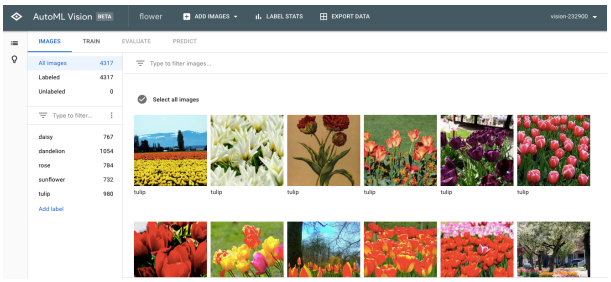
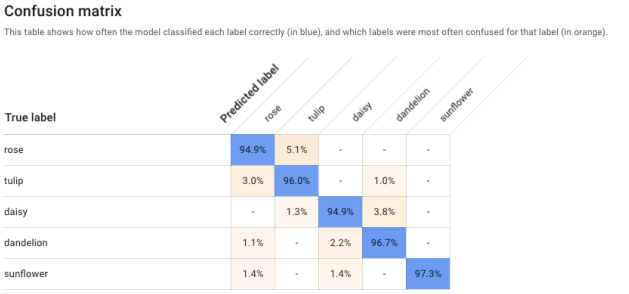
Flower Images Classification

With the development of machine learning, more and more packages and APIs can help us to solve problems more easily and more conveniently. GCP AutoML Vision and vision API are useful for us to do images classification. Cloud AutoML is a suite of machine learning products that enables developers with limited machine learning expertise to train high-quality models specific to their business needs, by leveraging Google's state-of-the-art transfer learning, and Neural Architecture Search technology [1]. And AutoML Vision is a part of Cloud AutoML. In this report, I did GCP AutoML Vision and vision API for flower images classification.

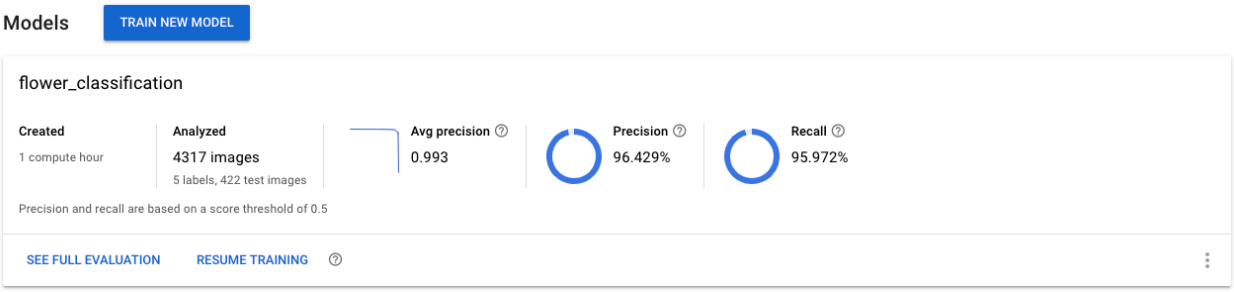
In the GCP AutoML Vision part, I also need to ingest the data firstly. I uploaded all images with the label into the AutoML Vision. Then, let AutoML Vision train the model directly, and gain the final model with the 96% precision. Lastly, test the model by five test images to figure out whether the model gains the correct label for each test image.



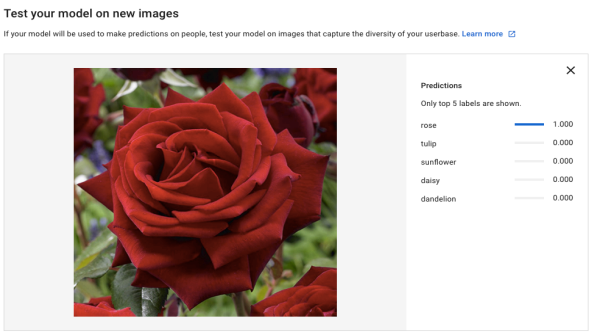
(Ingest data)



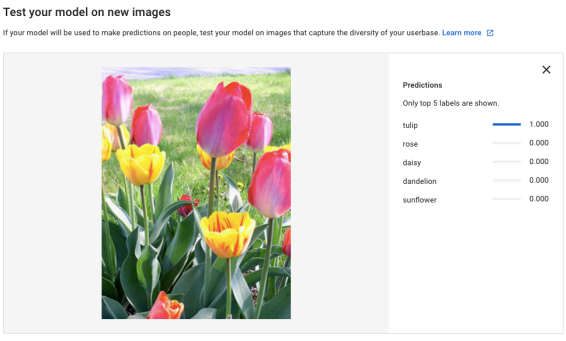
(Confusion matrix of the model)



(model precision, recall, and Avg precision)



(prediction result of test1)



(prediction result of test2)

Then, I tried the Vision API to do the prediction of test images. Following are the prediction results of the test1 and test2 images.

(test1 prediction result)

```
Labels:
Flower
Rose
Garden roses
Flowering plant
Petal
Red
Plant
Floribunda
Rose family
Hybrid tea rose
```

(test2 prediction result)

```
Labels:
Flower
Flowering plant
Petal
Tulip
Plant
Leaf
Yellow
Spring
Plant stem
Natural environment
```

In conclusion, both of GCP AutoML Vision and Vision API gain the same result of flower classification. Hence, both of these tools are efficient, useful, and convenient tools for people to utilize machine learning model to do the images classification.

Here is my colab link:
https://colab.research.google.com/drive/19kZIu7HQqbYI8Ka7zHqsczpoInn26qbH

Reference:
[1] https://cloud.google.com/automl/