Report

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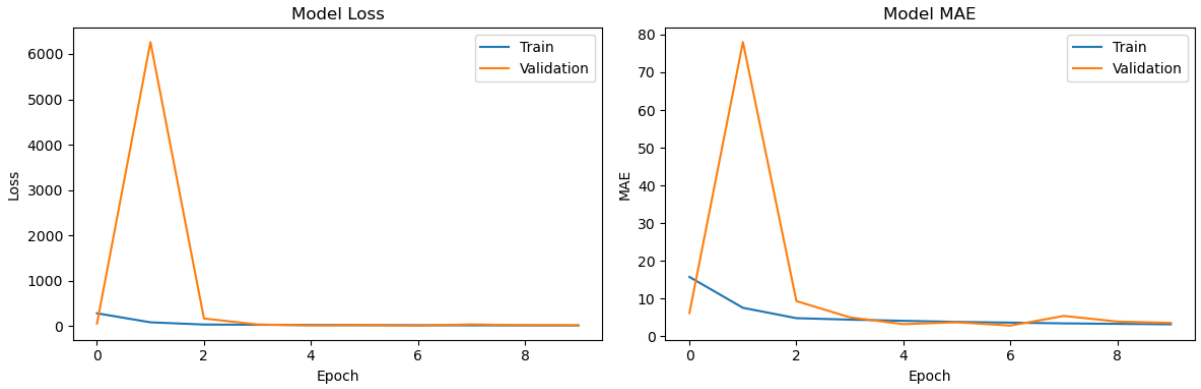
Problem statement

Given an image (and its label value) predict the sum of the digits in the image.

Training File

- I combined all three data files to create the full training set.
- I normalized the pixel values to prevent the loss function from blowing up.
- I added a channel dimension to make the data match the required input format.
- I created a CNN model with two convolutional layers and a few dense (fully connected) layers after that.
- The model directly predicts the final sum.
- I am using Mean Squared Error as the loss function because this is a regression problem.
- I also track Mean Absolute Error as a metric to measure the difference between predicted and actual values.
- The model trains for 10 epochs with a batch size of 128.



Inference File

- I used the data2 file for testing.
- I calculated Mean Absolute Error, Root Mean Square Error, and Accuracy (predictions within ±0.5 of the true value).
- Finally, I showed the results for 5 random samples.