**Neural Networks Summary**

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1. You used two hidden layers. Try using one or three hidden layers and see how doing so affects validation and test accuracy.

Validation accuracy starts to decrease after the fourth epoch when using a single hidden layer, whereas training accuracy keeps increasing. The graph clearly demonstrates a declining trend for the training loss, but overfitting is indicated by the validation loss's initial decline that rose after the fifth epoch. Accuracy rose for two epochs when employing three hidden layers before starting to fluctuate. Accuracy decreased with the number of layers included.

1. Try using layers with more hidden units or fewer hidden units: 32 units, 64 units, and so on

While validation loss is investigated more from the third epoch onward, training loss is studied less throughout the training phase. Following the third epoch, validation accuracy gradually rose before declining. The accuracy of the network decreased as the number of nodes increased.

1. Try using the mse loss function instead of binary\_crossentropy.

Accuracy is more reliable when MSE is utilized as opposed to binary\_crossentropy. Up until two epochs, training and validation loss had a similar trend before showing a considerable difference.   
Reliability started to deteriorate after the fourth epoch when the loss function was MSE.

1. Try using the tanh activation (an activation that was popular in the early days of neural  
   networks) instead of relu.

Validation accuracy rose until the second epoch before declining, while training accuracy climbed. When ReLu was utilized instead of Tanh, validation loss surged more, and validation accuracy varied more in ReLu.

1. Use any technique we studied in class, and these include regularization, dropout, etc., to  
   get your model to perform better on validation.

While validation accuracy improved until eight epochs and then almost halved, training accuracy increased consistently. Accuracy increased throughout several epochs when the dropout technique was used, and the graph revealed no discernible shift in validation accuracy.