Capstone Project

**Project: Amazon Distribution Center**

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# Definition

## Project Overview

This project addresses a use case in Amazon logistics which is the number of items per bin. A solution to use case can leverage problems like orders assignments (is the number of items per order, correct?) or stock planning.

The proposed solution is an endpoint deployed in SageMaker. This endpoint is going to process images of the bins and it is going to respond with the number of items per bin. To do so, a computer vision model is trained and deployed. But before this step, the data is processed, analyzed, and finally ingested to a production machine learning model.

## Problem Statement

The project and business need are very clear.

* Incorrect number of items per bin means incorrect order fulfillment and therefore low customer satisfaction.
* Incorrect number of items per bin means that items stock imbalance which means logistic costs and time.
* The strategy and means to deploy a solution are doable. Using Sagemaker capacities and photos coming from the warehouse machines, it is possible to deploy an end-to-end computer vision solution based on data.

## Metrics

For this specific challenge precision is very important. The metric choice is accuracy which means the general percentage correct prediction of items per bin.

# Analysis

## Data Exploration

## Exploratory Visualization

## Algorithms and Techniques

## Benchmark

# Methodology

## Data Preprocessing

## Implementation

## Refinement

# Results

## Model Evaluation and Validation

## Justificatiion