MAIS Project Deliverable 3
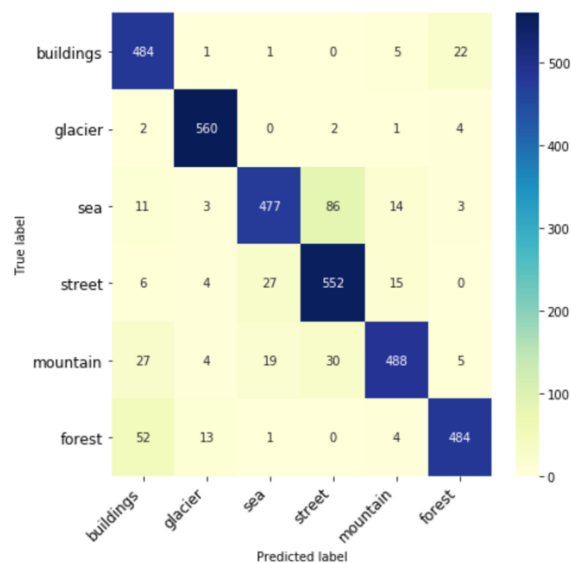Landscape Classifier
Benjamin Jiang

1. Final Training Results

My final training results were a huge improvement on my previous results. My initial results were indicative of underfitting, due to my reduced data set since the training was taking too much time. I had previously trained using approximately 20% of the data, and executing 5 epochs, resulting in 54% accuracy for the test results and loss of 1.14.

By training my model on google Collab instead of terminal, the training time was significantly reduced, which allowed for the training and validation using the full data set of approximately 13 500 pictures. This resulted in a much better training accuracy, with up to 91.5%, and validation accuracy of up to 85%.

```
Train on 9538 samples, validate on 4089 samples
Epoch 1/10
9538/9538 [==============================] - 83s 9ms/sample - loss: 0.5886 - acc: 0.8115 - val_loss: 0.4586 - val_acc: 0.8449
Epoch 2/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.5419 - acc: 0.8210 - val_loss: 0.5033 - val_acc: 0.8288
Epoch 3/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.4995 - acc: 0.8369 - val_loss: 0.4824 - val_acc: 0.8305
Epoch 4/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.4657 - acc: 0.8475 - val_loss: 0.4617 - val_acc: 0.8427
Epoch 5/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.4357 - acc: 0.8572 - val_loss: 0.4342 - val_acc: 0.8538
Epoch 6/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.4054 - acc: 0.8686 - val_loss: 0.4526 - val_acc: 0.8472
Epoch 7/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.3611 - acc: 0.8853 - val_loss: 0.5381 - val_acc: 0.8376
Epoch 8/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.3370 - acc: 0.8918 - val_loss: 0.5442 - val_acc: 0.8276
Epoch 9/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.2993 - acc: 0.9020 - val_loss: 0.4876 - val_acc: 0.8445
Epoch 10/10
9538/9538 [==============================] - 82s 9ms/sample - loss: 0.2695 - acc: 0.9148 - val_loss: 0.5366 - val_acc: 0.8339
```

As for the test results, they improved greatly as the model achieved 89% accuracy with loss of 0.33. The following confusion matrix depicts the labels assigned by the model compared to the actual labels:

2. Final demonstration proposal

I would like to make a simple web-app, where a user uploads a picture of a landscape, which is then classified by the model. I have no experience whatsoever implementing a web-app. However, I am confident that a lot of documentation online exists, and many tutorials are available.

The layout I have in mind is a simple page with a title and an upload button. Upon pressing the button and uploading a picture, the picture is shown on the page and a button predict outputs the prediction of the picture.