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Two Wheels Differential Type Odometry for Robot

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Abstract : This paper proposes a new type of two wheels differential type odometry to estimate the next position and orientation of mobile robots. The proposed odometry is composed for two independent wheels with respective encoders. The two wheels rotate independently, and the change is determined by the difference in the velocity of the two wheels. Angular velocities of the two wheels are measured by rotary encoders. A mathematical model is proposed for the mobile robots to precisely move towards the goal. Using measured values of the two encoders, the current displacement vector of a mobile robot is calculated by kinematics of the mathematical model. Using the displacement vector, the next position and orientation of the mobile robot are estimated by proposed odometry. Result of simulator experiment by the developed odometry is shown.

Keywords : mobile robot, odometry, unicycle, differential type, encoders, infrared range sensors, kinematic model
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