Fruit Recognition

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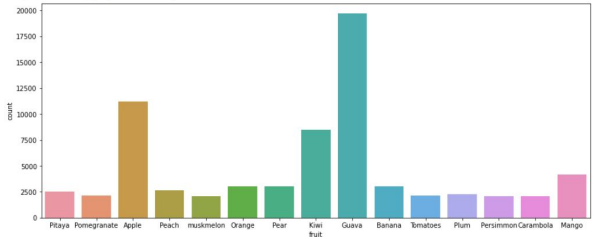
Introduction

The problem that we attempted to tackle was accurately recognizing fruits based on images, which were taken over a 6 month period. To solve this problem we used a Convolutional Neural Network model. We also created a classical machine learning model for comparison of results.

Data

The data used for this analysis contained 44,406 images with 15 different fruit labels. images were taken with different poses, number of fruit, same color but different fruit, different color - same category, and different lighting conditions. We also reduced the amount of images by randomly removing images from each category.



Results

	SGD	CNN	RBM
Color	0.77	0.98	
Grayscale	0.74	0.99	0.33

Conclusions

- The deep learning model (CNN) performed better than the classical machine learning model (SGD classifier)
- Little difference in accuracy between color and grayscale
- After converting to grayscale we used RBM to reduce the data
- Grayscale and color models were very similar. There is likely differences in how the dataset was randomized and split for sets between the different models.
- We attempted PCA analysis; however, given the our resources the notebook kept crashing