

CASE STUDY

SKU COUNT IN THE PALLETS USING AI-BASED MACHINE VISION SYSTEM TO ELIMINATE COUNTING ERRORS

CLIENT/INDUSTRY BACKGROUND

Our client is a niche management consulting firm focused on helping organizations solve business problems through technology & process solutions. As seasoned professionals having diverse industry, solution, and product experience, they pride themselves on being effective business liaisons.

CLIENT'S PROBLEMS

1. The manual counting of the SKUs is very time-consuming. It takes 20-25 seconds to count all the SKUs placed on the pallets.
2. The SKUs were miscounted due to manual inspection and the percentage of miscounts was 20-22 percent.

PROBLEM IMPLICATIONS

If the inspection is not performed correctly, there could be inventory mismatch issues

CLIENT REQUIREMENTS

1. To count the number of SKUs on a pallet as it's being transported to a centralized warehouse, identify mismatch of pallet contents and check for presence/absence of pallet separator.
2. Identify different criteria at once like the layer separator, number of SKUs, and identifying mismatch in SKUs.

CURRENT PROCESS

The process is being done manually which is a very time-consuming process requiring a lot of labor and there is a significant scope of error as well.

SOLUTION USING MACHINE VISION

Four machine vision cameras are used for successfully capturing images of each of the 4 sides of the cartons. Each of the 4 images would be processed using a Deep Learning based processing module which would identify the number of tubs/pails present in each layer. The results of all 4 images would be interpolated to arrive at the total count.

- **Object detection techniques are used to** count the total number of SKUs in a pallet and identify the layer separator.
- **Classification techniques are used to** look for mismatches of pallet contents.

IMAGES



CONCLUSION

With the Machine Vision System deployed the following were observed -

1. The accuracy of counting was 100 percent which helped our client to track inventory.
2. 100 percent accuracy was achieved in classifying the variants.
3. The cycle time was reduced to 0.5 seconds led to fast delivery to the customers



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