

IMPLEMENTATION OF PID METHOD IN HUMAN FOLLOWER DESIGN ON ARDUINO BASED AUTOMATIC TROLLEY

Dimas Rizky Andrean

*Electrical Engineering Study Program, Faculty of Science
& Technology*

*University of Technology Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta*

E-mail : ariskyandre@gmail.com

ABSTRACT

Automatic control systems are increasingly gaining attention in various fields, including the development of autonomous mobile robots. This final assignment discusses the implementation of the Proportional-Integral-Derivative (PID) method in the design of a human follower on an Arduino-based automatic trolley. The main objective of this research is to produce a system that is able to maintain the distance between the trolley robot and the user at the desired set point value, in this case 30 cm. This research consists of several stages, namely analysis of the trolley's mechanical design, development of an electronic system using the Arduino platform, implementation of the PID algorithm, as well as testing and evaluating system performance. The mechanical design of the trolley includes selecting appropriate materials, designing distance sensors for user detection, and a wheel structure that allows optimal mobility. The electronic system uses Arduino as the main brain which integrates data from distance sensors and applies a PID algorithm to produce precise control signals. The PID algorithm is adjusted and regulated to suit the movement characteristics of the trolley as well as its response to changes in distance to the user.

Keywords: *Trolley robot, Arduino UNO microcontroller, PID control method.*