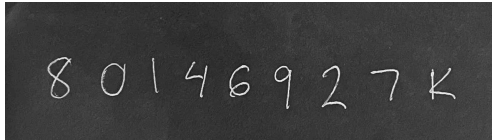


Handwriting Recognition



8 - correct
0 - correct
1 - correct
4 - correct
6 - incorrect (predicted 8)
9 - correct
2 - correct
7 - incorrect (predicted 2)
K - predicted 4

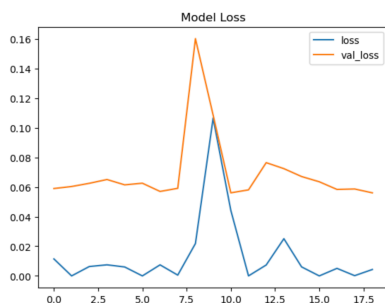
Model Accuracy: 0.9899; Model Loss: 0.0352

Letter “K” was predicted as a “4”

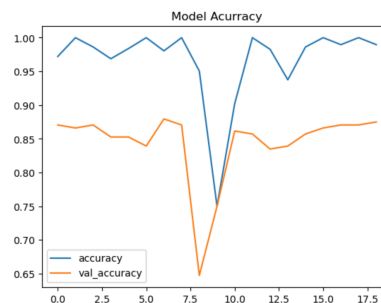
Radar Recognition

Number of epochs (for closest to convergence): 19
Accuracy: 0.9896432757377625, Val_Accuracy: 0.875
Loss: 0.004327431321144104, Val_Loss: 0.05604328587651253

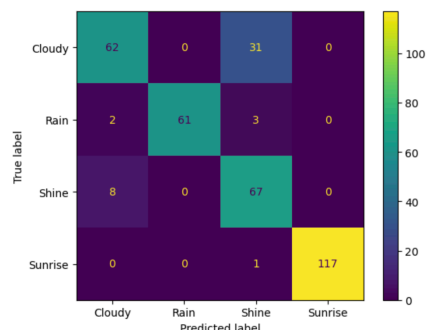
Model Loss:



Model Accuracy:



Confusion Matrix:



GANS for ClimateWins

Proposed Uses:

- *Storm severity*—train models on satellite imagery on storm formations to better understand severity of possible storm threats (such as with hurricanes or tropical storms)
- *Wildfire predictions*—using satellite imagery of forests and land that have experienced wildfires, is it possible to train the model on those images to predict potential locations that might “be due” for a wildfire breakout?
- *Migratory patterns*—is it possible to train GANs on the migratory patterns of birds to predict potential storm or weather patterns? We know that birds will migrate based on their own innate understanding of weather patterns and signals, so it would be interesting to study visuals of bird migrations to see if this shows any underlying patterns. Though, likely it might be more the time of their flight versus visuals of the formations that help predict possible weather threats.
- *Tree ring patterns*—tree ring images and their pairings with known historical weather patterns could help classify possible climate trends, however this might be more useful for classification, not necessarily predictions

Researched Uses:

- *Short-term rainfall forecasting*—GANs can improve the precision of short-term rainfall predictions, generating high-resolution precipitation maps up to two hours in advance ([link](#)).
- *Climate data generation*: GANs can produce realistic weather situations when trained on climate data from general circulation models, helping to generate synthetic climate datasets ([link](#)).
- *Stochastic downscaling*: GANs can be used to increase the resolution and accuracy of low-resolution weather forecasting model outputs, creating high-resolution, spatially coherent precipitation maps ([link](#)).