

SUMMARY

The task is to develop an image classification model trained on the given celebrity image dataset. The model aims to classify any input image into one of five classes - Lionel Messi, Roger Federer, Maria Sharapova, Serena Williams, and Virat Kohli.

The model architecture used is Convolutional Neural Network (CNN) with a sequential model involving two convolutional layers.

Training process

Load each image using OpenCV, convert it to RGB color space, resize it to (128, 128), and finally, transform it into a NumPy array.

The dataset is split into training and testing sets in the ratio of 75% and 25%

The model summary is as follows:

Model: "sequential"

Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 126, 126, 32)	896
max_pooling2d (MaxPooling2D)	(None, 63, 63, 32)	0
conv2d_1 (Conv2D)	(None, 61, 61, 64)	18496
max_pooling2d_1 (MaxPooling2D)	(None, 30, 30, 64)	0
dropout (Dropout)	(None, 30, 30, 64)	0
flatten (Flatten)	(None, 57600)	0
dense (Dense)	(None, 64)	3686464
dense_1 (Dense)	(None, 5)	325

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Total params: 3706181 (14.14 MB)
Trainable params: 3706181 (14.14 MB)
Non-trainable params: 0 (0.00 Byte)
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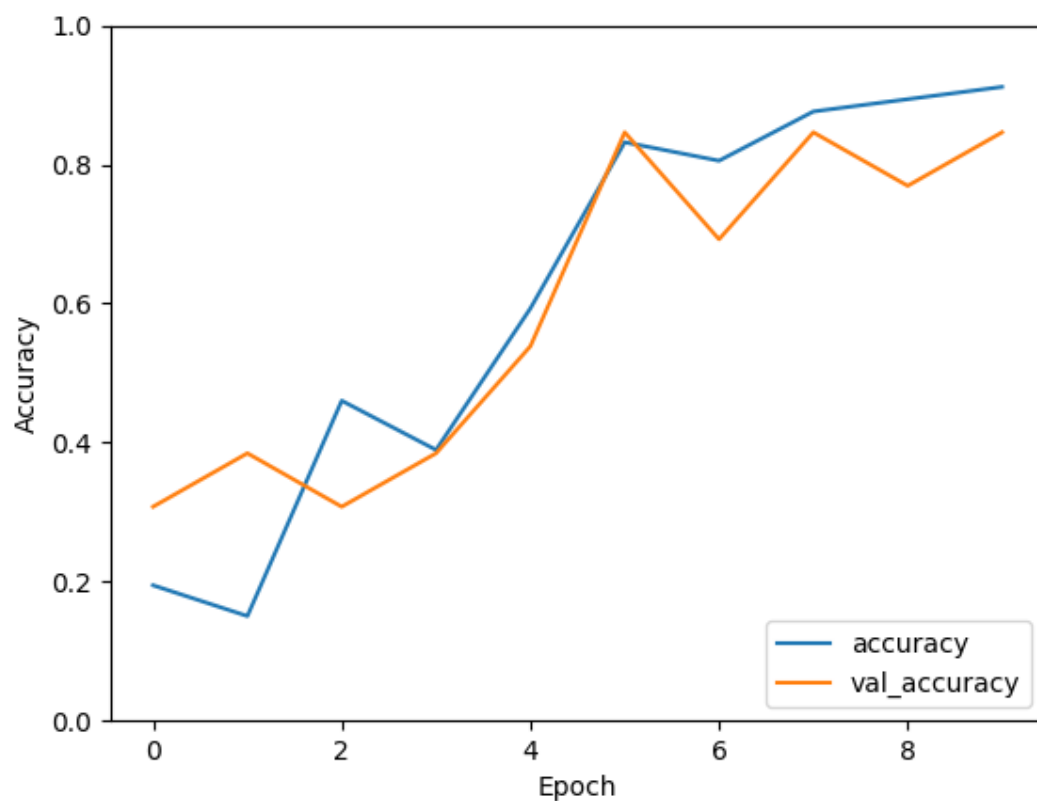
The Adam optimizer is employed along with the Sparse Categorical Cross-Entropy loss function.

The model is trained on the given data for 10 epochs with batches of size 32, and 10% of the training data is reserved for validation. The resultant model has an accuracy of 76%. The classification report obtained is as follows:

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classification Report
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	precision	recall	f1-score	support
0	0.73	0.89	0.80	9
1	0.64	1.00	0.78	9
2	1.00	0.86	0.92	7
3	0.75	0.43	0.55	7
4	0.86	0.60	0.71	10
accuracy			0.76	42
macro avg	0.80	0.75	0.75	42
weighted avg	0.79	0.76	0.75	42

The accuracy plot as follows:



The loss plot as follows:

