Week 2 Presentation

PHY 496

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Data generation

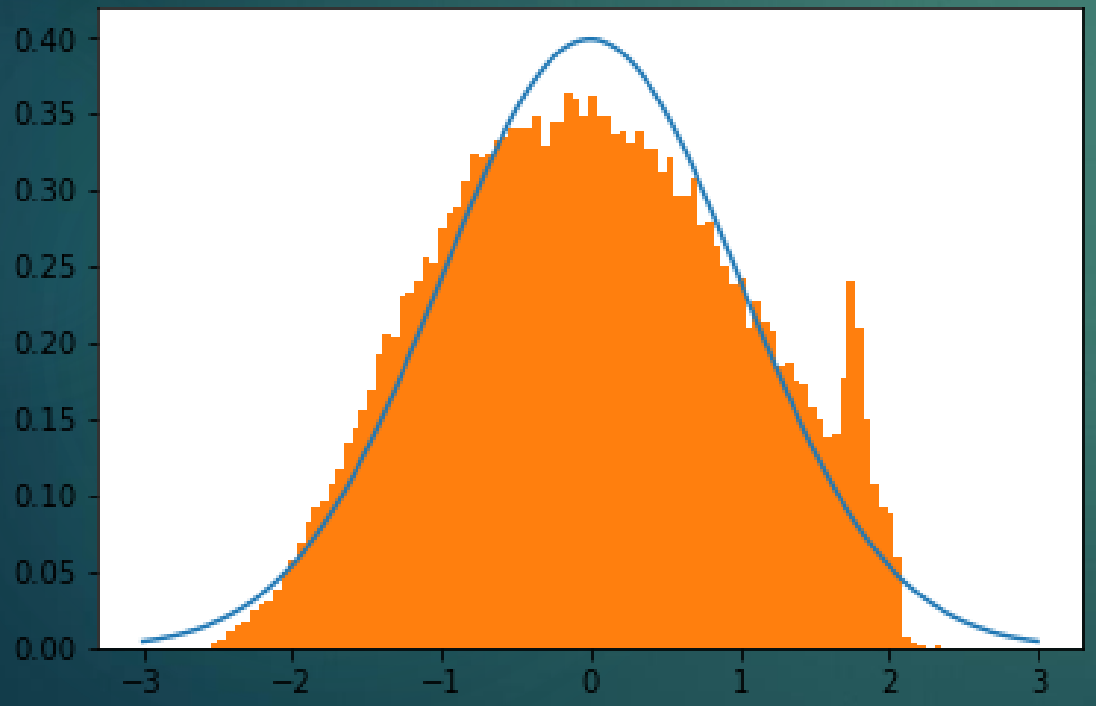
- Modified a shell script Karbo wrote to run in parallel
- Processing 100 datapoints on 28 cores took 12 minutes and 53 seconds
  - 7.73 seconds a point
  - 465.7 points an hour

Dataset Summary

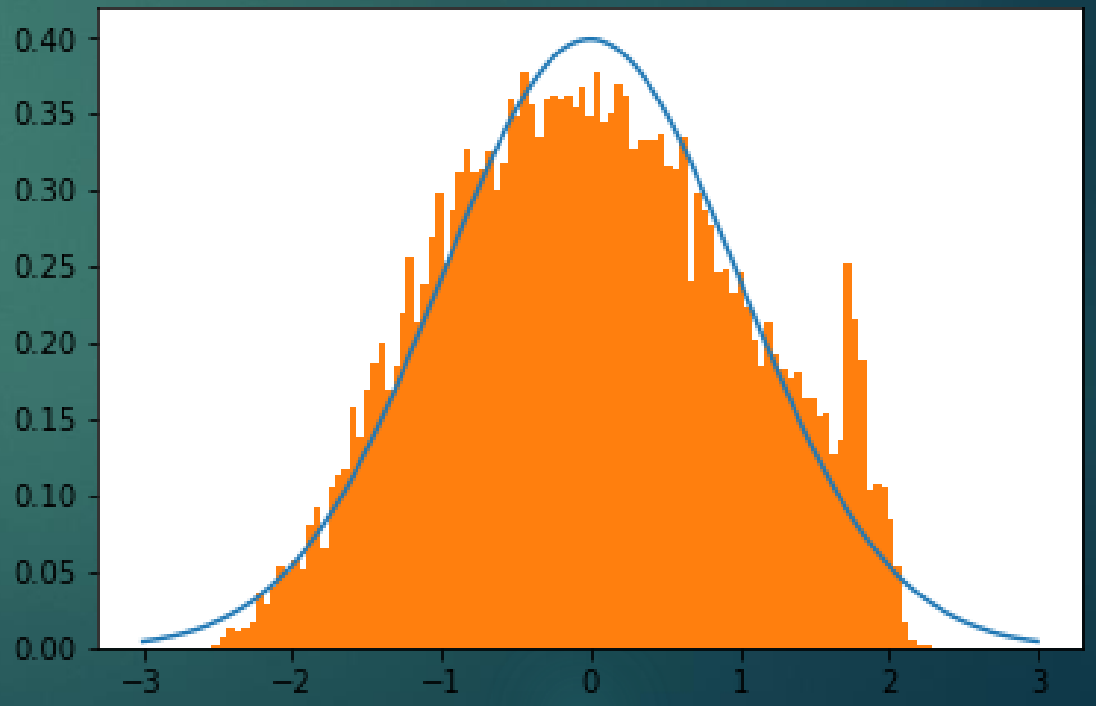
- 96,952 data points, consisting of 19 input values and 1 output value
- Split into approximately 80% training and 20% validation
- Each input value is approximately evenly distributed between two values.
- The output value can be normalized by taking the log and then using a normal fit

