Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=i0xYInPFpgAz

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk Editing

```
[1] from tensorflow.keras.models import Sequential
    from tensorflow.keras.layers import Dense
    from tensorflow.keras.layers import Convolution2D
    from tensorflow.keras.layers import MaxPooling2D
    from tensorflow.keras.layers import Flatten
```

```
[2] from google.colab import drive
    drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

```
[4] from tensorflow.keras.preprocessing.image import ImageDataGenerator
    train_datagen = ImageDataGenerator(rescale = 1./255, shear_range = 0.2, zoom_range= 0.2,horizontal_flip=True)
    test_datagen = ImageDataGenerator(rescale = 1./255)
```

```
    x_train = train_datagen.flow_from_directory(r"/content/drive/MyDrive/train",target_size=(224,224),batch_size = 32, class_mode ="categorical")
    x_test = test_datagen.flow_from_directory(r"/content/drive/MyDrive/test",target_size=(224,224),batch_size = 32, class_mode ="categorical")
```

```
Found 3805 images belonging to 12 classes.
Found 957 images belonging to 12 classes.
```

```
[6] x_train.class_indices
```

ENG 7:24 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=i0xYInPFpgAz

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk Editing

[6] x_train.class_indices

```
{'Black-grass': 0,
 'Charlock': 1,
 'Cleavers': 2,
 'Common Chickweed': 3,
 'Common wheat': 4,
 'Fat Hen': 5,
 'Loose Silky-bent': 6,
 'Maize': 7,
 'Scentless Mayweed': 8,
 'Shepherds Purse': 9,
 'Small-flowered Cranesbill': 10,
 'Sugar beet': 11}
```

[7] model = Sequential()

[8] model.add(Convolution2D(32,(3,3),input_shape = (224,224,3),activation ="relu"))

[9] model.add(MaxPooling2D(pool_size =(2,2)))

[10] model.add(Flatten())

[12] model.add(Dense(units = 128,activation ="relu"))

ENG 7:24 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=i0xYInPFpgAz

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk Editing

```
[13] model.add(Dense(units = 12,activation ="softmax"))
```

```
[14] model.compile(optimizer="adam", loss="categorical_crossentropy", metrics =["accuracy"])
```

```
from PIL import Image
```

```
[16] model.fit_generator(x_train,steps_per_epoch =len(x_train)//5, epochs = 100,validation_data = x_test,validation_steps =len(x_test)//5 )
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future vers
  """Entry point for launching an IPython kernel.
Epoch 1/100
23/23 [==============================] - 290s 13s/step - loss: 9.3171 - accuracy: 0.1277 - val_loss: 2.9536 - val_accuracy: 0.1719
Epoch 2/100
23/23 [==============================] - 226s 10s/step - loss: 2.3819 - accuracy: 0.2459 - val_loss: 2.2331 - val_accuracy: 0.3125
Epoch 3/100
23/23 [==============================] - 185s 8s/step - loss: 2.0593 - accuracy: 0.3505 - val_loss: 2.0390 - val_accuracy: 0.3438
Epoch 4/100
23/23 [==============================] - 161s 7s/step - loss: 1.9361 - accuracy: 0.3655 - val_loss: 1.9265 - val_accuracy: 0.3490
Epoch 5/100
23/23 [==============================] - 130s 6s/step - loss: 1.7315 - accuracy: 0.4338 - val_loss: 1.7674 - val_accuracy: 0.4427
Epoch 6/100
23/23 [==============================] - 111s 5s/step - loss: 1.6786 - accuracy: 0.4565 - val_loss: 1.7662 - val_accuracy: 0.3906
Epoch 7/100
23/23 [==============================] - 97s 4s/step - loss: 1.5880 - accuracy: 0.4606 - val_loss: 1.6544 - val_accuracy: 0.4427
Epoch 8/100
23/23 [==============================] - 81s 3s/step - loss: 1.4663 - accuracy: 0.5217 - val_loss: 1.5896 - val_accuracy: 0.4844
```

ENG 7:24 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=i0xYInPFpgAz

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk

Editing

