ASL Interpreter Testing

Run asl script

In [ ]:
```
run asl.py
```

Create asl object

In [ ]:
```
asl = Asl()
```

```
Model: "sequential_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_3 (Conv2D)           (None, 28, 28, 32)        320

 max_pooling2d_3 (MaxPooling  (None, 14, 14, 32)       0
 2D)

 conv2d_4 (Conv2D)           (None, 14, 14, 64)        18496

 max_pooling2d_4 (MaxPooling  (None, 7, 7, 64)         0
 2D)

 conv2d_5 (Conv2D)           (None, 7, 7, 128)         73856

 max_pooling2d_5 (MaxPooling  (None, 3, 3, 128)        0
 2D)

 flatten_1 (Flatten)         (None, 1152)              0

 dense_2 (Dense)             (None, 512)               590336

 dense_3 (Dense)             (None, 24)                12312

=================================================================
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_3 (Conv2D)           (None, 28, 28, 32)        320

 max_pooling2d_3 (MaxPooling  (None, 14, 14, 32)       0
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 conv2d_4 (Conv2D)           (None, 14, 14, 64)        18496

 max_pooling2d_4 (MaxPooling  (None, 7, 7, 64)         0
 2D)

 conv2d_5 (Conv2D)           (None, 7, 7, 128)         73856

 max_pooling2d_5 (MaxPooling  (None, 3, 3, 128)        0
 2D)

 flatten_1 (Flatten)         (None, 1152)              0

 dense_2 (Dense)             (None, 512)               590336

 dense_3 (Dense)             (None, 24)                12312

=================================================================
Total params: 695,320
Trainable params: 695,320
Non-trainable params: 0
_________________________________________________________________
```

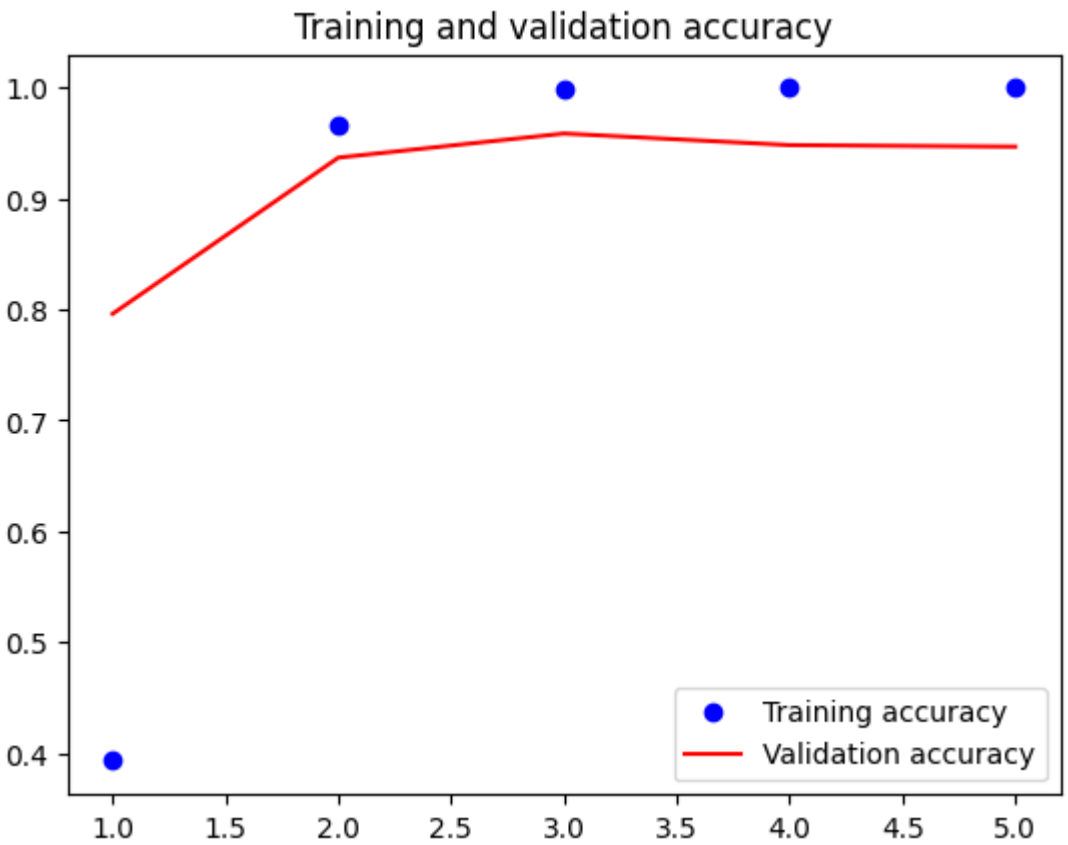
Train asl model passing number of epochs

