



Warehouse Inventory Management System

UNDERGRADUATE THESIS

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Sarjana Komputer (S.Kom.)**

By:

ZULFIKAR AHMAD ALIANSYAH

001202200100

FACULTY OF COMPUTER SCIENCE

INFORMATICS STUDY PROGRAM

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Zulfikar Ahmad

ABSTRACT

In industrial 4.0, inventory management plays an important role in ensuring the efficiency of production workflows in industrial environments. However, many warehouses still rely on manual inventory management processes which are prone to human error, inefficiencies and less operational productivity. These problems can lead to delays, stock inaccuracies, and production line interruptions. All these issues can make the business become problematic and make stakeholders unable to expand more advanced.

To overcome this obstacle, this project introduces “Warehouse Inventory Management System”, a digitalization system of warehouse management that can help stakeholders to manage their inventory with integrating semi automation, real time monitoring, and user-friendly dashboard. This system architecture aims to solve the gap in conventional methods by introducing a connected smart conveyor system with load cell sensor, and machine learning object detection with YOLO algorithm approach which has a good performance to track products in real time.

By providing an advanced approach with implementing trustworthy architecture, the proposed Warehouse Inventory Management System successfully transforms conventional warehouse inventory management workflows into modern and efficient processes. It reduces the risk of human error, enhances operational visibility, and improves efficiency through intelligent stock tracking and real-time inventory integration.

Keywords: *Warehouse Management System, YOLO, YOLOv11, Machine Learning, Artificial Intelligence, Object Detection, Internet of Things, Load Sensor, Smart Warehouse Management System*

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