Associate Editor Comments to Author:  
  
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Comments to the Author:  
I received two review reports from the experts who assessed the original paper. The reviews are mixed. While reviewer 1 is generally satisfied, reviewer 2 remains unconvinced by the motivation of the problem and the complex presentation.  While the revision has improved the write-up, the paper is still very difficult to read. Moreover, I agree with reviewer 2 that the real-world motivation and application of the problem are still unclear. Similarly, the distinction and practical application of the complete and partial overlapping formulations are not clear. This means that the authors did not manage to successfully addresses my concerns with the earlier version of the revision. As I do not believe that these (fundamental) concerns could be successfully addressed in another round of revision, I regretfully recommend rejecting the paper. I hope the provided feedback can help the authors to further improve the paper and find a more fitting outlet.  
  
  
Reviewer(s)' Comments to Author:  
  
Reviewer: 1  
  
Comments to the Author  
  
I have only found a few small typos and small things to comment:  
  
Page 21, paragraph -3: Table 5, instead of Table 6.  
  
Page 21, paragraph -2: The authors use a "gap", but it is not understood between which values: the AMMDRPG model is a branch-and-bound algorithm, then it provides a lower bound and can provide an upper bound if it finds feasible solutions (or even the optimal solution). On the other hand, the matheuristic provides an upper bound. Does the gap represent the difference between the lower bound given by the AMMDRPG model and the upper bound given by the matheuristic?  
  
Page 21, paragraph -2: The authors mention percentages of 58%, etc., while in Table 5, the gaps appear as 0.58, etc.  
  
Page 24, Figure 12: Figure caption: "The darker the color intensity the smaller the objective value." Isn't it the other way around? And in any case, this figure is a bit obvious.  
  
Pages 26 and 27: Figures 14 and 16 can be removed in the presence of Figures 15 and 17, respectively.  
  
Reviewer: 2  
  
Comments to the Author  
The writing on this revision is noticeably improved.  
  
In terms of motivation, I am still struggling with the implementation of visiting a percentage of a graph (or its edges).  Such an approach provides no guarantees of coverage.  Can the authors provide some concrete examples of anyone conducting surveillance in such a manner?    
- In the case of traffic monitoring, the drones can see a very wide area.  To monitor that traffic, area coverage seems more appropriate than arc routing (the drones don't need to follow the road network, and can see many roads at once).  The same holds true for the military surveillance application.  
- To inspect power lines, I don't think it is sufficient to let the algorithm decide which of a percentage of the lines are observed.  For regulatory purposes, I would imaging that utility companies must provide periodic inspections of their \*entire\* lines.  Obviously those inspections aren't necessarily conducted at one time.  However, subsequent inspections should cover portions of the lines that weren't previously/recently inspected.  Such constraints are absent from the proposed model.  
  
     
As in my prior review, I still do not see the need for the overly-restrictive "complete overlapping" model.  I understand that the authors worked really hard on developing that model, and that it was the foundation for the "partial overlapping" model.  However, I don't think the reader needs the background info about how the "partial" model came into existence.  Furthermore, I still don't see any practical application where the "complete" constraint is necessary.  Thus, if there's not practical use for the "complete" formulation, I do not think it adds any value to the paper.    
   - If, for some reason, the "complete" version is included, it should be relegated to an Appendix only, and should not be used in introducing the main ("partial") version in the body of the manuscript.  This would require a major re-write.  
     
I don't believe that Theorem 3.1 is required, as it is clear that the "complete overlapping" problem is a more restrictive special case of the "partial overlapping" problem.  
  
I also have some questions/concerns about the computational study:  
a) It seems that the study consisted of 10 test problems.  This is insufficient.  
b) It is still not clear how the gaps are calculated, and it seems that there are different types of gaps.  
   - In Table 5, it seems that the gaps are Gurobi's self-reported optimality gaps (against the lower bound that Gurobi has found)?  
  
   - In Figures 10 and 11 (boxplots), it seems that the gap is ((heuristic objective function value) - (Gurobi OFV))/(Gurobi OFV).  If this is the case, we're seeing gaps above 50% in some cases, and median gaps around 30%.  This isn't good.  
  
  
A minor suggestion:  
In defining the problem, rather than stating that the objective is to minimize the mothership's total travel time, why not explain it as minimizing the makespan?  Mathematically, this is equivalent for this problem.  However, conceptually, I think the user's end goal is really to complete all of the surveillance activities in the least amount of time.    
  
  
Overall, while I still think the notion of mothership/graph problems is interesting, I do not find the current manuscript to be ready for publication.