```
Epoch 1/20
9/9 [==============================] - ETA: 0s - loss: 0.4576 - accuracy: 0.7588
Epoch 1: val_loss improved from inf to 45709705216.00000, saving model to best_model.h5
C:\Users\Sabbir Ahmed Sibli\anaconda3\Lib\site-packages\keras\src\engine\training.py:
3103: UserWarning: You are saving your model as an HDF5 file via `model.save()`. This
file format is considered legacy. We recommend using instead the native Keras format,
e.g. `model.save('my_model.keras')`.
  saving_api.save_model(
9/9 [==============================] - 184s 21s/step - loss: 0.4576 - accuracy: 0.7588 -
val_loss: 45709705216.0000 - val_accuracy: 0.8957
Epoch 2/20
9/9 [==============================] - ETA: 0s - loss: 0.0797 - accuracy: 0.9120
Epoch 2: val_loss improved from 45709705216.00000 to 103818056.00000, saving model to
best_model.h5
9/9 [==============================] - 195s 22s/step - loss: 0.0797 - accuracy: 0.9120 -
val_loss: 103818056.0000 - val_accuracy: 0.8957
Epoch 3/20
9/9 [==============================] - ETA: 0s - loss: 0.0530 - accuracy: 0.9164
Epoch 3: val_loss improved from 103818056.00000 to 3001602.75000, saving model to
best_model.h5
9/9 [==============================] - 195s 22s/step - loss: 0.0530 - accuracy: 0.9164 -
val_loss: 3001602.7500 - val_accuracy: 0.8957
Epoch 4/20
9/9 [==============================] - ETA: 0s - loss: 0.0373 - accuracy: 0.9223
Epoch 4: val_loss improved from 3001602.75000 to 147394.75000, saving model to
best_model.h5
9/9 [==============================] - 192s 21s/step - loss: 0.0373 - accuracy: 0.9223 -
val_loss: 147394.7500 - val_accuracy: 0.8957
Epoch 5/20
9/9 [==============================] - ETA: 0s - loss: 0.0269 - accuracy: 0.9247
Epoch 5: val_loss improved from 147394.75000 to 22102.04492, saving model to
best_model.h5
9/9 [==============================] - 198s 22s/step - loss: 0.0269 - accuracy: 0.9247 -
val_loss: 22102.0449 - val_accuracy: 0.8957
Epoch 6/20
9/9 [==============================] - ETA: 0s - loss: 0.0286 - accuracy: 0.9224
Epoch 6: val_loss improved from 22102.04492 to 6070.25537, saving model to best_model.h5
9/9 [==============================] - 210s 24s/step - loss: 0.0286 - accuracy: 0.9224 -
val_loss: 6070.2554 - val_accuracy: 0.8957
Epoch 7/20
9/9 [==============================] - ETA: 0s - loss: 0.0230 - accuracy: 0.9242
Epoch 7: val_loss improved from 6070.25537 to 1260.92334, saving model to best_model.h5
9/9 [==============================] - 198s 22s/step - loss: 0.0230 - accuracy: 0.9242 -
val_loss: 1260.9233 - val_accuracy: 0.8957
Epoch 8/20
9/9 [==============================] - ETA: 0s - loss: 0.0185 - accuracy: 0.9252
Epoch 8: val_loss improved from 1260.92334 to 371.15982, saving model to best_model.h5
9/9 [==============================] - 188s 21s/step - loss: 0.0185 - accuracy: 0.9252 -
val_loss: 371.1598 - val_accuracy: 0.8957
Epoch 9/20
9/9 [==============================] - ETA: 0s - loss: 0.0169 - accuracy: 0.9254
Epoch 9: val_loss improved from 371.15982 to 136.12611, saving model to best_model.h5
9/9 [==============================] - 197s 22s/step - loss: 0.0169 - accuracy: 0.9254 -
val_loss: 136.1261 - val_accuracy: 0.8957
Epoch 10/20
9/9 [==============================] - ETA: 0s - loss: 0.0151 - accuracy: 0.9254
Epoch 10: val_loss improved from 136.12611 to 43.90170, saving model to best_model.h5
9/9 [==============================] - 204s 23s/step - loss: 0.0151 - accuracy: 0.9254 -
```

```
val_loss: 43.9017 - val_accuracy: 0.8957
Epoch 11/20
9/9 [==============================] - ETA: 0s - loss: 0.0144 - accuracy: 0.9255
Epoch 11: val_loss improved from 43.90170 to 20.02309, saving model to best_model.h5
9/9 [==============================] - 205s 23s/step - loss: 0.0144 - accuracy: 0.9255 -
val_loss: 20.0231 - val_accuracy: 0.8957
Epoch 12/20
9/9 [==============================] - ETA: 0s - loss: 0.0152 - accuracy: 0.9252
Epoch 12: val_loss improved from 20.02309 to 8.49658, saving model to best_model.h5
9/9 [==============================] - 197s 22s/step - loss: 0.0152 - accuracy: 0.9252 -
val_loss: 8.4966 - val_accuracy: 0.8957
Epoch 13/20
9/9 [==============================] - ETA: 0s - loss: 0.0151 - accuracy: 0.9255