```
Epoch 9/100
23/23 [==============================] - 76s 3s/step - loss: 1.4069 - accuracy: 0.5584 - val_loss: 1.6016 - val_accuracy: 0.4427
Epoch 10/100
23/23 [==============================] - 68s 3s/step - loss: 1.3346 - accuracy: 0.5611 - val_loss: 1.2956 - val_accuracy: 0.5885
Epoch 11/100
23/23 [==============================] - 66s 3s/step - loss: 1.3382 - accuracy: 0.5870 - val_loss: 1.4677 - val_accuracy: 0.5365
Epoch 12/100
23/23 [==============================] - 62s 3s/step - loss: 1.2631 - accuracy: 0.5910 - val_loss: 1.3296 - val_accuracy: 0.5260
Epoch 13/100
23/23 [==============================] - 58s 2s/step - loss: 1.1817 - accuracy: 0.6276 - val_loss: 1.4601 - val_accuracy: 0.5000
Epoch 14/100
23/23 [==============================] - 58s 2s/step - loss: 1.1931 - accuracy: 0.6168 - val_loss: 1.1868 - val_accuracy: 0.6250
Epoch 15/100
23/23 [==============================] - 52s 2s/step - loss: 1.1866 - accuracy: 0.5978 - val_loss: 1.0767 - val_accuracy: 0.6406
Epoch 16/100
23/23 [==============================] - 52s 2s/step - loss: 1.1046 - accuracy: 0.6194 - val_loss: 1.2277 - val_accuracy: 0.5625
Epoch 17/100
23/23 [==============================] - 53s 2s/step - loss: 1.1342 - accuracy: 0.6060 - val_loss: 1.2325 - val_accuracy: 0.5938
Epoch 18/100
23/23 [==============================] - 50s 2s/step - loss: 1.1098 - accuracy: 0.6413 - val_loss: 1.2450 - val_accuracy: 0.6042
Epoch 19/100
23/23 [==============================] - 49s 2s/step - loss: 1.0280 - accuracy: 0.6739 - val_loss: 1.3516 - val_accuracy: 0.5312
Epoch 20/100
23/23 [==============================] - 48s 2s/step - loss: 1.0733 - accuracy: 0.6481 - val_loss: 1.1713 - val_accuracy: 0.6094
Epoch 21/100
23/23 [==============================] - 46s 2s/step - loss: 0.9721 - accuracy: 0.6848 - val_loss: 1.0938 - val_accuracy: 0.6510
Epoch 22/100
23/23 [==============================] - 47s 2s/step - loss: 1.1132 - accuracy: 0.6372 - val_loss: 1.2473 - val_accuracy: 0.6302
Epoch 23/100
```

ENG 7:25 PM 11/9/2022

Seedling classification-checkpoint

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=i0xYInPFpgAz

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk Editing

