

# MOBILE ROBOT DECISION MAKING USING BEHAVIOUR TREE

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## ABSTRACT

*In this study, we used the BT as a mobile decision-making system for mobile robots to investigate whether the proposed system is accurate, and whether there is a significant difference in the performance of the system in the simulation and in actual environment. A robot soccer system was used as a test bed for this study to confirm the accuracy of the execution of the behaviours and task performed in both ideal and experimental environments. The method consists of behaviours suited for different cases. The experiment includes success rate measurement on the execution of the behaviours as well as the task completion in both actual and ideal environment. The proposed method was able to execute the behaviours with a 100% accuracy rate for positioning and defense behaviours and a 60% accuracy rate for shooting and obstacle avoidance behaviours. The task completion which involves the presence of opposing team robots, it has an average of 75% success rate achieved in simulated test while an average of 41% success rate achieved in the actual environmental test. The robot was able perform accurately the behavior formulated. The results also show a significant difference in the performance rate between the simulation and the actual experiment.*

**Keywords:** Behaviour Trees (BT); Soccer Robot; test bed;

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