Dear Professor Prasant Mohapatra,

I would like to submit the following manuscript to TMC for possible evaluation.

Manuscript Title: **CATS:** **C**ooperative **A**llocation of **T**asks and **S**cheduling of Sampling Intervals for Maximizing Data Sharing in WSNs.

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A previous submission with original log number **TMC-2015-03-0192** has been determined to revise and resubmit as a new paper. We have revised the previous version according to all of reviewers’ comments. This paper presents original material which has not previously published, completely or in part, in another journal, and it is not being submitted for publication elsewhere. I affirm that the manuscript has been prepared in accordance with IEEE’s journals Instructions for Contributors.

The major contribution of this paper is as follows.

Data sharing amongst multiple sampling tasks significantly reduces energy consumption and communication cost in low-power WSNs. Conventional proposals have already scheduled the discrete point sampling tasks to decrease the amount of sampled data. However, less effort has been done for the applications which generate continuous interval sampling tasks. Moreover, most of pioneering work limits its view to schedule sampling interval of tasks on a single sensor node, and neglects the process of task allocation in WSNs. Therefore, the gained efforts in the prior work cannot benefit a large-scale wireless sensor network. Broadening the scope to an entire network, this paper is the first work to maximize data sharing amongst continuous interval sampling tasks by jointly optimizing task allocation and scheduling of sampling interval in WSNs. First, we formalize the joint optimization problem and prove it NP-hard. Second, we present *COMBINE* operation which is a 2-factor approximate algorithm for maximizing data sharing amongst overlapping tasks. Furthermore, our heuristic named *CATS* is proposed. *CATS* is 2-factor approximate algorithm for jointly allocating tasks and scheduling sampling interval so as to maximize data sharing in the entire network. Extensive empirical study indicates that our methods successfully reduce the volume of sampled data and decrease the energy consumption significantly.