```
Epoch 23/100
23/23 [==============================] - 46s 2s/step - loss: 1.0095 - accuracy: 0.6630 - val_loss: 1.1629 - val_accuracy: 0.6354
Epoch 24/100
23/23 [==============================] - 48s 2s/step - loss: 1.0016 - accuracy: 0.6685 - val_loss: 1.0988 - val_accuracy: 0.6198
Epoch 25/100
23/23 [==============================] - 46s 2s/step - loss: 0.9483 - accuracy: 0.6848 - val_loss: 1.0141 - val_accuracy: 0.6354
Epoch 26/100
23/23 [==============================] - 52s 2s/step - loss: 1.0710 - accuracy: 0.6495 - val_loss: 1.1013 - val_accuracy: 0.6042
Epoch 27/100
23/23 [==============================] - 48s 2s/step - loss: 0.9339 - accuracy: 0.6821 - val_loss: 1.1229 - val_accuracy: 0.6094
Epoch 28/100
23/23 [==============================] - 49s 2s/step - loss: 0.9330 - accuracy: 0.6997 - val_loss: 0.9757 - val_accuracy: 0.6927
Epoch 29/100
23/23 [==============================] - 47s 2s/step - loss: 0.8939 - accuracy: 0.7024 - val_loss: 1.0113 - val_accuracy: 0.6667
Epoch 30/100
23/23 [==============================] - 47s 2s/step - loss: 0.9483 - accuracy: 0.6658 - val_loss: 1.1133 - val_accuracy: 0.6354
Epoch 31/100
23/23 [==============================] - 47s 2s/step - loss: 0.9517 - accuracy: 0.6889 - val_loss: 1.0082 - val_accuracy: 0.6562
Epoch 32/100
23/23 [==============================] - 48s 2s/step - loss: 0.8732 - accuracy: 0.7160 - val_loss: 1.0934 - val_accuracy: 0.6354
Epoch 33/100
23/23 [==============================] - 49s 2s/step - loss: 0.8357 - accuracy: 0.7283 - val_loss: 1.1114 - val_accuracy: 0.6823
Epoch 34/100
23/23 [==============================] - 49s 2s/step - loss: 0.8326 - accuracy: 0.7108 - val_loss: 1.2172 - val_accuracy: 0.5677
Epoch 35/100
23/23 [==============================] - 55s 2s/step - loss: 0.8994 - accuracy: 0.6985 - val_loss: 1.0470 - val_accuracy: 0.6406
Epoch 36/100
23/23 [==============================] - 48s 2s/step - loss: 0.8510 - accuracy: 0.7147 - val_loss: 0.9294 - val_accuracy: 0.6458
Epoch 37/100
```

ENG 7:25 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=i0xYInPFpgAz

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk

Editing

```
Epoch 37/100
23/23 [==============================] - 49s 2s/step - loss: 0.8249 - accuracy: 0.7255 - val_loss: 1.0691 - val_accuracy: 0.5990
Epoch 38/100
23/23 [==============================] - 49s 2s/step - loss: 0.7889 - accuracy: 0.7351 - val_loss: 1.0500 - val_accuracy: 0.6094
Epoch 39/100
23/23 [==============================] - 48s 2s/step - loss: 0.8330 - accuracy: 0.7188 - val_loss: 0.9575 - val_accuracy: 0.6510
Epoch 40/100
23/23 [==============================] - 49s 2s/step - loss: 0.7954 - accuracy: 0.7514 - val_loss: 1.2163 - val_accuracy: 0.5833
Epoch 41/100
23/23 [==============================] - 48s 2s/step - loss: 0.7909 - accuracy: 0.7473 - val_loss: 0.9991 - val_accuracy: 0.6615
Epoch 42/100
23/23 [==============================] - 49s 2s/step - loss: 0.7990 - accuracy: 0.7378 - val_loss: 1.1259 - val_accuracy: 0.6198
Epoch 43/100
23/23 [==============================] - 49s 2s/step - loss: 0.7371 - accuracy: 0.7364 - val_loss: 1.1335 - val_accuracy: 0.5885
Epoch 44/100
23/23 [==============================] - 54s 2s/step - loss: 0.7046 - accuracy: 0.7649 - val_loss: 0.9036 - val_accuracy: 0.7083
Epoch 45/100
23/23 [==============================] - 48s 2s/step - loss: 0.7592 - accuracy: 0.7514 - val_loss: 1.1569 - val_accuracy: 0.6198
Epoch 46/100
23/23 [==============================] - 47s 2s/step - loss: 0.6909 - accuracy: 0.7758 - val_loss: 1.0641 - val_accuracy: 0.6562
Epoch 47/100
23/23 [==============================] - 48s 2s/step - loss: 0.6776 - accuracy: 0.7785 - val_loss: 1.0287 - val_accuracy: 0.6667
Epoch 48/100
23/23 [==============================] - 49s 2s/step - loss: 0.7001 - accuracy: 0.7704 - val_loss: 0.8693 - val_accuracy: 0.7031
Epoch 49/100
23/23 [==============================] - 48s 2s/step - loss: 0.7228 - accuracy: 0.7595 - val_loss: 1.1221 - val_accuracy: 0.6615
Epoch 50/100
23/23 [==============================] - 49s 2s/step - loss: 0.7059 - accuracy: 0.7649 - val_loss: 1.1654 - val_accuracy: 0.6667
Epoch 51/100
```

ENG 7:25 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=i0xYInPFpgAz

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk Editing

