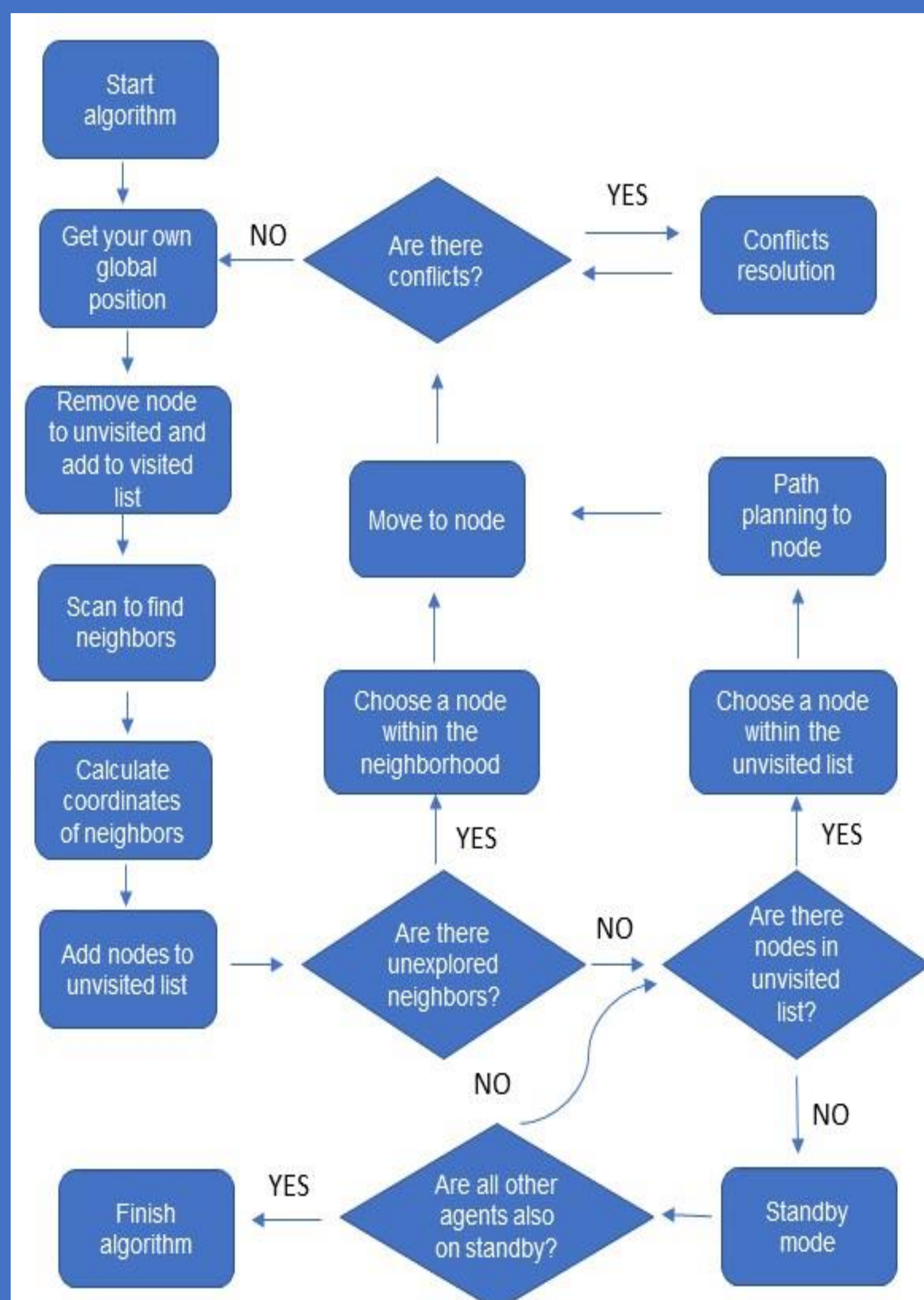




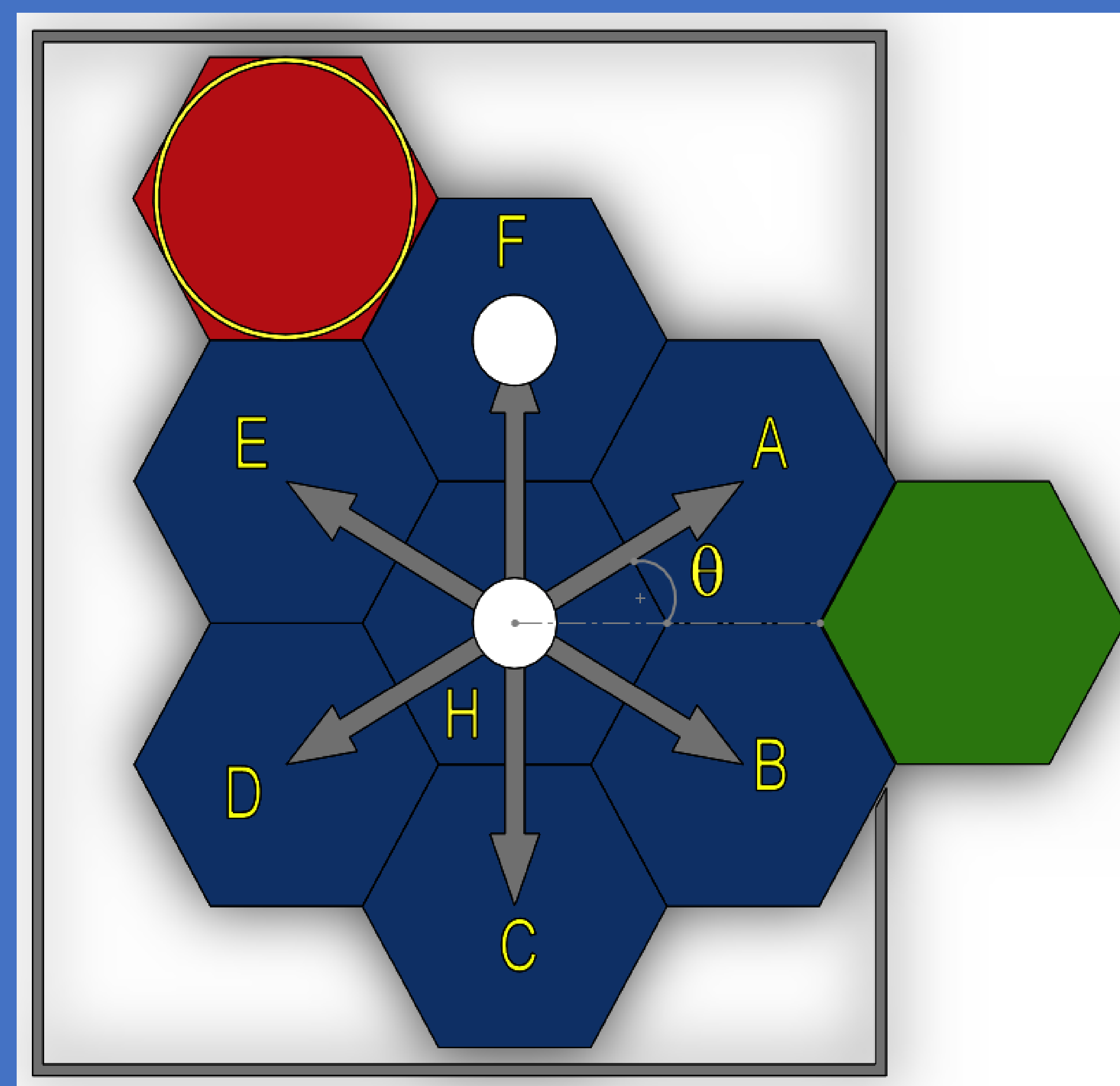
## Abstract

Swarm robots are an important area of mobile robotics inspired by the collective behavior of animals for the execution of activities and, using this premise, the present work aims to present a swarm robotics algorithm for topological mapping of environments. A comparison was made with another article in the literature that presents a similar technique, where it was possible to see an improvement in performance in the proposed parameters. An assessment of closed-loop control was also carried out, using a proposed evaluation metric, which showed a minor impact with the increase in the number of agents, and in smaller environments.

