

Journal Paper Review

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Soul: Data Sharing for Robot Swarms, 2019

I. 3 points you liked about the paper, and why

1. The idea of Swarm Intelligence. I've always been thinking that the ecosystem is a respectful teacher for technological advancement. Swarm Intelligence is consistent with my idea of using human cell concepts to allow machines to emulate various human behaviours at a high level. For example, we consider one CNN model to be an optic nerve, so we can use multiple models to give the human visual ability to machines.
2. The way for optimising the distribution of the datagrams. I have always wondered why memory should be limited to hardware furthermore should have limited capacity. This limitation of memory is an obstacle to the infinite development of artificial intelligence. Therefore, I want to break down this limitation of memory by enabling software-based memory with unlimited capacity. The idea of data distribution of this paper is likely to be of great help to how to distribute and store data on memory when I create such capacity-free memory.
3. Results obtained when compared to YOLO. Since the field I am most interested in and researching is artificial intelligence, I have been focusing on the achievements of SOUL in the task that the YOLO model mainly performs. And although SOUL was not a professional algorithm created for this task, it was very surprising that it worked similarly to the YOLO model.

II. 3 points for improvement, and why

1. Security enhancements. Security is one the most important parts of managing data. But in this paper, there are no special measures for security.
2. Git-like track of the changes. This is necessary for controlling the version of each swarm and also each robot.
3. Update mechanism for the shared data. Data redundancy can be avoided with information about the data being shared. It would then be more efficient, both in terms of time and space.

III. 3 concrete ways to address the issues that you identified

1. Using Block Chain Algorithm. If a blockchain algorithm is used, it can make send and receive encoded data using a signature method between the auctioneer and the buyer without having to send raw data.
2. Using Tree Algorithm. With the robot as a branch, the swarm to which it belongs is considered a large tree. This tree then makes it possible to control the process of uploading, modifying, and deleting data that is processed by robots by recording version.
3. This problem also can be solved by using Tree Algorithm. Overlapping will occur when processing data and writing it to the branch. Since this is shared data, it is expected that it will be easier to manage the data if we take it and write it on a table separately.