```
Epoch 51/100
23/23 [==============================] - 47s 2s/step - loss: 0.7134 - accuracy: 0.7772 - val_loss: 1.0443 - val_accuracy: 0.6250
Epoch 52/100
23/23 [==============================] - 48s 2s/step - loss: 0.7120 - accuracy: 0.7544 - val_loss: 1.0064 - val_accuracy: 0.6719
Epoch 53/100
23/23 [==============================] - 48s 2s/step - loss: 0.6386 - accuracy: 0.7812 - val_loss: 1.1797 - val_accuracy: 0.6458
Epoch 54/100
23/23 [==============================] - 49s 2s/step - loss: 0.7290 - accuracy: 0.7473 - val_loss: 1.1085 - val_accuracy: 0.6510
Epoch 55/100
23/23 [==============================] - 49s 2s/step - loss: 0.7837 - accuracy: 0.7378 - val_loss: 1.2471 - val_accuracy: 0.6667
Epoch 56/100
23/23 [==============================] - 49s 2s/step - loss: 0.6246 - accuracy: 0.7976 - val_loss: 0.9866 - val_accuracy: 0.6562
Epoch 57/100
23/23 [==============================] - 48s 2s/step - loss: 0.6325 - accuracy: 0.7913 - val_loss: 0.8458 - val_accuracy: 0.6719
Epoch 58/100
23/23 [==============================] - 47s 2s/step - loss: 0.6010 - accuracy: 0.8043 - val_loss: 1.0625 - val_accuracy: 0.6667
Epoch 59/100
23/23 [==============================] - 48s 2s/step - loss: 0.6678 - accuracy: 0.7804 - val_loss: 1.1093 - val_accuracy: 0.6406
Epoch 60/100
23/23 [==============================] - 48s 2s/step - loss: 0.6676 - accuracy: 0.7690 - val_loss: 1.1657 - val_accuracy: 0.6354
Epoch 61/100
23/23 [==============================] - 48s 2s/step - loss: 0.6188 - accuracy: 0.7962 - val_loss: 1.0065 - val_accuracy: 0.6771
Epoch 62/100
23/23 [==============================] - 48s 2s/step - loss: 0.6487 - accuracy: 0.7948 - val_loss: 0.8574 - val_accuracy: 0.7031
Epoch 63/100
23/23 [==============================] - 50s 2s/step - loss: 0.6279 - accuracy: 0.7894 - val_loss: 0.9546 - val_accuracy: 0.6615
Epoch 64/100
23/23 [==============================] - 48s 2s/step - loss: 0.7104 - accuracy: 0.7527 - val_loss: 1.0306 - val_accuracy: 0.6823
Epoch 65/100
```

ENG 7:25 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=i0xYInPFpgAz

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk

Editing