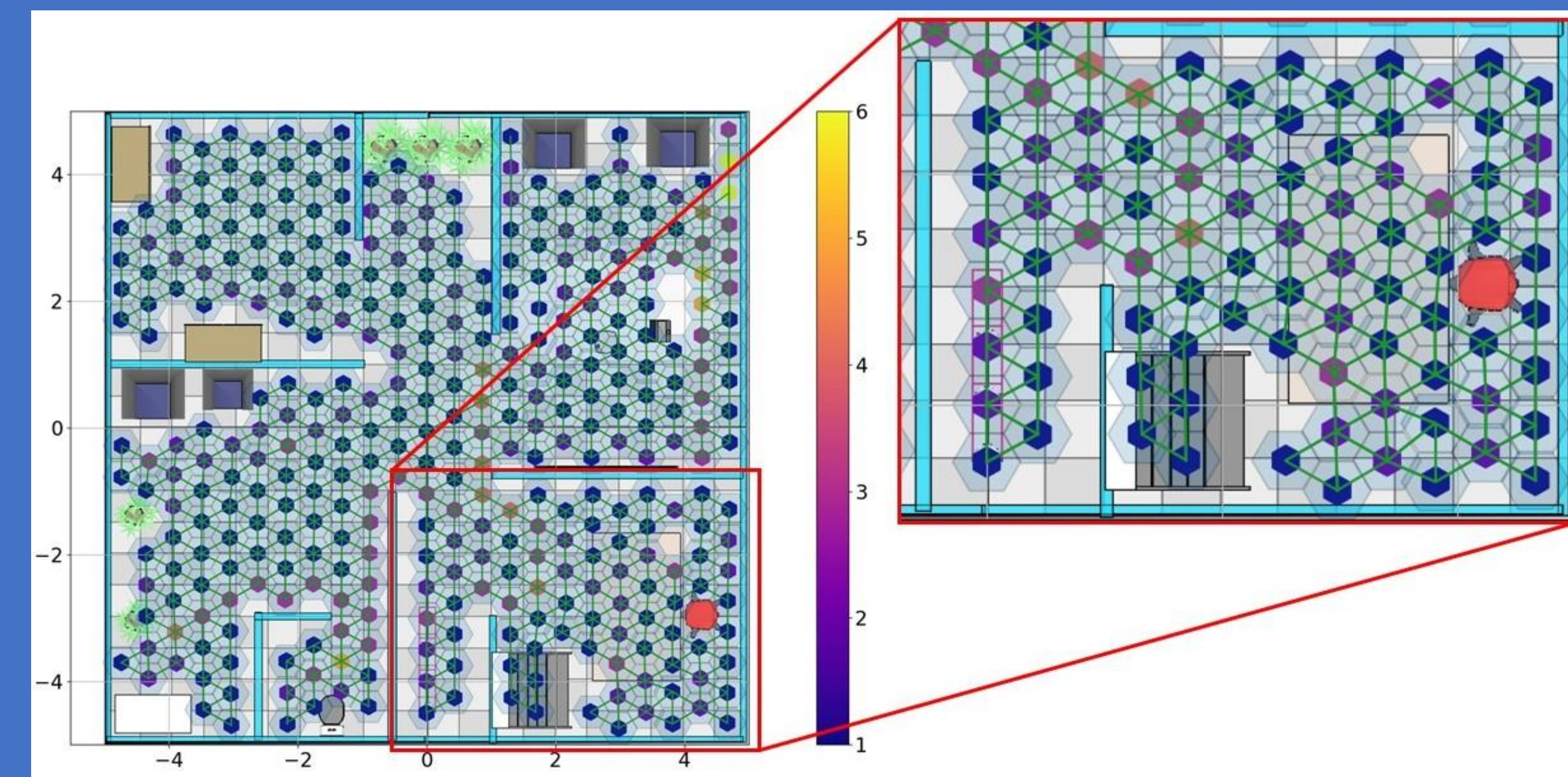
## Main Algorithm



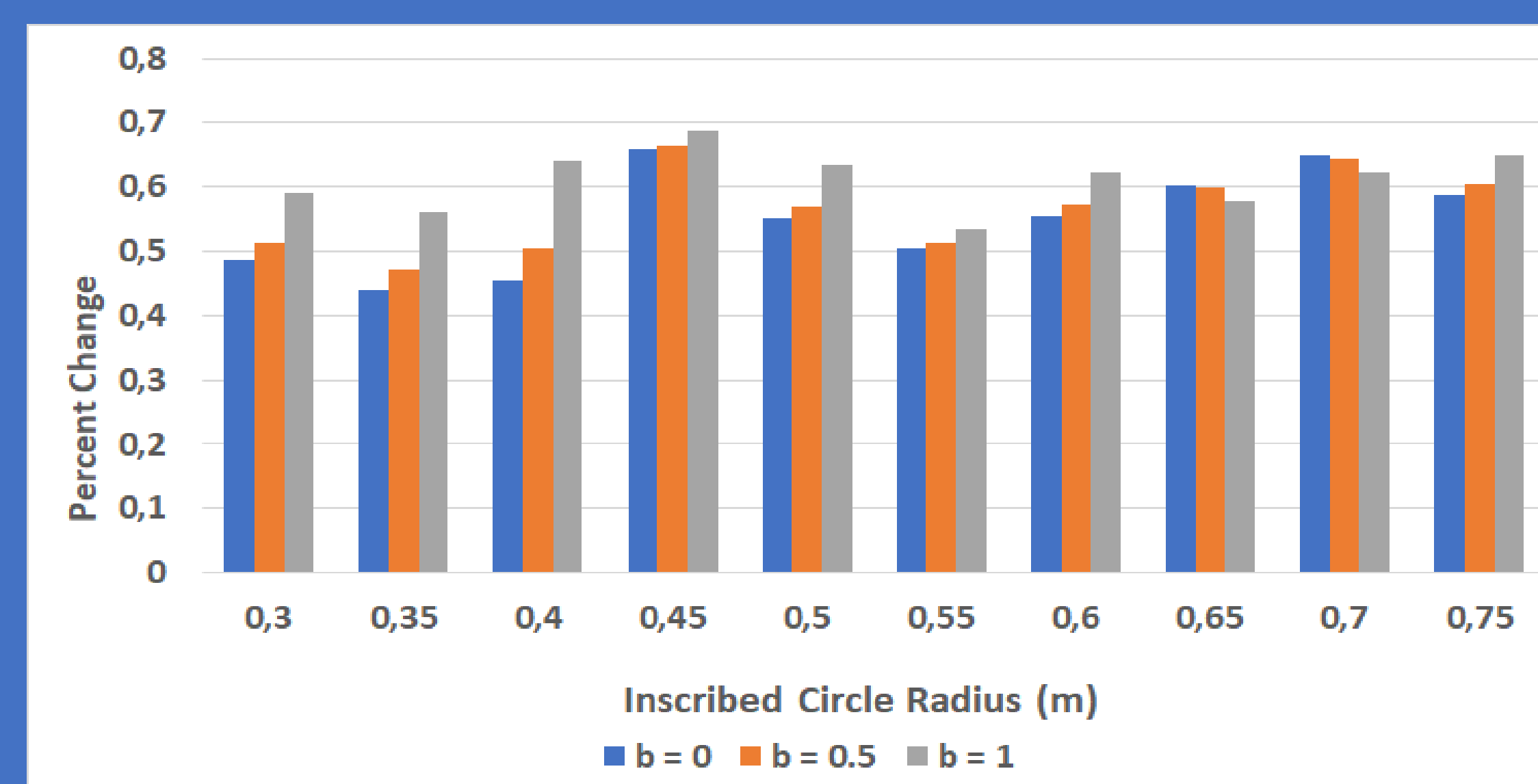
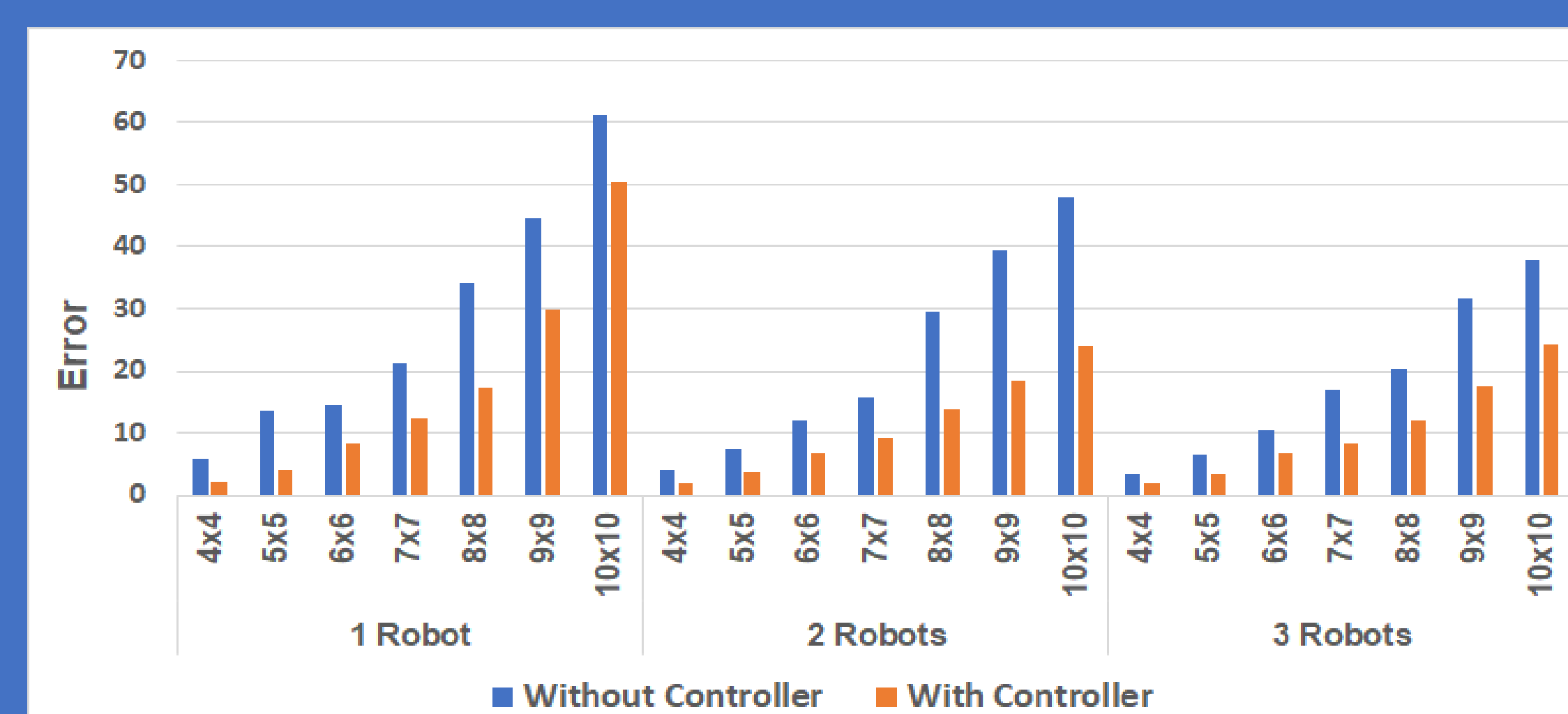
## Movement Premisses



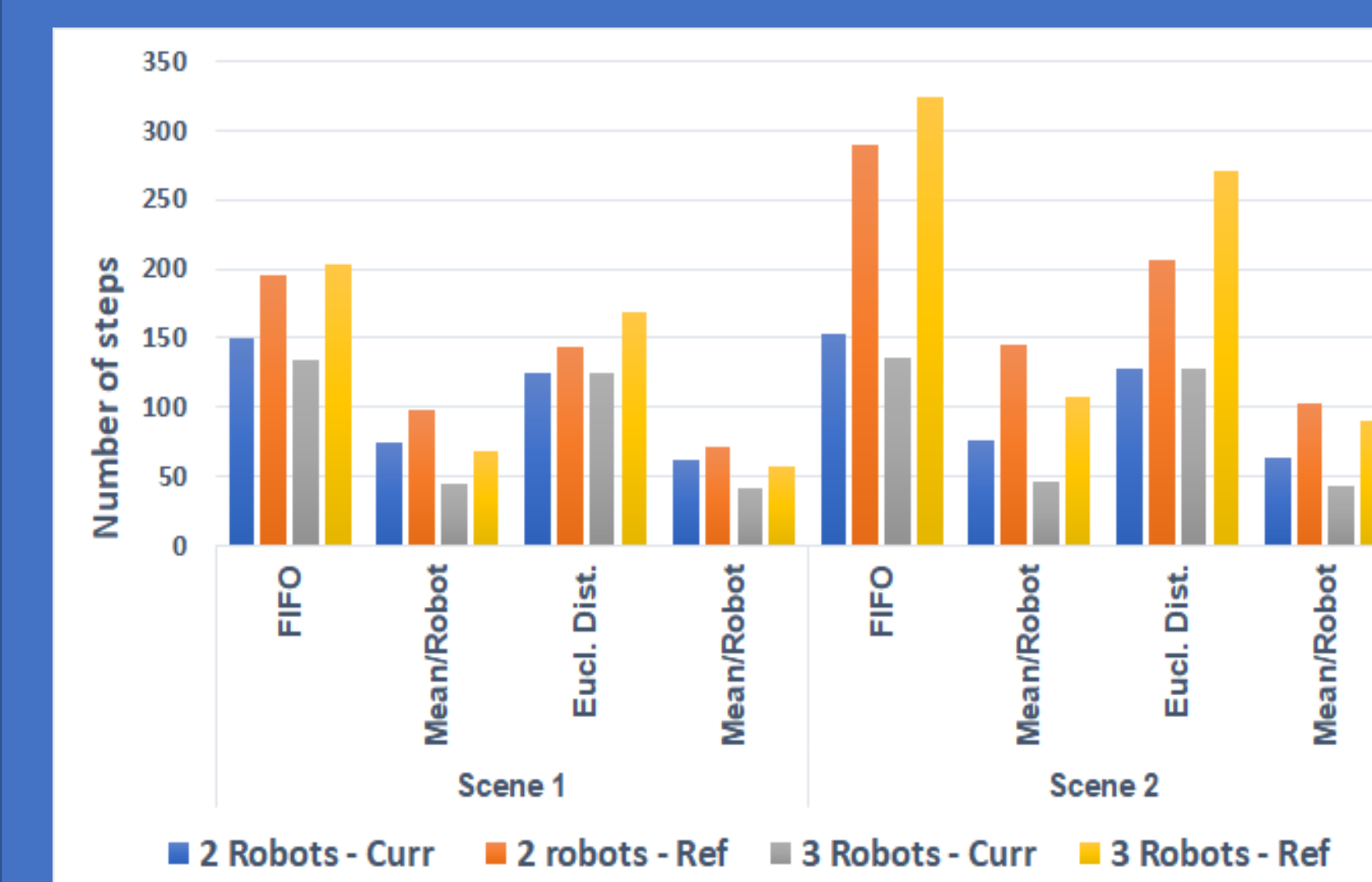
## Preliminary Evaluation



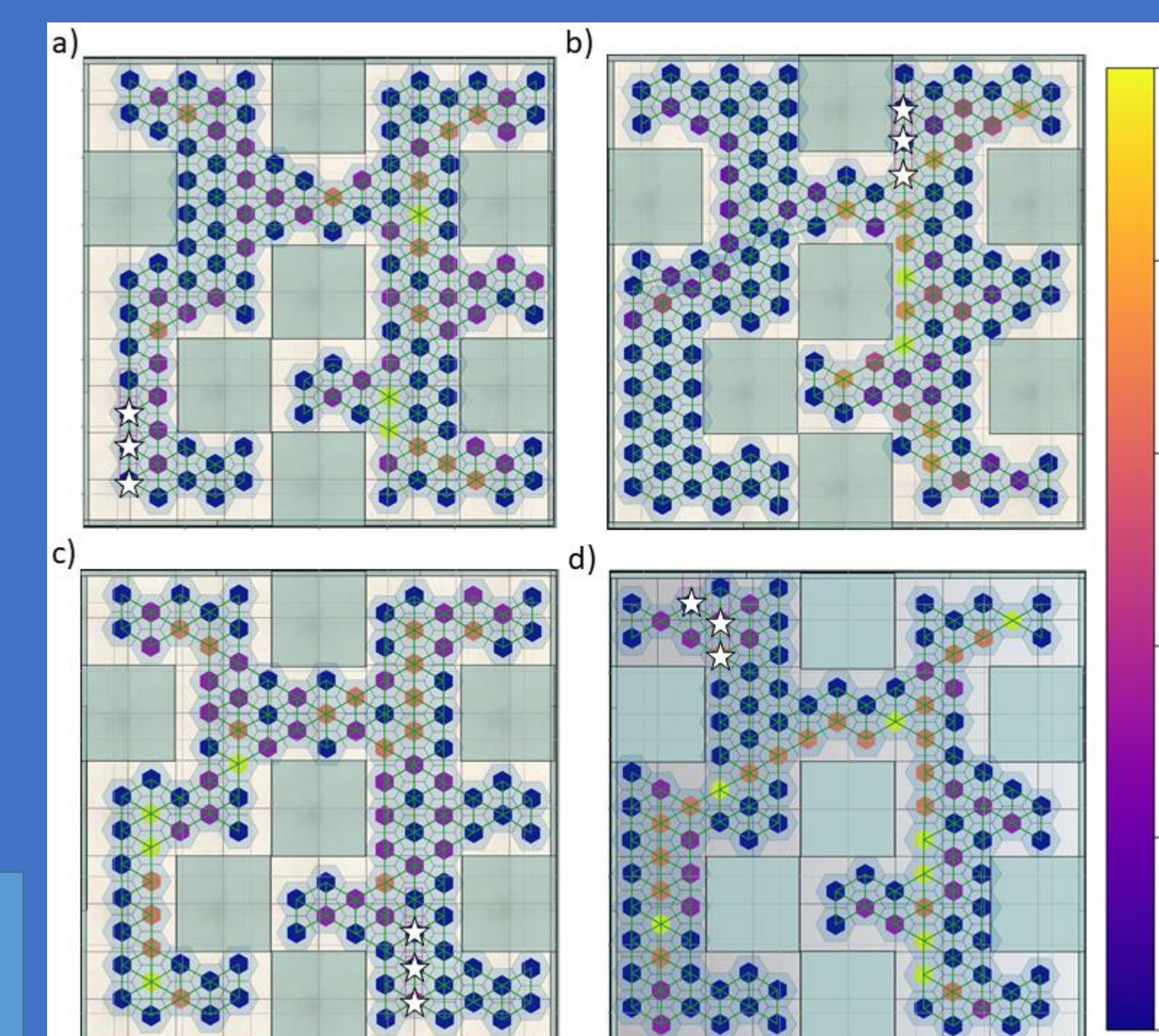
## Movement Control Evaluation



## Comparison to the literature



## Influence of starting position



## Conclusions

In the present work, was possible to conclude, after analysis, that the present implementation was very efficient in terms of computation steps when building the maps, which points to a good perspective regarding the power consumption of robots. The discussion on motion close-loop control showed the importance of relying on it for efficient map generation and, associated with that, revealed that it benefits hugely as the environment grows, which might be measured based on the evaluation metric proposed. A future study must follow in the direction of creating new motion rules to maximize the collaboration, with each robot exploring a different micro-region, which shows promising results in preliminary experiments realized, reducing the number of steps moved, reducing conflicts, and maximizing agents parallelism. These results are being prepared to be presented in a periodic.