

MINI PROJECT

Introduction

Currently, many manufacturing factories need to automate product counting and identification, such as:

- Production lines in the factory
- Product classification/packaging lines of logistics companies
- The process of importing/exporting warehouses, buying and selling products of supermarkets, etc.

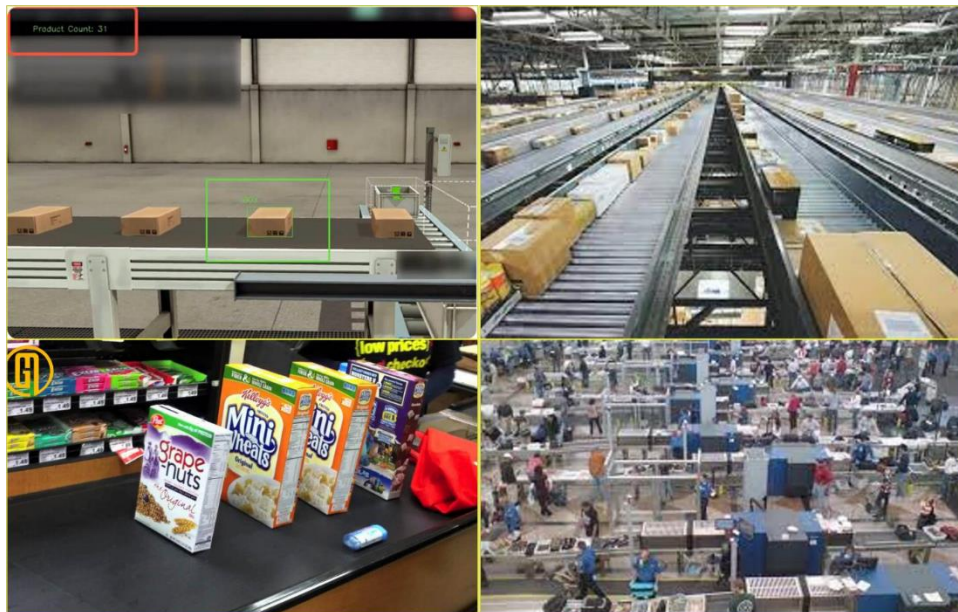


Figure 1: Several product conveyors in the factory.

Problem description

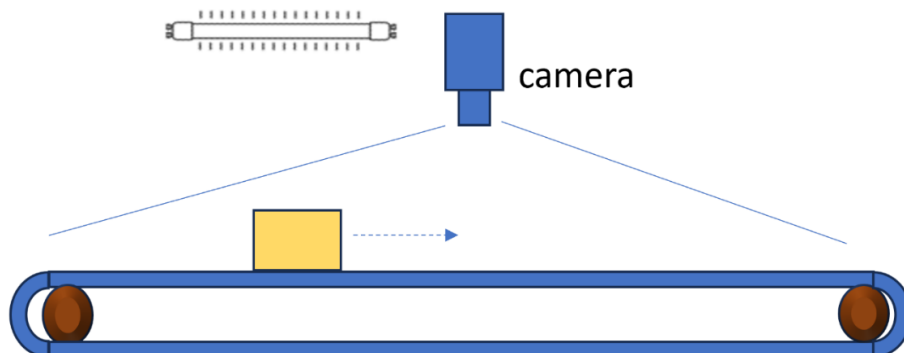


Figure 2: A simple conveyor system

In figure 2 we show a simple conveyor system, consisting of the following components:

- Conveyor belt
- The camera is fixed above, looking down at the conveyor belt.
- Objects are confectionery products.

The following data will be provided for investigation:

- Image data of the objects
- Video data (video files) of objects moving on the conveyor belt.

Our goal (*):

- (1) Classify objects moving on the conveyor belt
- (2) Count the number of each class
- (3) Display results on screen (**)

(**) We show you a simple interface as below. It would be nice if the detection bounding boxes were displayed too.

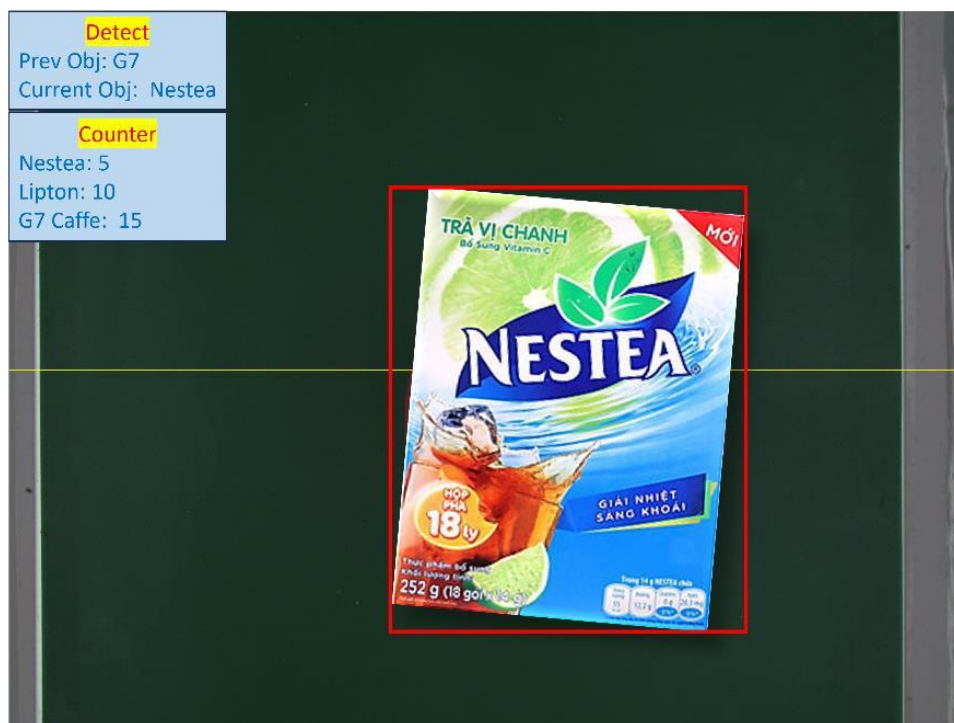


Figure 3: A simple interface.

Detail requirements

Index	Requirement	Notes
1	Achieve the above goals (*)	After implementation, some videos will be provided during the review session to test and evaluate the solution.
2	Present the proposed solution	<p>Presentation slides should include the following basic items:</p> <ol style="list-style-type: none">1) Pose the problem: Describe and analyze the problem requirements (how difficult and challenging)2) System proposal: Overview of the proposed solution (e.g. what modules are included)3) System details: Technical description of the implemented modules4) Testing and Evaluation: Show test results and analyze5) Conclusion6) Directions for further improvement (if any).

Timeline & Evaluation

- Project statement: 31/10/2024
- Work assignment:
 - Each group has 2 people to implement mini projects
- Project review: 15 ~ 17/11/2024
 - All groups present methods, implementation and results
 - Evaluation:
 - Evaluate project results
 - Evaluate the presentation
 - Others: teamwork, discussion, new techniques, ...
 - The evaluation scale is as below: