IMAGE PROCESSING SOLUTIONS FOR EQUIPMENT TESTING IN AUTOMOTIVE INDUSTRY

Goal of the project

The main goal of the project is to design and implement image processing solutions for equipment testing in the automotive industry. The project was divided into two themes, each one having as final result a functional experimental model. The themes are: fault detection using image processing and counting modules using image processing.

Short description of the project

1. Fault detection using image processing

The developed experimental model represents a low-cost hardware-software solution, based on image processing, that detects faults (e.g. pins, connectors, clips) on specific boards.

The main implemented functions are:

- Detection of wrong clips disposal or damaged clips;
- Detection of cracks on boards;
- Detection of crooked pins;
- Detection of missing pins;
- Detection of extra pins;
- Reporting of the whole process;
- Collecting and marking faults, data aggregation on the master equipment, creating logs, user and board selection, debug procedure, etc. within the graphical user interface;
- Managing existing boards configuration;
- Learning new boards configuration;
- Reading barcodes;
- Data exchange between the four micro-computers and communication with the higher-level traceability application.

2. Counting modules using image processing

The goal of the experimental model is to provide a solution, based on image processing, for counting the boards placed by the operator in a packaging box, after the process of testing correct pins/parts/connectors disposal. The developed hardware-software system is also providing a solution for relevant data integration in a higher-level traceability application and to store relevant images over a prescribed period.

Project implemented by

University Politehnica Timisoara,
Department of Automation and Applied Informatics

Implementation period

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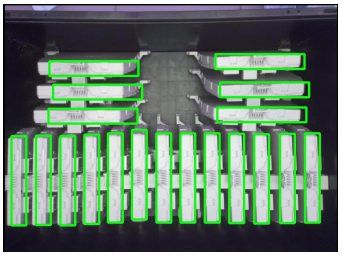
Results

1. Fault detection using image processing

The developed experimental model was tested and validated in several scenarios. The developed experimental stand is depicted in fig. 1, and fig. 2 shows the four micro-computers and cameras mounted within the experimental model.

2. Counting modules using image processing

The developed experimental model was tested and validated in several scenarios. The resulting image of one full packaging box, after boards detection and counting using the developed solution is depicted in fig. 3.



Research team

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