of authors Bayesian filter is determined by equation 3-4. As this forms the main technical background of the method presented in the paper, it is advised to present a better explanation of the equation 4, ie., when does it hold—only if the measurements are iid? If that is the case, then this should be explicitly stated and should be an important assumption of the proposed work.
4. The main result of the paper is theorem 4 and 5 which present consistency of the proposed algorithm. However, they need better explanation—please expand on how the law of large numbers yields equation 8a (It is also advised to expand equation 6 i.e., how to obtain the batch form of the DBF at kth step).
5. The proof of theorem 5 is rather ad-hoc and needs more explanation and needs to be precise.
6. The simulation results are good but however, they cant be considered to be the main results of this paper and thus the technical part of the paper needs to be revised for better chances of acceptance.

Overall, the paper is a nice read and is technically sound. However, the paper lacks in novelty as most of the results (i.e., the theorems) presented in the paper are standard and the main technical results of the paper are not properly explained. The simulation results presented can not make-up for the technical novelty which is required for the proposed contributions by the authors.