Model Development Phase Template

Date	15 October 2024
Team ID	LTVIP2024TMID24772
Project Title	Implementation of Deep Learning Techniques to Detect Malaria
Maximum Marks	10 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include a summary and training and validation performance metrics for multiple models, presented through respective screenshots.

Initial Model Training Code (5 marks):

```
#creating sequential model
model=Sequential()
model.add(Conv2D(filters=32,kernel_size=2,padding="same",activation="relu",input_shape=(50,50,3)))
model.add(MaxPooling2D(pool_size=2))
model.add(Dropout(0.2))
model.add(Conv2D(filters=32,kernel_size=2,padding="same",activation="relu"))
model.add(MaxPooling2D(pool_size=2))
model.add(Dropout(0.2))
model.add(Conv2D(filters=32,kernel_size=2,padding="same",activation="relu"))
model.add(MaxPooling2D(pool_size=2))
model.add(Dropout(0.2))


model.add(Flatten())

model.add(Dense(512,activation="relu"))
model.add(Dropout(0.4))
model.add(Dense(2,activation="softmax"))#2 represent output layer neurons
model.summary()
```

[21]

```
#Fit the model with min batch size as 32 can tune batch size to some factor of 2^power ]
h=model.fit(x_train,y_train,batch_size=32,callbacks=callbacks, validation_data=(x_test,y_test),epochs=20,verbose=1)
```

[24] Python

```
Train on 24803 samples, validate on 2755 samples
Epoch 1/20
24803/24803 [==============================] - 16s 634us/step - loss: 0.3904 - acc: 0.8049 - val_loss: 0.1509 - val_acc: 0.9546
Epoch 2/20
24803/24803 [==============================] - 9s 381us/step - loss: 0.1755 - acc: 0.9445 - val_loss: 0.1406 - val_acc: 0.9564
Epoch 3/20
24803/24803 [==============================] - 9s 370us/step - loss: 0.1624 - acc: 0.9496 - val_loss: 0.1399 - val_acc: 0.9583
Epoch 4/20
24803/24803 [==============================] - 9s 371us/step - loss: 0.1523 - acc: 0.9527 - val_loss: 0.1277 - val_acc: 0.9608
Epoch 5/20
24803/24803 [==============================] - 9s 373us/step - loss: 0.1449 - acc: 0.9541 - val_loss: 0.1196 - val_acc: 0.9626
Epoch 6/20
24803/24803 [==============================] - 9s 370us/step - loss: 0.1418 - acc: 0.9541 - val_loss: 0.1172 - val_acc: 0.9633
Epoch 7/20
24803/24803 [==============================] - 9s 373us/step - loss: 0.1361 - acc: 0.9554 - val_loss: 0.1130 - val_acc: 0.9641
Epoch 8/20
24803/24803 [==============================] - 9s 369us/step - loss: 0.1311 - acc: 0.9563 - val_loss: 0.1173 - val_acc: 0.9626
Epoch 9/20
24803/24803 [==============================] - 9s 367us/step - loss: 0.1300 - acc: 0.9570 - val_loss: 0.1115 - val_acc: 0.9630
Epoch 10/20
24803/24803 [==============================] - 9s 369us/step - loss: 0.1229 - acc: 0.9584 - val_loss: 0.1214 - val_acc: 0.9619
Epoch 11/20
24803/24803 [==============================] - 9s 364us/step - loss: 0.1222 - acc: 0.9586 - val_loss: 0.1110 - val_acc: 0.9648
Epoch 12/20
24803/24803 [==============================] - 9s 368us/step - loss: 0.1185 - acc: 0.9586 - val_loss: 0.1161 - val_acc: 0.9630
```

Model Validation and Evaluation Report (5 marks):

Model	Summary	Training and Validation Performance Metrics
CNN