```
Epoch 65/100
23/23 [==============================] - 48s 2s/step - loss: 0.5798 - accuracy: 0.8166 - val_loss: 0.8982 - val_accuracy: 0.7240
Epoch 66/100
23/23 [==============================] - 50s 2s/step - loss: 0.5971 - accuracy: 0.7921 - val_loss: 1.0627 - val_accuracy: 0.6302
Epoch 67/100
23/23 [==============================] - 49s 2s/step - loss: 0.6113 - accuracy: 0.7940 - val_loss: 0.9010 - val_accuracy: 0.6875
Epoch 68/100
23/23 [==============================] - 49s 2s/step - loss: 0.5618 - accuracy: 0.8370 - val_loss: 1.0072 - val_accuracy: 0.6927
Epoch 69/100
23/23 [==============================] - 49s 2s/step - loss: 0.5143 - accuracy: 0.8234 - val_loss: 1.1039 - val_accuracy: 0.6927
Epoch 70/100
23/23 [==============================] - 48s 2s/step - loss: 0.6276 - accuracy: 0.7921 - val_loss: 1.0557 - val_accuracy: 0.6875
Epoch 71/100
23/23 [==============================] - 49s 2s/step - loss: 0.5326 - accuracy: 0.8302 - val_loss: 1.0637 - val_accuracy: 0.6823
Epoch 72/100
23/23 [==============================] - 49s 2s/step - loss: 0.4768 - accuracy: 0.8573 - val_loss: 0.9452 - val_accuracy: 0.7448
Epoch 73/100
23/23 [==============================] - 49s 2s/step - loss: 0.5469 - accuracy: 0.8302 - val_loss: 1.1925 - val_accuracy: 0.6458
Epoch 74/100
23/23 [==============================] - 48s 2s/step - loss: 0.5191 - accuracy: 0.8261 - val_loss: 0.8729 - val_accuracy: 0.7083
Epoch 75/100
23/23 [==============================] - 48s 2s/step - loss: 0.5107 - accuracy: 0.8226 - val_loss: 0.9024 - val_accuracy: 0.6771
Epoch 76/100
23/23 [==============================] - 49s 2s/step - loss: 0.5773 - accuracy: 0.8071 - val_loss: 1.1508 - val_accuracy: 0.6250
Epoch 77/100
23/23 [==============================] - 49s 2s/step - loss: 0.5408 - accuracy: 0.8090 - val_loss: 1.0216 - val_accuracy: 0.6719
Epoch 78/100
23/23 [==============================] - 49s 2s/step - loss: 0.5158 - accuracy: 0.8478 - val_loss: 0.9370 - val_accuracy: 0.7135
Epoch 79/100
```

ENG 7:25 PM 11/9/2022

Seedling classification-checkpoint

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=e8dc60da

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk

Editing

```
Epoch 77/100
23/23 [==============================] - 49s 2s/step - loss: 0.5408 - accuracy: 0.8090 - val_loss: 1.0216 - val_accuracy:
Epoch 78/100
23/23 [==============================] - 49s 2s/step - loss: 0.5158 - accuracy: 0.8478 - val_loss: 0.9370 - val_accuracy: 0.7135
Epoch 79/100
23/23 [==============================] - 48s 2s/step - loss: 0.5437 - accuracy: 0.8207 - val_loss: 0.8158 - val_accuracy: 0.7552
Epoch 80/100
23/23 [==============================] - 48s 2s/step - loss: 0.4857 - accuracy: 0.8458 - val_loss: 0.8724 - val_accuracy: 0.7500
Epoch 81/100
23/23 [==============================] - 47s 2s/step - loss: 0.4651 - accuracy: 0.8397 - val_loss: 0.9450 - val_accuracy: 0.7240
Epoch 82/100
23/23 [==============================] - 53s 2s/step - loss: 0.5229 - accuracy: 0.8234 - val_loss: 1.1533 - val_accuracy: 0.6615
Epoch 83/100
23/23 [==============================] - 50s 2s/step - loss: 0.5012 - accuracy: 0.8247 - val_loss: 0.8311 - val_accuracy: 0.7344
Epoch 84/100
23/23 [==============================] - 50s 2s/step - loss: 0.4826 - accuracy: 0.8342 - val_loss: 0.8792 - val_accuracy: 0.6927
Epoch 85/100
23/23 [==============================] - 48s 2s/step - loss: 0.4684 - accuracy: 0.8342 - val_loss: 0.9839 - val_accuracy: 0.7188
Epoch 86/100
23/23 [==============================] - 50s 2s/step - loss: 0.4996 - accuracy: 0.8356 - val_loss: 0.9137 - val_accuracy: 0.7344
Epoch 87/100
23/23 [==============================] - 48s 2s/step - loss: 0.4635 - accuracy: 0.8718 - val_loss: 0.9012 - val_accuracy: 0.7448
Epoch 88/100
23/23 [==============================] - 51s 2s/step - loss: 0.4591 - accuracy: 0.8527 - val_loss: 0.9901 - val_accuracy: 0.7240
Epoch 89/100
23/23 [==============================] - 50s 2s/step - loss: 0.4870 - accuracy: 0.8546 - val_loss: 1.0478 - val_accuracy: 0.6927
Epoch 90/100
23/23 [==============================] - 50s 2s/step - loss: 0.5273 - accuracy: 0.8288 - val_loss: 1.0023 - val_accuracy: 0.7083
Epoch 91/100
23/23 [==============================] - 50s 2s/step - loss: 0.4916 - accuracy: 0.8342 - val_loss: 0.8020 - val_accuracy: 0.7344
```

ENG 7:26 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=e8dc60da

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk Editing