Output Fit

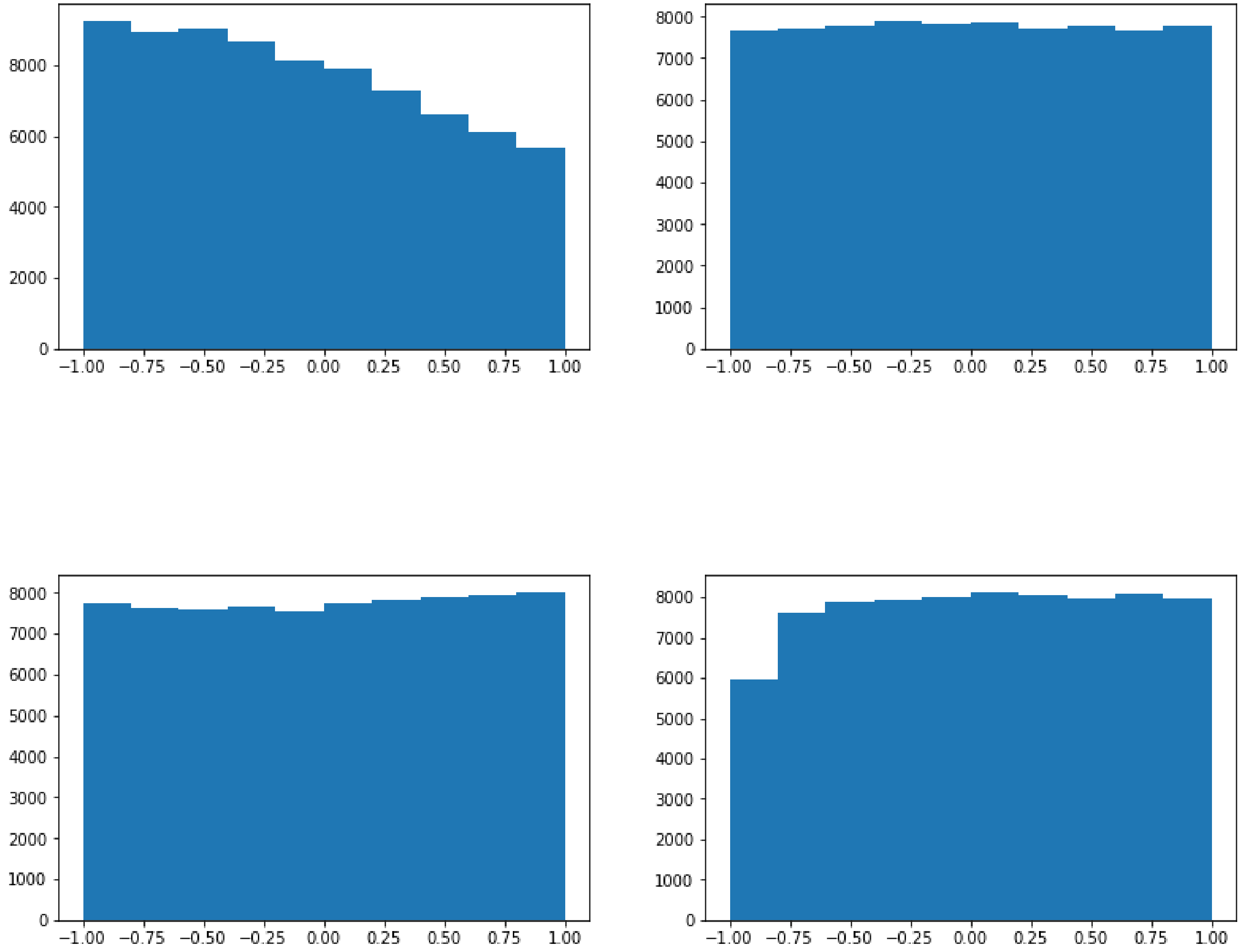
Training



Validation



Input Fit



0
2000
4000
6000
8000
−1.00 −0.75 −0.50 −0.25 0.00 0.25 0.50 0.75 1.00
0
1000
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3000
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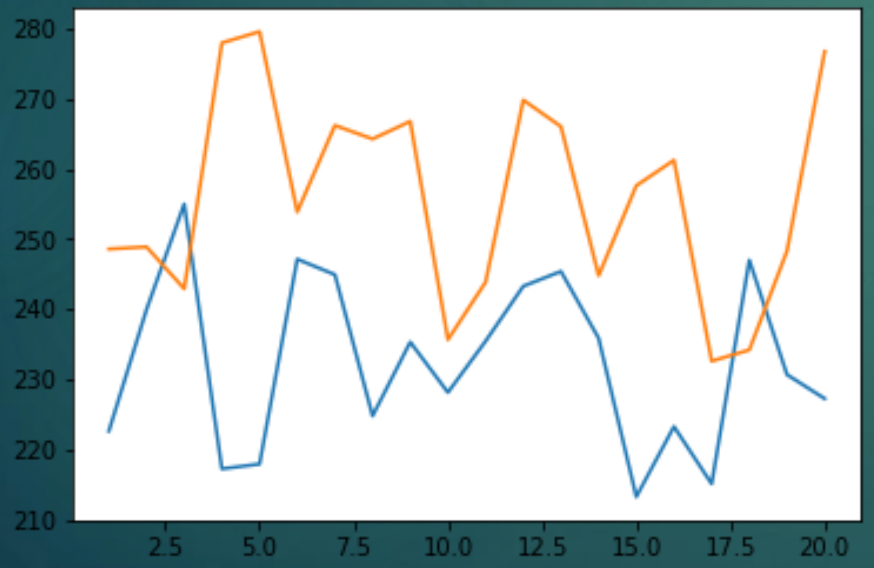
−1.00 −0.75 −0.50 −0.25 0.00 0.25 0.50 0.75 1.00

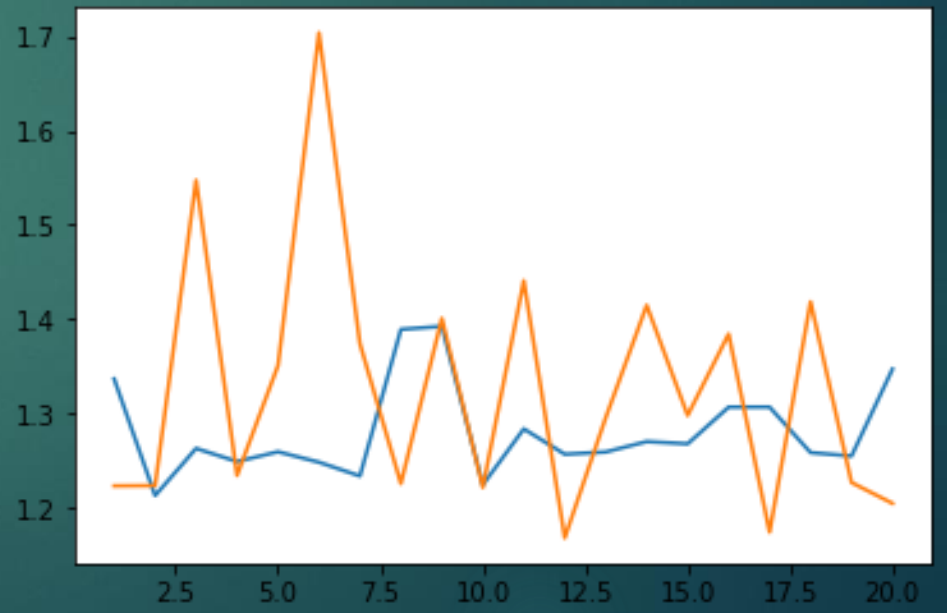
Initial Neural Networks

- Created a framework which will train and validate on data
- Loss function is squared difference
- Created a percent difference metric
- Plots the percent error for the training and validation runs
- Network is not training well currently



Validation

Training



Goals for next week

- Add a feature to the neural network to print about 10 actual and predicted values when it processing the validation data
- Make sure loss function and accuracy metric are working correctly
- Experiment with different loss functions and layer architecture