

## **Differential steering control for an autonomous mobile robot: a preliminary experimental study**

### **Abstract**

In this paper, we present the first stage of a study in reducing errors occurred during the trajectory tracking by a nonholonomic mobile robot forwarding to a stable-target point. A preliminary experimental study is very important in order to verify the both velocity of DC motors with and without control the Pulse Width Modulation (PWM) for DC motors which control the velocities of left and right wheels of the mobile robot. Before any navigation control algorithm can be developed for navigate the mobile robot move in straight line to the stable target, both wheels should be set to move with the same velocity. From these preliminary experiments, we found that the PWM for left DC motor must be set higher than PWM for the right DC motor in order to achieve the least different velocity of both wheel. These PWMs setting for both DC motors then tested with a simple proportional control algorithm to verify effectiveness of selected PWM value for both DC motors in mission to navigate the mobile robot to the stable-target.

**Keywords** — Differential steering, autonomous mobile robot, preliminary experiment