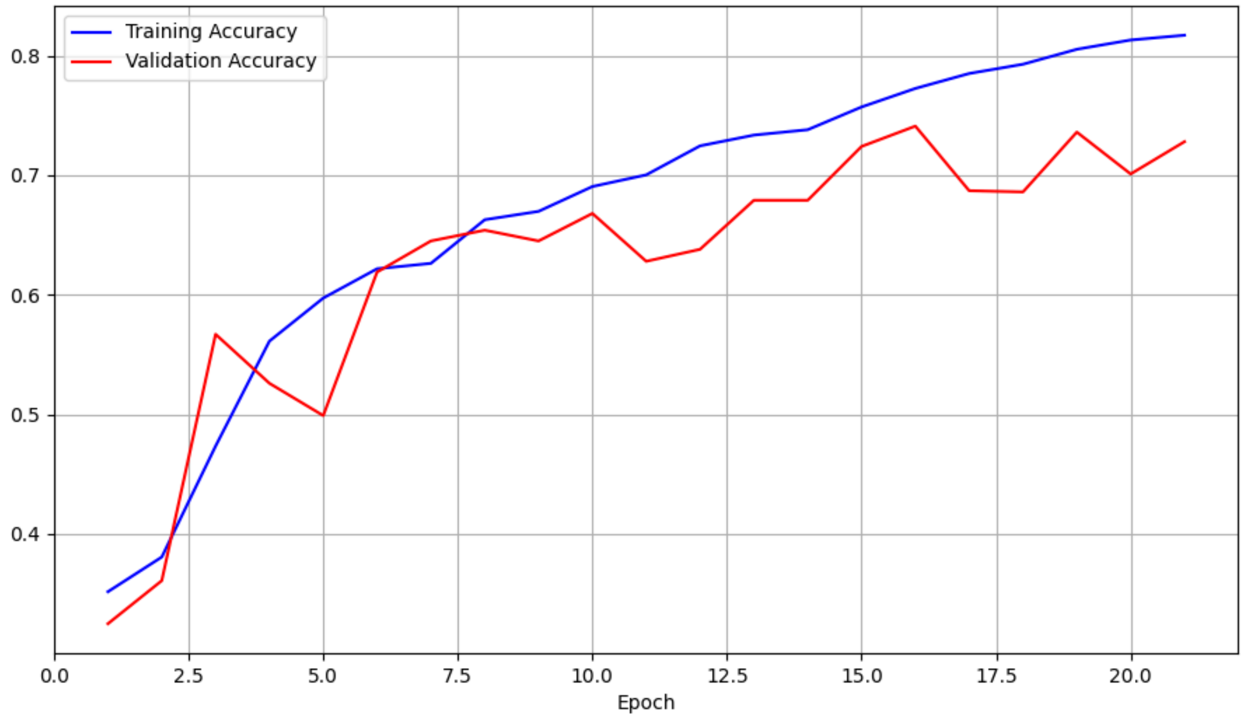
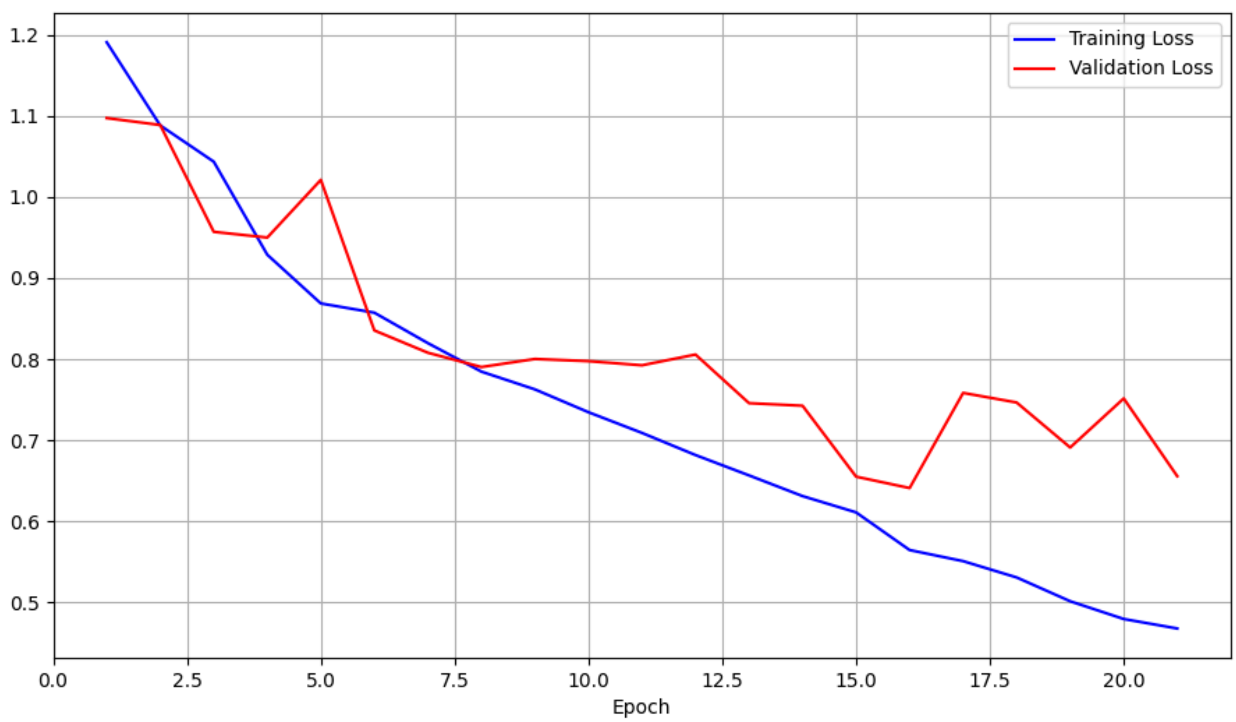
Initial Network

```
 Layer (type)                Output Shape              Param #
=================================================================
 rescaling (Rescaling)       (None, 150, 150, 3)       0

 conv2d (Conv2D)             (None, 148, 148, 16)      448

 max_pooling2d (MaxPooling2D  (None, 74, 74, 16)       0
 )

 dropout (Dropout)           (None, 74, 74, 16)        0

 conv2d_1 (Conv2D)           (None, 72, 72, 32)        4640

 max_pooling2d_1 (MaxPooling  (None, 36, 36, 32)       0
 2D)

 dropout_1 (Dropout)         (None, 36, 36, 32)        0

 conv2d_2 (Conv2D)           (None, 34, 34, 64)        18496

 max_pooling2d_2 (MaxPooling  (None, 17, 17, 64)       0
 2D)

 dropout_2 (Dropout)         (None, 17, 17, 64)        0

 conv2d_3 (Conv2D)           (None, 15, 15, 128)       73856

 max_pooling2d_3 (MaxPooling  (None, 7, 7, 128)        0
 2D)

 flatten (Flatten)           (None, 6272)              0

 dense (Dense)               (None, 3)                 18819

=================================================================
Total params: 116,259
Trainable params: 116,259
Non-trainable params: 0
```

Basic Model Evaluation:
loss: 0.6495 - accuracy: 0.7337

21 epochs:





Hyperparameter optimization strategy

We first added dropout layers, which prevents overfitting by setting the input of random neurons to zero. We ended up adding 3 dropout layers, and found that using dropout twice early on, then once at the end gave us the best results. The dropout percentage was also increased by 10% every time, going from 10% to 20% and ending at 30%. If the dropout percentages were increased by too much then the overall accuracy would end up going down over time. It is better to use a larger percentage dropout percentage with a larger number of neurons being created, however too high of a percentage causes the results to become worsened. We finally implemented early stopping to choose the optimal number of epochs, which ended up being 21 epochs.