CS533

HW2: Distributed Synchronous Value Iteration

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1.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Map size 8 | Map size 16 | Map size 32 |
| sync-vi-v1 | 1.3059 | 27.32368 | 701.52679 |
| sync-vi-v2 | 0.38804 | 2.56258 | 24.95231 |
| dist-vi-v1 | 10.95833 | 82.51746 | 1392.60135 |
| dist-vi-v2 | 1.651949 | 4.30523 | 17.14339 |

2.

3.

In the first distributed method, each worker would be assigned a task after they finish the previous one. This can be seen like we assign four (number of workers in the program) tasks to them in one loop and keep looping this process. In each loop, we need to keep “ray.get( )” to trace the work who has finished his job and assign a new one to him. This whole process is inefficient. On the other hand, in the second distributed method, we have separated all tasks (states) into four set. So, each worker may just do their set (in parallel). And, once all the sets are finished, “ray.get( )” the result and end the program.

4.

According to the result above, we can figure out that the advantage of distributed method is when the input data (number of state) is getting larger, its performance may have significant improvement. So, we think distributed method is better