Wire Color Sequence Detector

Deadline: 15 April, 2024 (Monday)

INTRODUCTION

In industries where wiring harnesses play a crucial role, ensuring correct color sequence and terminal insertion is paramount. However, manual inspection is prone to errors due to fatigue and inconsistency. Therefore, there is a need for an automated solution to accurately detect and validate the color sequence and terminal insertion of flat wire harnesses.

DOMAIN

This project falls under the domain of automated quality assurance and inspection systems, specifically targeting the automotive, electronics, and manufacturing industries where wiring harnesses are extensively used.

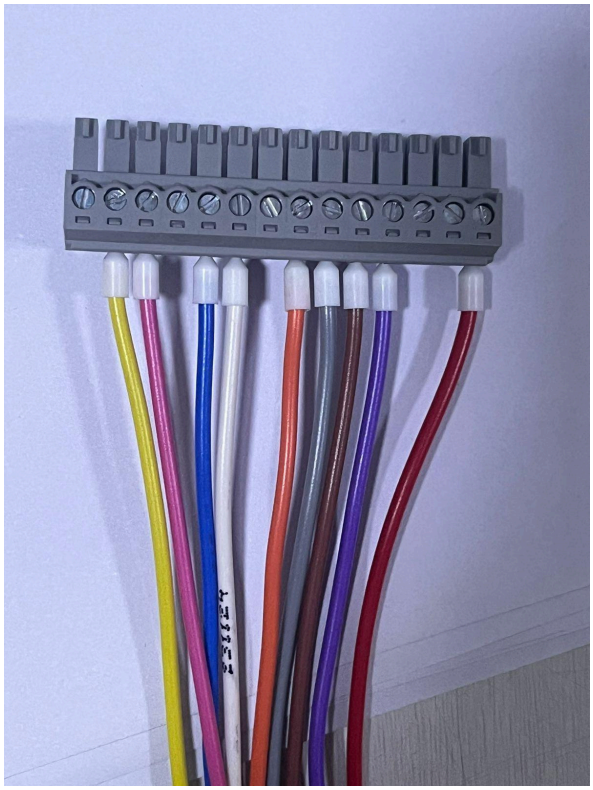
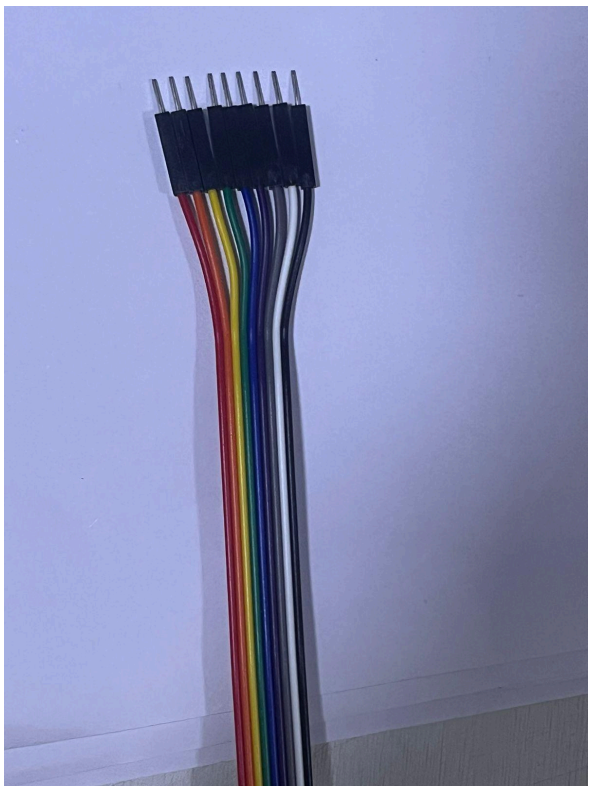
DESCRIPTION

The objective of this software solution is to automate the inspection process of flat wire harnesses to ensure correct color sequence and terminal insertion.

1. Automatic Color Identification: Utilizing vision technology and intelligent algorithms, the system automatically identifies the color of each wire in the harness and determines if the sequence complies with preset standards.
2. Terminal Insertion Detection: The software automatically judges whether the wire terminal hole is inserted correctly or not.
3. Fault Localization: In case of a deviation from the correct sequence, the system automatically displays the position of the faulty wire and provides an audible alarm prompt.
4. Trigger Mechanism: The system automatically triggers the inspection process once the material is stable, eliminating the need for manual intervention like foot switches or IO inputs.
5. High Detection Accuracy: The software ensures high detection accuracy, capable of eliminating interference from printed characters on the wire's surface and accurately distinguishing the color line sequence. The detection time per piece is less than 0.2-2 seconds.
6. Flexible Placement: There are no strict placement restrictions for the harness within the inspection frame, providing flexibility in positioning.
7. Ease of Use: The software is designed to be user-friendly, allowing for easy replacement of the material under test.

Conclusion

This documentation outlines the software problem for an automatic 2-line flat wire color sequence detector, addressing the challenges faced in manual inspection processes. With its advanced features and capabilities, the system aims to streamline the quality assurance process, ensuring 100% correctness in wiring sequences while improving efficiency and reducing errors.

References

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