ABSTRACT

In the current development of the robotics world, it is developing rapidly. Because the role of robots can help the role of humans. Self-Balancing Robot Technology (SBR) is a technological robot that can balance itself against the horizon by utilizing the momentum wheel (momentum wheel) whose axis is attached in line with the robot's balance axis. By utilizing PID control (Proportional, Integral, and Derivative) to control the DC motor and be able to balance the robot.

In this research, a prototype tool will be made to assist the task of the human leg as a support for a two-wheeled vehicle. This tool has the ability to balance a prototype robot, a two-wheeled vehicle to be perpendicular to the horizon, this tool is commonly referred to as Self-Balancing Robot (SBR). In robot research using the PID (Proportional, Integral, and Derivative) control method to help the momentum wheel (axle wheel) with the robot remain upright to the horizon. The force generated to balance comes from the wheel rotation which comes from the torque generated by the motor. The motor must have a large torque, robot balance. This two-wheeled robot can stand upright using the MPU6050 sensor. This sensor can help in finding the angle of view, the tilt can always stand perpendicular to the orientation of 90 degrees to the horizon. However, the design of the momentum wheel combined with the MPU6050 has never been implemented in Indonesia. Therefore, this final project will try to implement the MPU6050 sensor in controlling the self-balancing robot using PID control and momentum wheels.

Keywords: Self-Balancing Robot, PID Control, Momentum wheel, MPU6050