

# Label Classification

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## Client

Our client is a leading company in the packaging industry. It was established in 1983 and headquartered in Bangalore, Karnataka. It has seven manufacturing plants located in Baddi,

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Pantnagar, Guwahati, Manesar, and Karnataka, which has over 5,000 employees. The estimated revenue is Rs. 1,100 billion.

## Problem Faced

Identifying the positioning of the labels on plastic caps has been a difficulty our client was facing because of human error and limited accuracy. These results in an increase in the inspection cycle time. The removal of manual inspection of labels and an automate the whole process was the primary concern.

## Technology introduced by Qualitas

Deep Neural Network helps in optimal decision-making with highly accurate results for image processing. Processing of images without DNN operates by comparing the captured image to its master image. Since there is no robust and accurate algorithm, the classification of labels becomes complex for rule-based image processing solutions. But with Deep learning's best algorithm this complex classification can be achieved. An area scan camera is used with an appropriate Field Of Vision (FOV) so that the images taken are sharp and clear.



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## Solution

- The labeled caps are moving on a Conveyor of a labeling machine.
- A high-resolution area scan camera fitted with a lens will be mounted at the top to capture the alignment of the label.
- The presence of the cap is sensed by the sensor and the trigger is generated for the image acquisition.
- Acquired images are processed in GPU based PC by using Deep learning models for defect detection (pre-trained).
- Captured images are displayed on custom-built UI. Also, the signal is given to PLC whenever the defect is detected so that the rejection mechanism will push the defective cap into a separate bin.

## Images

<i>Captured Image</i>	<i>Captured Image</i>
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## Results

According to the trials conducted on-site, results were extremely accurate and we were able to fulfill the requirements.

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