Image Classification

FOR ONLINE MARKETING CAMPAIGNS

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Introduction

Say there is an online store that would like to target customers that exist online

- .With AI and the customers online accounts and profiles we could create a real-time recommendation marketing campaign.
- Shared images on social media may provide a significant amount of information of customer preferences in real time.

The project

Using Deep learning, we were able to create a recommender system Model that classify images, to identify Specific Items in a picture.

This can be integrated with other applications and website to make a powerful classification based of interests.

This will:

- Maximize marketing efficiency.
- Reducing cost.

The tools

- **Pytorch:**

  Using Pytorch library (behind the scenes) that was modified to use GPU for faster computation of deep learning.

- **FastAI:**

  An open-source library used for Deep Learning, that offer many trained models and image utilization tools.

  Built on Pytorch.

- **Resnet34/Resnet50:**

  A pretrained Image classification Model using that offer different layered Neural networks.(used 34 and 50)

- **Beautiful soup library:**

  Used BS to scrape the web for images to train/tune the last layer of the Model.

The approach

1) Scraped the net for a chosen 5 Classes of items to tune our model.

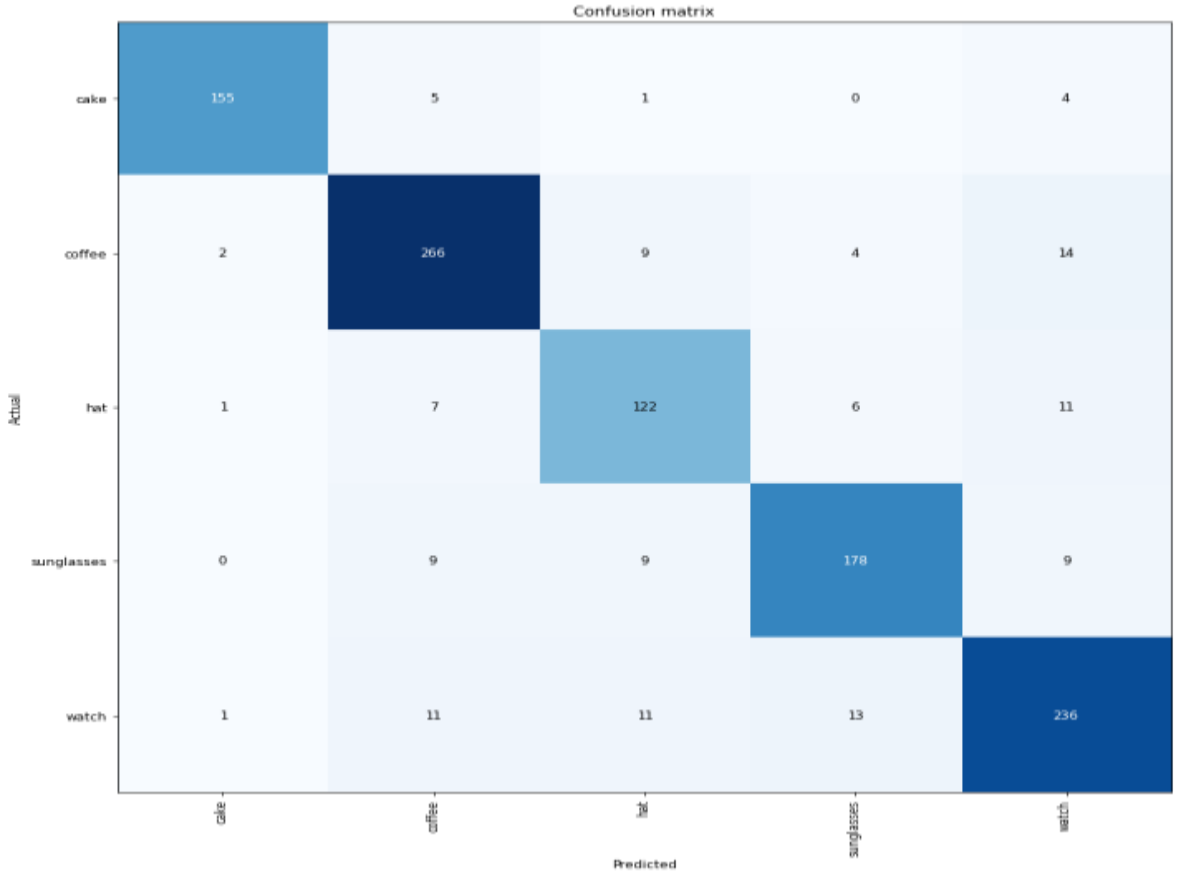
Watches	Sunglasses	Hats	Coffee	Cake
1,301 images.	1,129 images.	804 images.	1,443 images.	802 images.