Epoch 13: val_loss improved from 8.49658 to 5.11362, saving model to best_model.h5
9/9 [==============================] - 196s 22s/step - loss: 0.0151 - accuracy: 0.9255 -
val_loss: 5.1136 - val_accuracy: 0.8957
Epoch 14/20
9/9 [==============================] - ETA: 0s - loss: 0.0150 - accuracy: 0.9253
Epoch 14: val_loss improved from 5.11362 to 3.18359, saving model to best_model.h5
9/9 [==============================] - 194s 22s/step - loss: 0.0150 - accuracy: 0.9253 -
val_loss: 3.1836 - val_accuracy: 0.8957
Epoch 15/20
9/9 [==============================] - ETA: 0s - loss: 0.0140 - accuracy: 0.9255
Epoch 15: val_loss improved from 3.18359 to 1.89810, saving model to best_model.h5
9/9 [==============================] - 194s 22s/step - loss: 0.0140 - accuracy: 0.9255 -
val_loss: 1.8981 - val_accuracy: 0.8961
Epoch 16/20
9/9 [==============================] - ETA: 0s - loss: 0.0139 - accuracy: 0.9254
Epoch 16: val_loss improved from 1.89810 to 0.77268, saving model to best_model.h5
9/9 [==============================] - 208s 23s/step - loss: 0.0139 - accuracy: 0.9254 -
val_loss: 0.7727 - val_accuracy: 0.8984
Epoch 17/20
9/9 [==============================] - ETA: 0s - loss: 0.0130 - accuracy: 0.9255
Epoch 17: val_loss improved from 0.77268 to 0.44809, saving model to best_model.h5
9/9 [==============================] - 210s 23s/step - loss: 0.0130 - accuracy: 0.9255 -
val_loss: 0.4481 - val_accuracy: 0.8995
Epoch 18/20
9/9 [==============================] - ETA: 0s - loss: 0.0126 - accuracy: 0.9256
Epoch 18: val_loss improved from 0.44809 to 0.24317, saving model to best_model.h5
9/9 [==============================] - 205s 23s/step - loss: 0.0126 - accuracy: 0.9256 -
val_loss: 0.2432 - val_accuracy: 0.9046
Epoch 19/20
9/9 [==============================] - ETA: 0s - loss: 0.0132 - accuracy: 0.9255
Epoch 19: val_loss improved from 0.24317 to 0.17226, saving model to best_model.h5
9/9 [==============================] - 200s 22s/step - loss: 0.0132 - accuracy: 0.9255 -
val_loss: 0.1723 - val_accuracy: 0.9043
Epoch 20/20
9/9 [==============================] - ETA: 0s - loss: 0.0132 - accuracy: 0.9255
Epoch 20: val_loss did not improve from 0.17226
9/9 [==============================] - 199s 22s/step - loss: 0.0132 - accuracy: 0.9255 -
val_loss: 0.3295 - val_accuracy: 0.8498

In [14]:
    ...:
    ...:      .             'best_model.h5'

In [15]:
    ...:
```

```
    ...:     .              = 8  8
    ...:     .      "Learning curve"
    ...:     .            .        "loss"        ="loss"
    ...:     .            .        "val_loss"        ="val_loss"
    ...:     .       .             .        "val_loss"
  .          .       "val_loss"          ="x"       ="r"       ="best model"
    ...:     .       "Epochs"
    ...:     .       "log_loss"
    ...:     .

In [16]:
    ...:
    ...:      =        .        'loss'
    ...:          =        .        'val_loss'
    ...:        = range 1  len       + 1
    ...:     .                   'y'       ='Training loss'
    ...:     .                      'r'       ='Validation loss'
    ...:     .      'Training and validation loss'
    ...:     .       'Epochs'
    ...:     .       'Loss'
    ...:     .
    ...:     .

In [17]:
    ...:
    ...:     =        .        'accuracy'
    ...:         =        .        'val_accuracy'
    ...:     .                   'y'       ='Training acc'
    ...:     .                      'r'       ='Validation acc'
    ...:     .      'Training and validation accuracy'
    ...:     .       'Epochs'
    ...:     .       'Accuracy'
    ...:     .
    ...:     .

In [18]:
    ...:
    ...:       =     .
    ...:                    =        > 0.5
    ...:
    ...:              =   .
    ...:       =   .
    ...:           =   .                /   .
    ...: print "IoU socre is: "
6/6 [==============================] - 12s 2s/step
IoU socre is:  0.33788485324851786

In [19]:
    ...:
    ...:                  =       .        0  len
    ...:          =
    ...:             =
    ...:              =             0      None
    ...:                =  .                          0
    ...:            =       .                       0     0  > 0.2 .          .
1/1 [==============================] - 0s 152ms/step

In [20]:
```