Faculty name: Faculty of Computers and artificial intelligence – Helwan University

Course name: Selected topics in computer sciences 2

Team number: 26

Team members:

Member Name	Member ID
يوسف هشام محمد علي شرف الدين	202001113
فاطمه شريف احمد عطيه	202000637
محمد علاء الدين حسين هلال	202000797
محمد أمجد محمود	202000737
عبدالرحمن خليفة حلمي خليفة	201900417
عبدالرحمن محمد عبدالرجال عيسي	201900433

Authors name: Rahul Chauhan / Kamal Kumar Ghanshala / R.C Joshi

Paper name: Convolutional Neural Network (CNN) for Image Detection and Recognition

Publisher name: Rahul Chauhan

Publication date: December 2018

Dataset: Satellite Image Classification | Kaggle

Total number of samples: 5631

Dimension of the images: 256*256*3

Number of classes: 4

Classes: [Cloudy, Desert, Green Area, Water]

Number of training samples: 4504 | Ratio: 80%

Number of validation samples: 563 | Ratio: 10%

Number of testing samples: 564 | Ratio: 10%

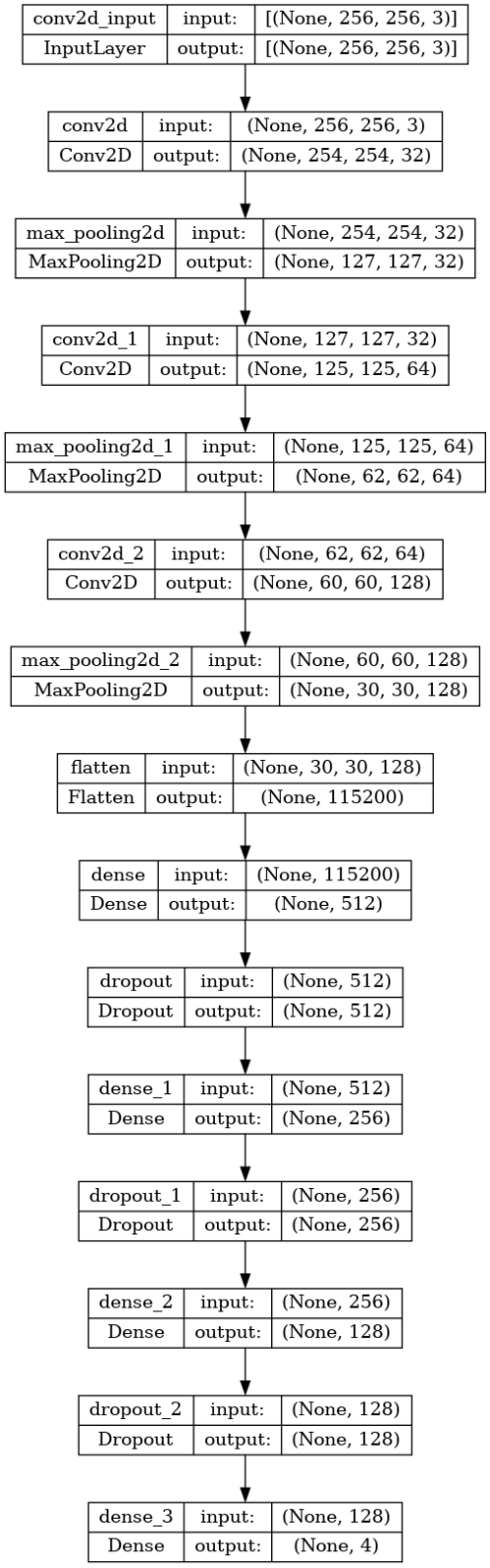
Implemented algorithms: CNN / VGG19 / MobileNetV2

