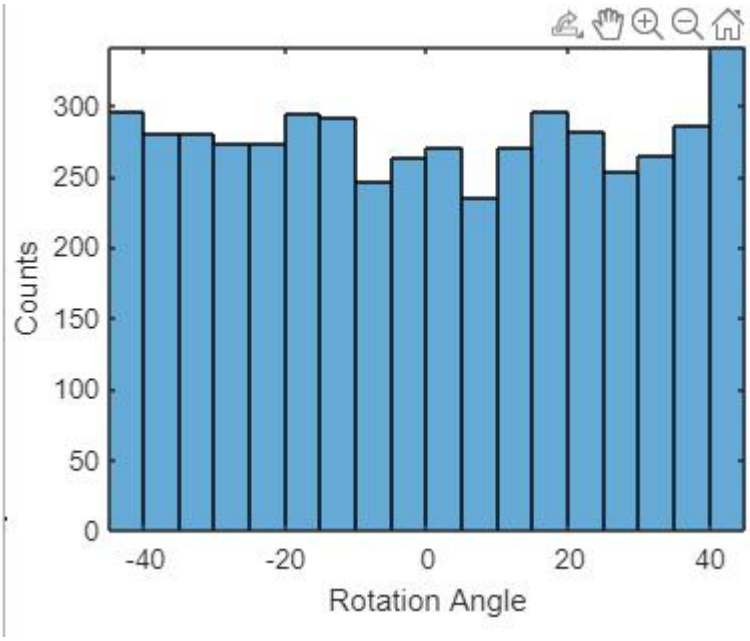
# JichenDai_HW2

## Build a Convolutional Neural Network

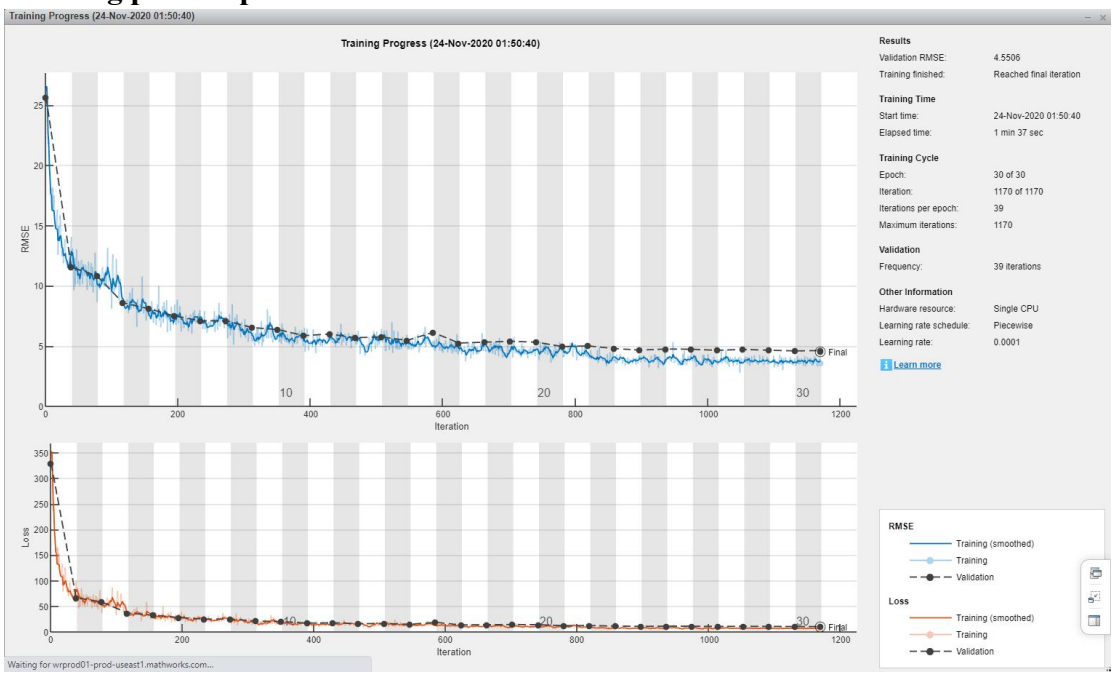
Code can be seen in *CNN.m*

**Accuracy** = 0.9736

### Normalization Plot:




### Training process plot:



**Five Worst predicted samples**

**Why failed predict these samples:**

Because these **6**s and **0**s are too similar, the tails of these 6's are not obvious, like a scribbled 0.

For this 4, I think it is because the upper open is too big.

## Comparison with Random Learning:

Code can be seen in *Random_Learning.m*

**Training speed**: The training speed for Random Learning is extremely slow, and I can hardly see a tendency to converge.

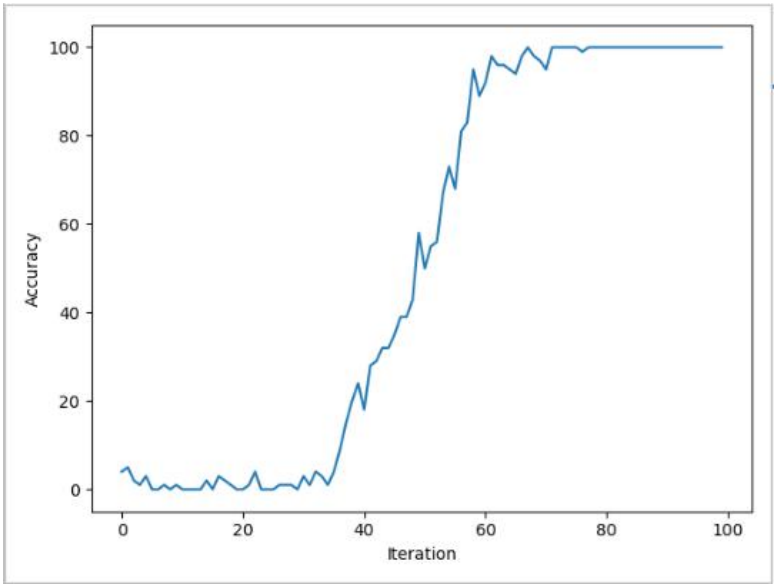
**Accuracy:** Since the model cannot converge, I was unable to compare the accuracy of random Learning and Gradient descent.

# Bonus:

## 1. Binary Addition

Code can be seen in *Binary_Addition.py*

Training process plot:



## 2. LSTM Gradient