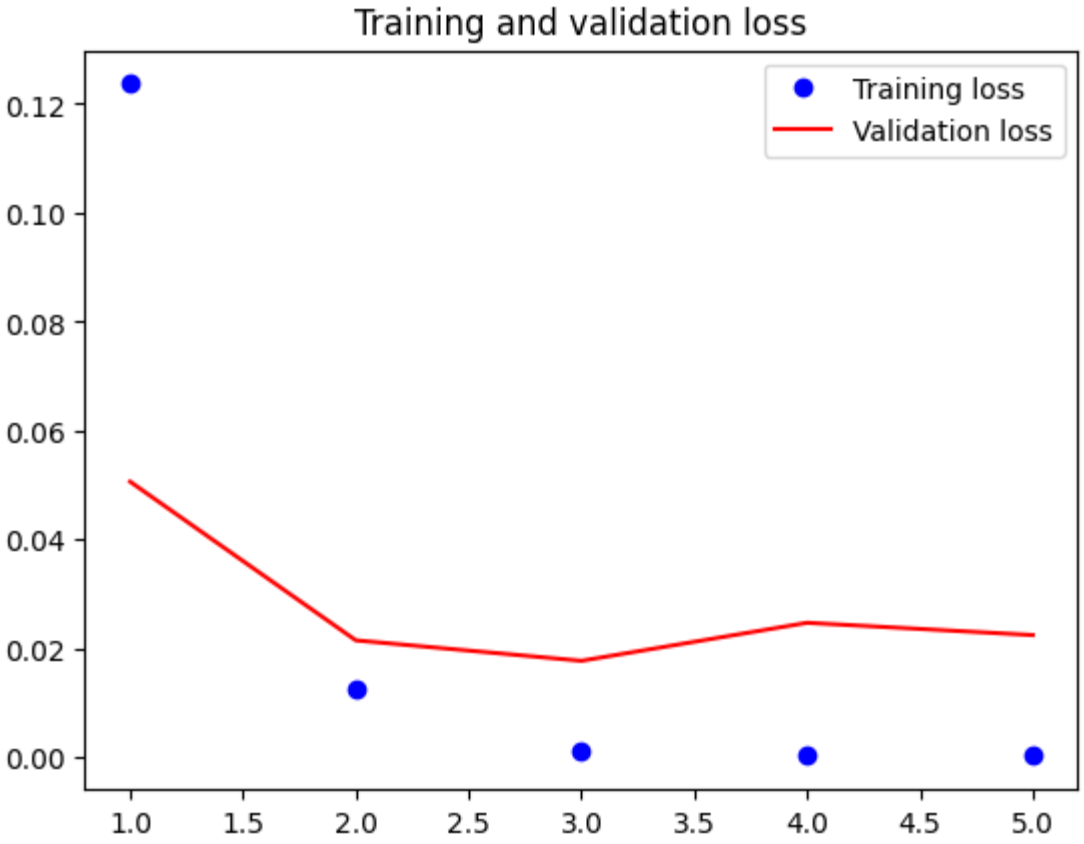
In [ ]:
```
asl.train_model(5)
```

```
Epoch 1/5
858/858 [==============================] - 15s 17ms/step - loss: 0.1237 - a
ccuracy: 0.3930 - val_loss: 0.0506 - val_accuracy: 0.7962
Epoch 2/5
858/858 [==============================] - 14s 16ms/step - loss: 0.0125 - a
ccuracy: 0.9671 - val_loss: 0.0215 - val_accuracy: 0.9370
Epoch 3/5
858/858 [==============================] - 14s 16ms/step - loss: 0.0012 - a
ccuracy: 0.9987 - val_loss: 0.0178 - val_accuracy: 0.9587
Epoch 4/5
858/858 [==============================] - 14s 16ms/step - loss: 2.8614e-04
- accuracy: 0.9997 - val_loss: 0.0247 - val_accuracy: 0.9483
Epoch 5/5
858/858 [==============================] - 15s 17ms/step - loss: 2.8812e-04
- accuracy: 0.9997 - val_loss: 0.0225 - val_accuracy: 0.9469
```

