Princess Sumaya University for Technology
Department of Data Science
Pattern Recognition Project - Fall Semester

# Barcode Detection

**Prepared By:**
Alksandra Aljabery 20200129
Sondos Ali 20200438
Azd Al-hasan 20200345

**Instructure:**

Dr. Ahmad ALzghoul

## 1. Problem Statement

This project aims to detect barcodes found on any product using a pretrained model. In order to prevent shipping error, drive up efficiency, and assure brand integrity, barcode reading technology is needed. A product's Universal Product Code (UPC) code is a set of black bars used to identify it. Expiration dates, country of origin, and batch numbers are just some of the information that may be found in a barcode.

Application of detecting the barcode of specific products:

1) Inventory Management: this could be used for different areas such as retail and sales and healthcare(pharmacy/ hospitals).
2) Library and document management: many libraries use barcodes to manage and track books, as well as document archiving where they check if the book is out or in.

## 2. Data Description:

In this project, a pretrained model is applied to a real-time video captured from a local webcam. The process begins with capturing a video from a webcam and if a barcode appears during capturing, a rectangular box around the detected barcode must be shown with its accuracy.

## 3. Proposed Methods

YOLOv3 model is a pretrained model that can be used to detect a barcode. The YOLOv3 model is found in the DensNet deep neural network model for the detection task, as it is pre-trained on 1000 classes from the ImageNet dataset.
To detect a barcode found in an image we need to do the following:
1) Load the class names text file and extract the required labels.
2) Load the pre-trained neural network model. In this project we will use the YOLOv3 pretrained model.
3) Load and prepare the image to be in the correct input format for the deep learning model.
4) Make prediction: forward propagate the input image through the model and obtain the outputs.
5) Visualize the result.