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

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

```
import tensorflow as tf
from tensorflow.keras.applications import ResNet50
from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.layers import Dense, Flatten
from tensorflow.keras.models import Model



base_model = ResNet50(weights='imagenet', include_top=False, input_shape=(224, 224, 3))
for layer in base_model.layers:
    layer.trainable = False
```

```
Downloading data from https://storage.googleapis.com/tensorflow/keras-applications/resnet/resnet50_weights_tf_dim_ordering_tf_kernels_no
94765736/94765736 ━━━━━━━━━━━━━━━━━━━━ 1s 0us/step
```

```
from tensorflow.keras.layers import Dense, Flatten
from tensorflow.keras.models import Model

# Defina o número de classes
num_classes = 4  # Substitua pelo número de classes do seu dataset

# Adicionar camadas personalizadas
x = Flatten()(base_model.output)
x = Dense(1024, activation='relu')(x)
predictions = Dense(num_classes, activation='softmax')(x)
model = Model(inputs=base_model.input, outputs=predictions)



model.compile(optimizer='adam', loss='binary_crossentropy', metrics=['accuracy'])
```

```
train_datagen = ImageDataGenerator(rescale=1./255)
train_generator = train_datagen.flow_from_directory(
    '/content/drive/MyDrive/sistema-de-recomendacao/Datasets',
    target_size=(224, 224),
    batch_size=32,
    class_mode='categorical'
)
```

```
Found 4106 images belonging to 4 classes.
```

```
model.fit(train_generator, steps_per_epoch=train_generator.n//train_generator.batch_size, epochs=10)
```

```
Epoch 1/10
/usr/local/lib/python3.10/dist-packages/keras/src/trainers/data_adapters/py_dataset_adapter.py:121: UserWarning: Your `PyDataset` class
  self._warn_if_super_not_called()
128/128 ━━━━━━━━━━━━━━━━━━━━ 1384s 10s/step - accuracy: 0.7315 - loss: 3.4082
Epoch 2/10
128/128 ━━━━━━━━━━━━━━━━━━━━ 7s 313us/step - accuracy: 0.9688 - loss: 0.0542
Epoch 3/10
/usr/lib/python3.10/contextlib.py:153: UserWarning: Your input ran out of data; interrupting training. Make sure that your dataset or ge
  self.gen.throw(typ, value, traceback)
128/128 ━━━━━━━━━━━━━━━━━━━━ 972s 7s/step - accuracy: 0.9561 - loss: 0.0977
Epoch 4/10
128/128 ━━━━━━━━━━━━━━━━━━━━ 6s 118us/step - accuracy: 0.9688 - loss: 0.0477
Epoch 5/10
128/128 ━━━━━━━━━━━━━━━━━━━━ 950s 7s/step - accuracy: 0.9455 - loss: 0.1487
Epoch 6/10
128/128 ━━━━━━━━━━━━━━━━━━━━ 7s 119us/step - accuracy: 0.9375 - loss: 0.0627
Epoch 7/10
128/128 ━━━━━━━━━━━━━━━━━━━━ 1010s 8s/step - accuracy: 0.9767 - loss: 0.0447
Epoch 8/10
128/128 ━━━━━━━━━━━━━━━━━━━━ 6s 114us/step - accuracy: 1.0000 - loss: 0.0187
Epoch 9/10
128/128 ━━━━━━━━━━━━━━━━━━━━ 1000s 7s/step - accuracy: 0.9685 - loss: 0.0691
Epoch 10/10
128/128 ━━━━━━━━━━━━━━━━━━━━ 7s 117us/step - accuracy: 0.9688 - loss: 0.0971
<keras.src.callbacks.history.History at 0x7f2e5c2869b0>
```

```
model.save('/content/drive/MyDrive/Model_recomendacao.h5')
```

```
WARNING:absl:You are saving your model as an HDF5 file via `model.save()` or `keras.saving.save_model(model)`. This file format is consi
```