```
Epoch 91/100
23/23 [==============================] - 50s 2s/step - loss: 0.4916 - accuracy: 0.8342 - val_loss: 0.8020 - val_accuracy: 0.7344
Epoch 92/100
23/23 [==============================] - 54s 2s/step - loss: 0.4317 - accuracy: 0.8554 - val_loss: 1.2233 - val_accuracy: 0.6406
Epoch 93/100
23/23 [==============================] - 50s 2s/step - loss: 0.4827 - accuracy: 0.8363 - val_loss: 1.2025 - val_accuracy: 0.6406
Epoch 94/100
23/23 [==============================] - 50s 2s/step - loss: 0.5080 - accuracy: 0.8261 - val_loss: 1.0484 - val_accuracy: 0.6875
Epoch 95/100
23/23 [==============================] - 50s 2s/step - loss: 0.4228 - accuracy: 0.8595 - val_loss: 1.1735 - val_accuracy: 0.6458
Epoch 96/100
23/23 [==============================] - 49s 2s/step - loss: 0.4297 - accuracy: 0.8614 - val_loss: 1.3341 - val_accuracy: 0.6562
Epoch 97/100
23/23 [==============================] - 50s 2s/step - loss: 0.4850 - accuracy: 0.8492 - val_loss: 1.2283 - val_accuracy: 0.6719
Epoch 98/100
23/23 [==============================] - 48s 2s/step - loss: 0.4168 - accuracy: 0.8764 - val_loss: 0.9078 - val_accuracy: 0.7083
Epoch 99/100
23/23 [==============================] - 50s 2s/step - loss: 0.4417 - accuracy: 0.8628 - val_loss: 1.1597 - val_accuracy: 0.6667
Epoch 100/100
23/23 [==============================] - 49s 2s/step - loss: 0.4041 - accuracy: 0.8655 - val_loss: 0.9576 - val_accuracy: 0.6823
<keras.callbacks.History at 0x7f6832a2fb10>
```

```
[17] model.save("seedling.h5")
```

```
[18] from tensorflow.keras.models import load_model
     from tensorflow.keras.preprocessing import image
```

ENG 7:26 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=e8dc60da

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk Editing

```
[17] model.save("seedling.h5")
```

```
[18] from tensorflow.keras.models import load_model
     from tensorflow.keras.preprocessing import image
```

```
[19] model = load_model("seedling.h5")
```

```
[21] img = image.load_img("/content/drive/MyDrive/train/Charlock/04098447d.png", target_size = (224,224))
```

```
[22] import numpy as np
     x= image.img_to_array(img)
     x = np.expand_dims(x,axis =0)
```

```
x.shape
```

```
(1, 224, 224, 3)
```

```
[31] pred = model.predict(x)
```

```
1/1 [==============================] - 0s 224ms/step
```

ENG 7:26 PM 11/9/2022

Seedling classification-checkpoin

colab.research.google.com/drive/1BLXeFHNqzYUHnV27DEU6IMbOrM0As03w#scrollTo=e8dc60da

Seedling classification-checkpoint.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

+ Code + Text

RAM Disk

Editing