CNN accuracy: 87.4%

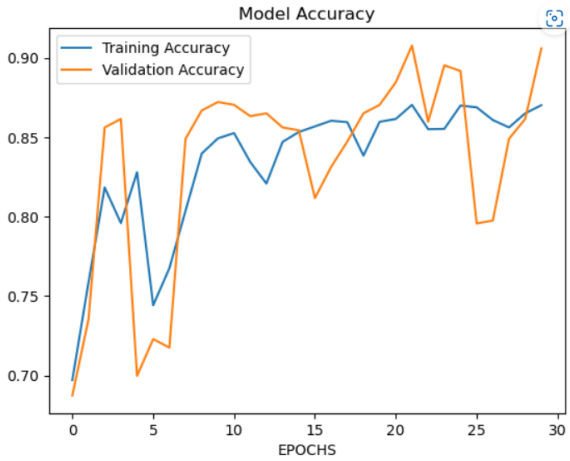
VGG-19 accuracy: 93.9%

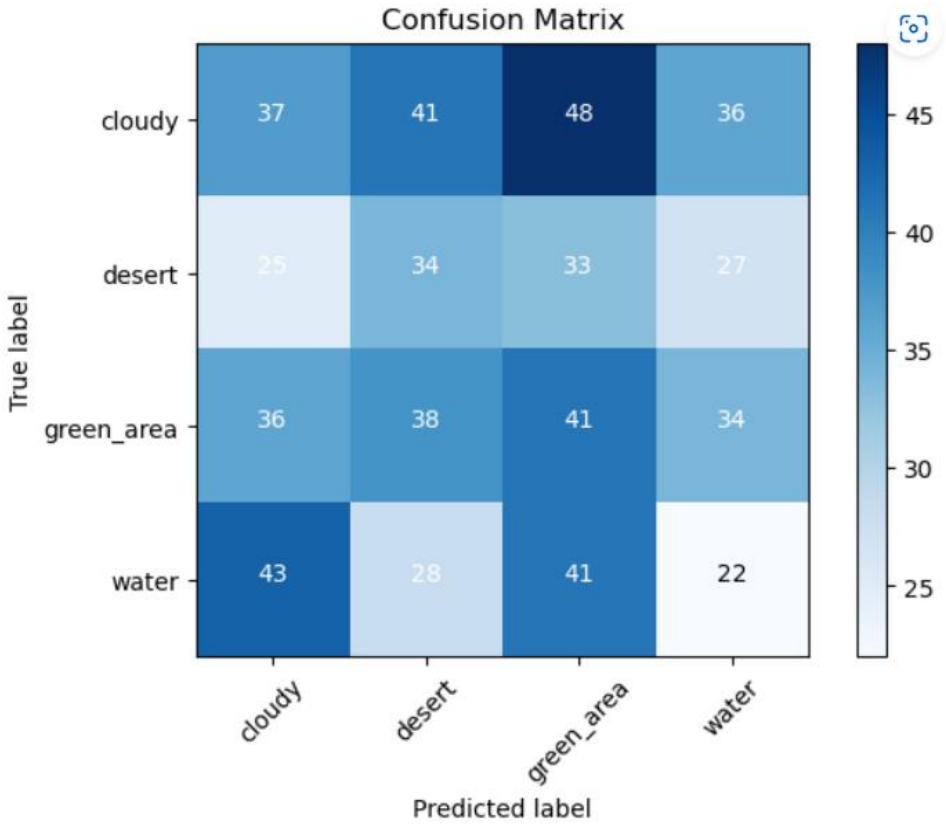
MobileNet V2 accuracy: 97.5%

CNN Block diagram



CNN Model Accuracy and Loss

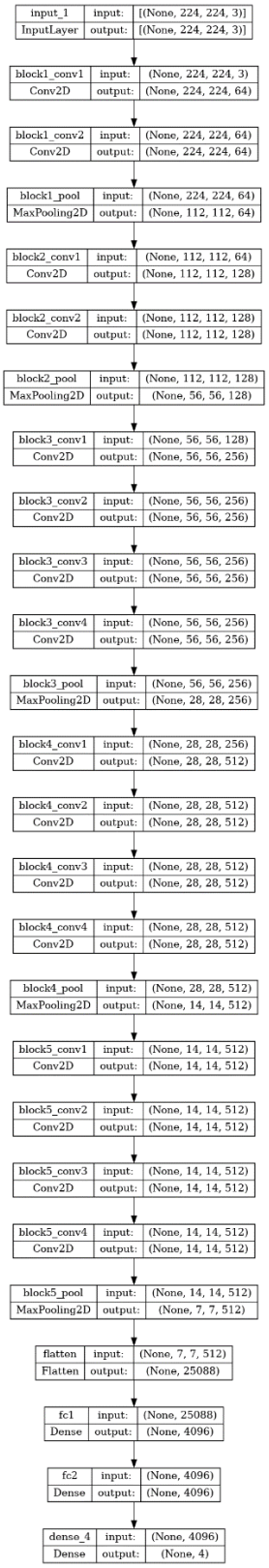




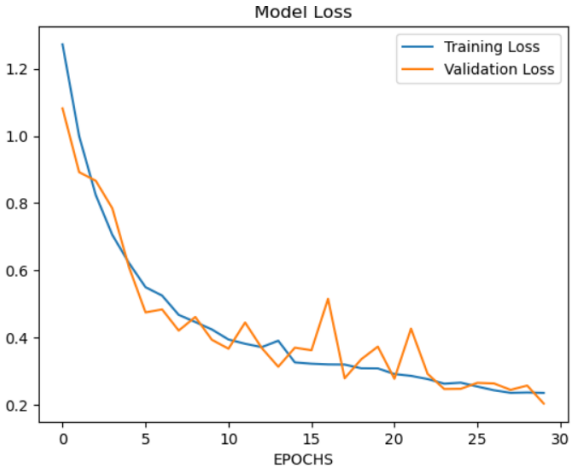

```
score = cnn_model.evaluate(cnn_test_generator)
```

