Calories From Food Images

The Capstone Plan

Overview & Problem Statement

- Nutrition is crucial for mental and physical health

- Counting calories and tracking nutrients can be complicated

- Highly individual

" There is great opportunity for a machine learning model to provide calorie estimations of foods from images. "

Project Vision

01. Preprocess Data & Augment Images

02. Modify a pre-trained CNN model (MobileNet/Inception)

03. Classify item & segment thumb to estimate calories

04. Deploy a simple website

Impact

Poor Nutrition Increases Risk of:

- Type II diabetes, Heart disease, Stroke & Cancer

Optimal Nutrition Increases:

- Ability to achieve fitness goals, mental & physical health
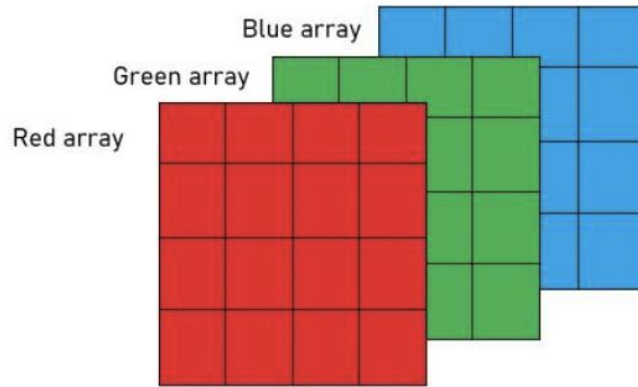
Potential Users:

- Vegans, athletes, over/underweight, education & sustainability

Dataset

How do you represent a JPEG file so that you can feed it into a CNN model?

NumPy Arrays

Dataset
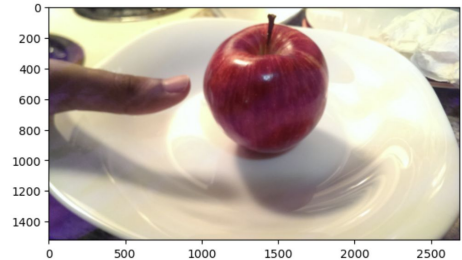
17 Unique food classes

3 Mixed food classes

3828 JPEG files

All loaded into a single dictionary as NumPy arrays

```
# Check a random image from the dataset
rand_img = "/Users/harrymckinney/Desktop/Capstone/FooDD/Apple/1-Samsung-S4-Light Environment/1 (61).jpg"
img_arr = np.asarray(Image.open(rand_img))
plt.imshow(img_arr)
```
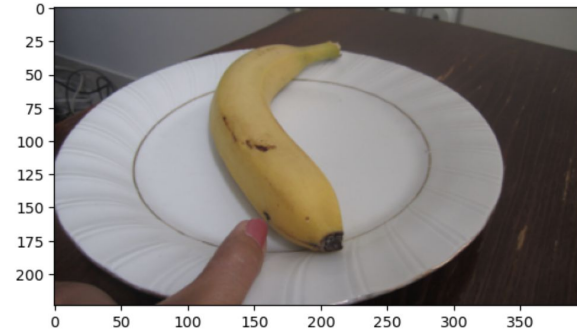
<matplotlib.image.AxesImage at 0x7f864bf86fb0>


```
img_arr.shape
```

(1520, 2688, 3)

```
#Check a random image from the loaded dataset
inspect_img = food_ims["Banana"][13]
plt.imshow(inspect_img)
```

<matplotlib.image.AxesImage at 0x7fa6041ea350>


```
inspect_img.shape
```

(224, 397, 3)

Next Steps (where things get spicy…)

01. Preprocess Images & Augment

02. Tensorflow & Transfer Learning

03. Remove top layers, add specific, freeze layers

04. Train, Evaluate & Iterate

Questions?