2) Used Resnet34/50 models with their 100k+ images.

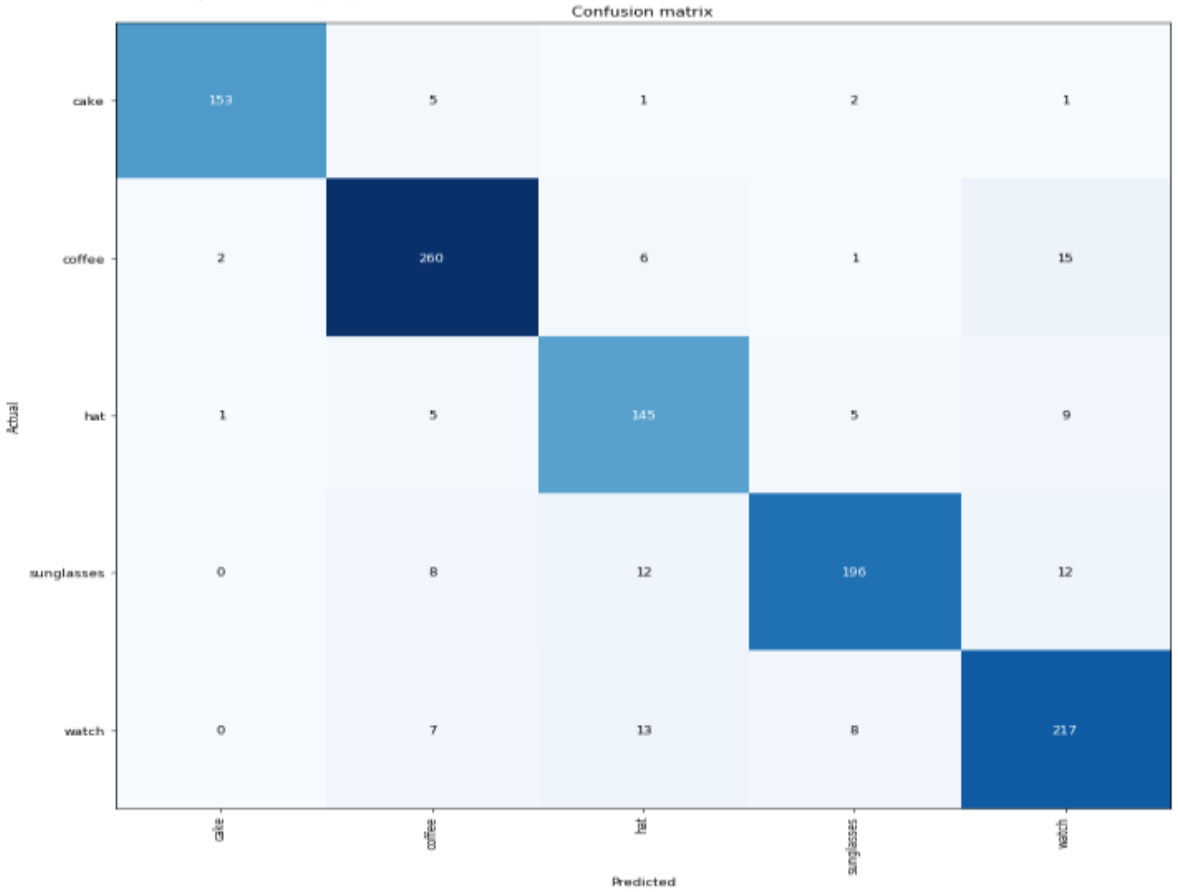
3) Trained the last layer of the Model with my own scraped images.
   - Changed image sizes to 224.
   - Batches = 8.
   - Epochs = 4, *and an additional one later*.

Resnet 34 Vs Resnet 50

RESNET34



RESNET50



The results

- Both models did astonishingly, with 50 doing a better job. *(see confusion matrix before)*

  Note that the diagonal line was darker (pred/actual)

- However, the time that 50 layers took to train was much higher that the 34 layers.

- In the end new images were tested manually.
  - the 50 layers model got all right.
  - The 34 layers model miss-classified once.

Thank you