```
[32] pred
```

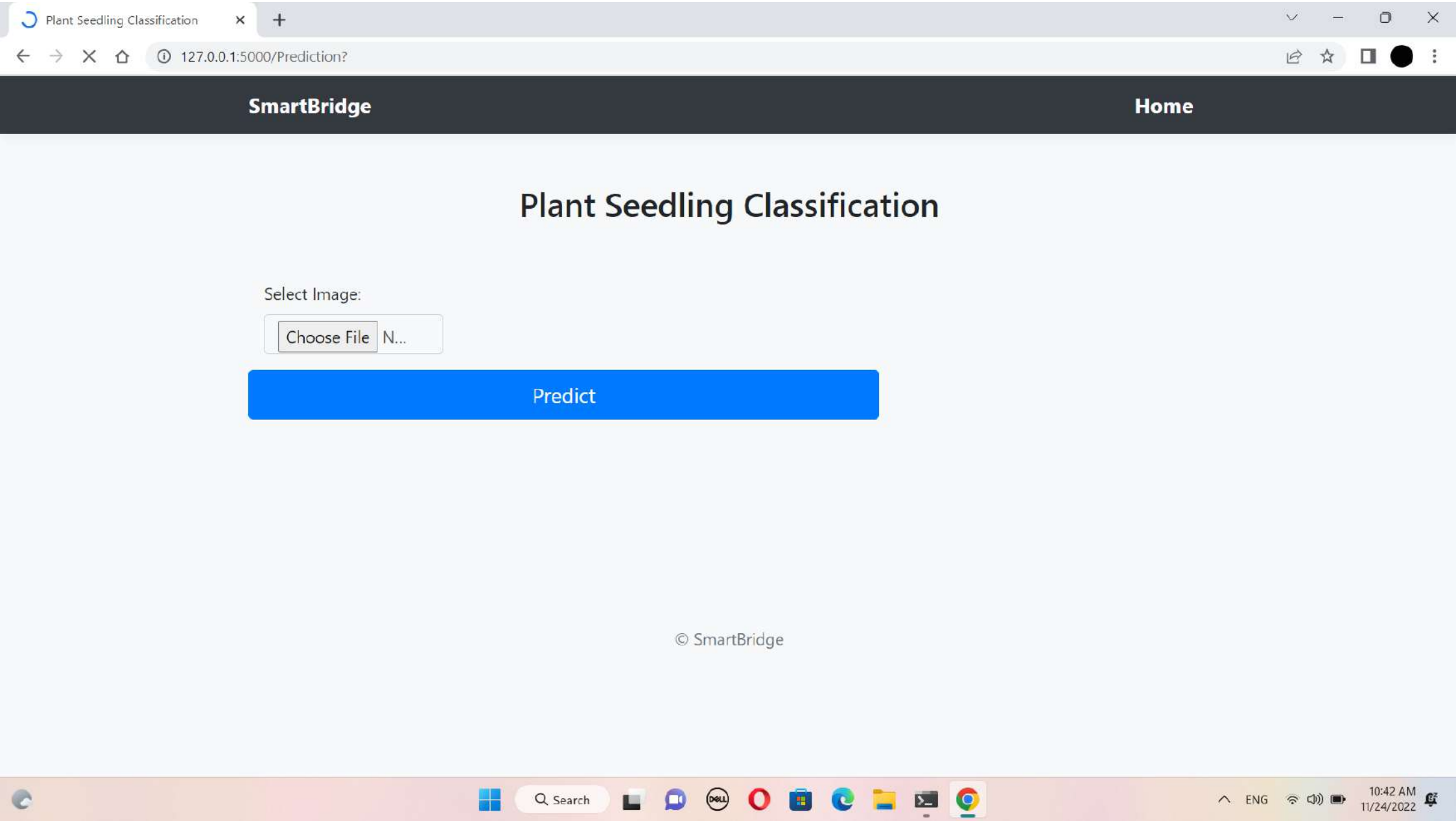
```
array([[0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 1.]], dtype=float32)
```

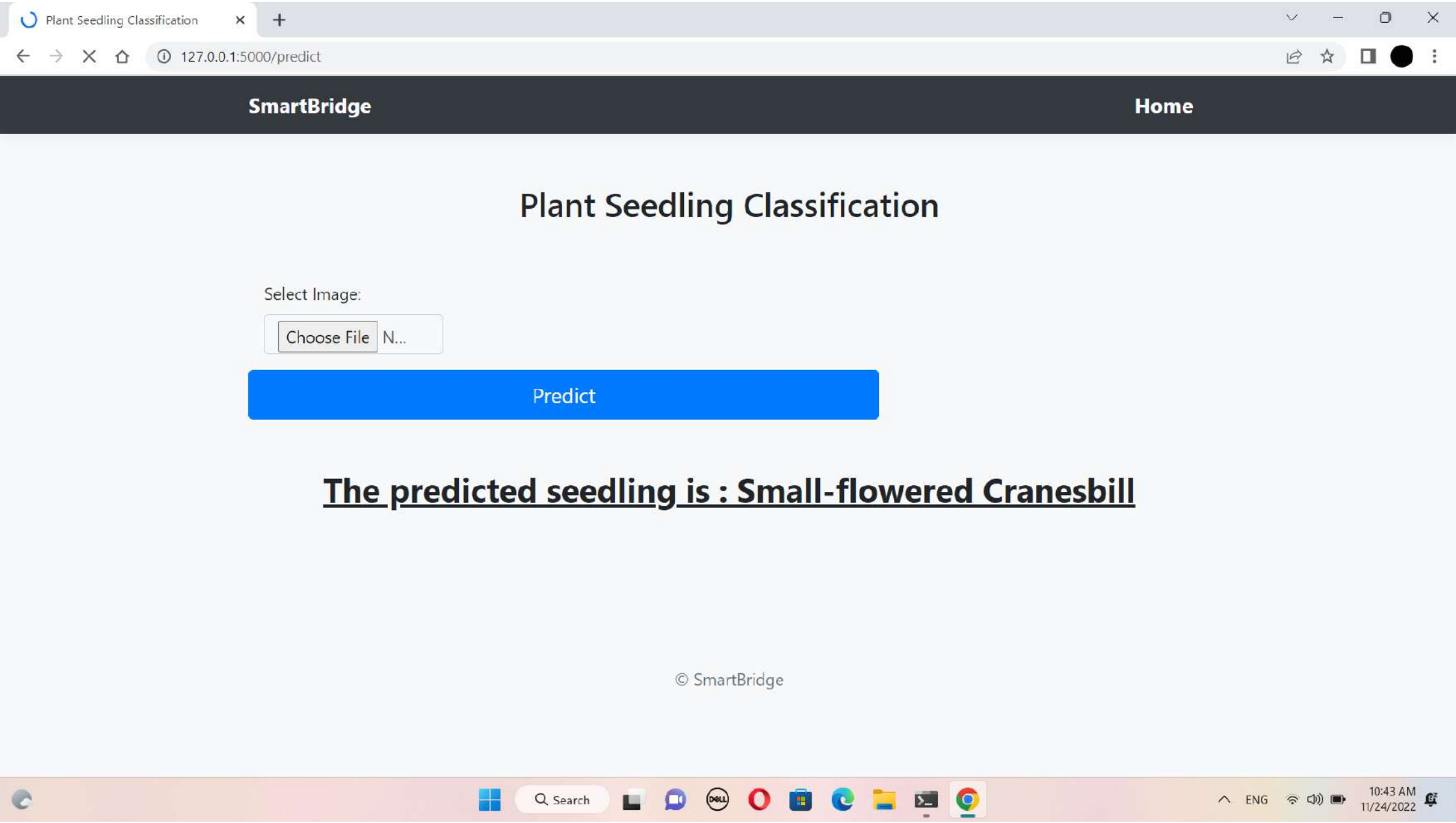
```
[36] output=np.argmax(model.predict(x),axis=1)
     output
```

```
1/1 [==============================] - 0s 53ms/step
array([11])
```

```
[ ]
```

ENG 7:26 PM 11/9/2022


Plant Seedling Classification
127.0.0.1:5000/Prediction?
SmartBridge
Home
Plant Seedling Classification
Select Image:
Choose File N...
Predict
© SmartBridge
Search
ENG
10:42 AM
11/24/2022


Plant Seedling Classification
127.0.0.1:5000/predict
SmartBridge
Home
Plant Seedling Classification
Select Image:
Choose File N...
Predict
The predicted seedling is : Small-flowered Cranesbill
© SmartBridge
Search
ENG
10:43 AM
11/24/2022