

***AUTOMATIC SORTING SYSTEM ON OMNIDIRECTIONAL CONVEYOR
BASED ON RASPBERRY PI AND QR CODE***

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ABSTRACT

The rapid growth of e-commerce in Indonesia has increased the demand for efficient package distribution, while manual sorting processes remain prone to human error. This research designs and builds an automatic package sorting system on an omnidirectional conveyor using Raspberry Pi 5 as the main controller, QR Code scanning via webcam with PyZBar library, and three conveyor cells each controlled by an ESP32 microcontroller communicating via I²C protocol. Testing results showed that after camera exposure parameter adjustment, the QR Code reading success rate improved from 10% to 100%. All I²C commands were successfully executed, proximity sensors detected packages consistently, and the routing system correctly directed packages to all destination boxes including an automatic reject mechanism for unrecognized data. The system effectively minimizes human error and improves sorting efficiency in expedition services.

Key words: *Automatic Sorting, Omnidirectional Conveyor, Raspberry Pi, QR Code, ESP32, I²C*