Plot model training vs epochs

In [ ]:
```
asl.plot_history()
```





Print out loss asn accuracy of trained model

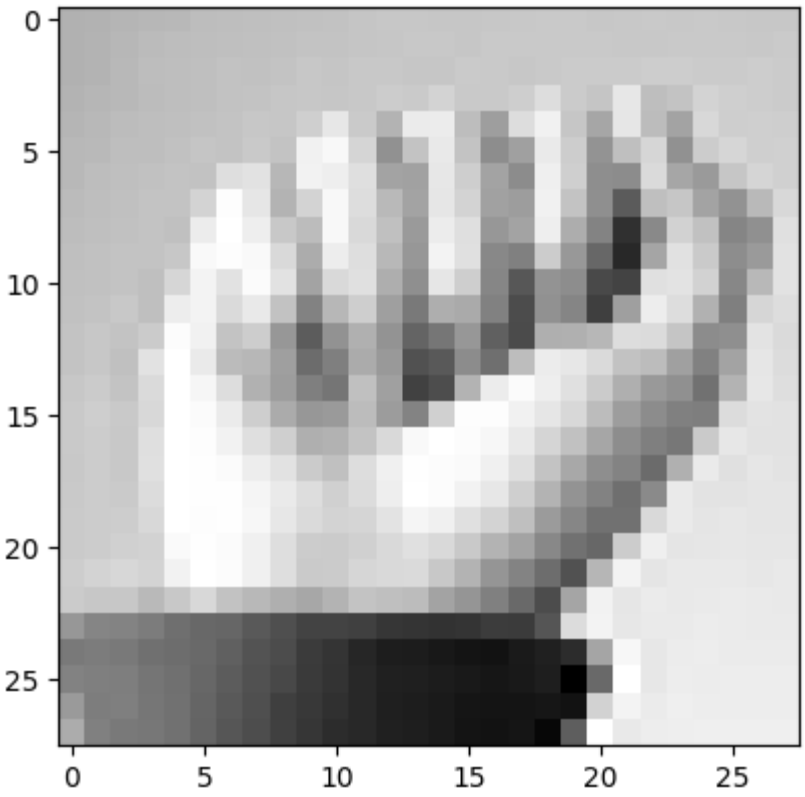
In [ ]:
```
asl.evaluate()
```

```
225/225 [==============================] - 1s 4ms/step - loss: 0.0225 - acc
uracy: 0.9469
[INFO] Test loss: 0.022478345781564713
[INFO] Test accuracy: 0.9468767642974854
```

Test trained model using prediciton

In [ ]:
```
asl.predict(112)
```

```
1/1 [==============================] - 0s 67ms/step
prediction:
a
```



Load lookup table of ASL to check prediction against

In [ ]:
```
asl.show_asl_chart()
```

Comparing the prediciton print out and image vs the look up tabel we can see the prediciton was accurate