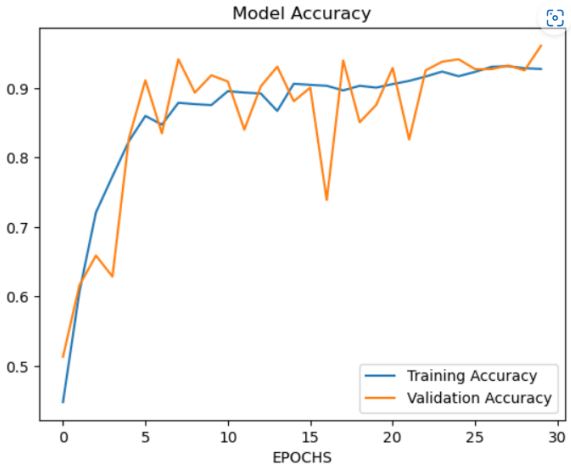
```
18/18 [==============================] - 2s 129ms/step - loss: 0.2943 - accuracy: 0.8741
```

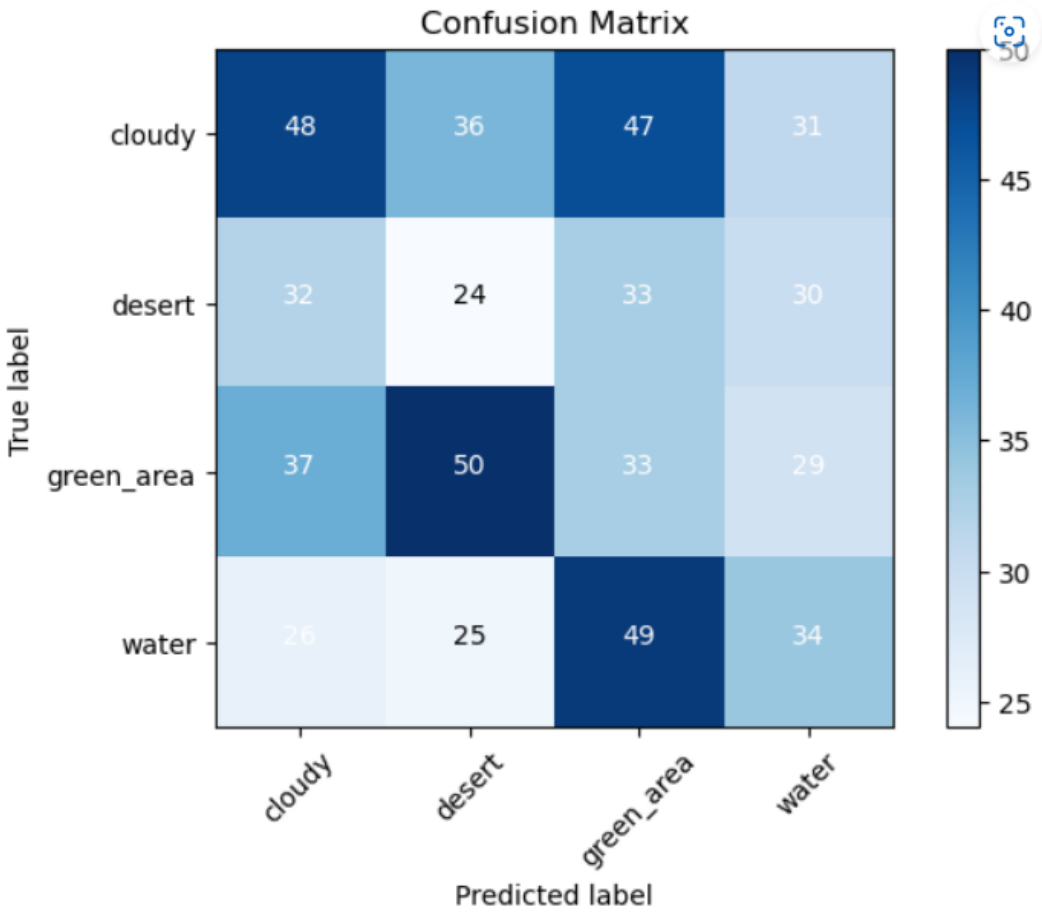
VGG-19 Block Diagram



VGG-19 accuracy and loss



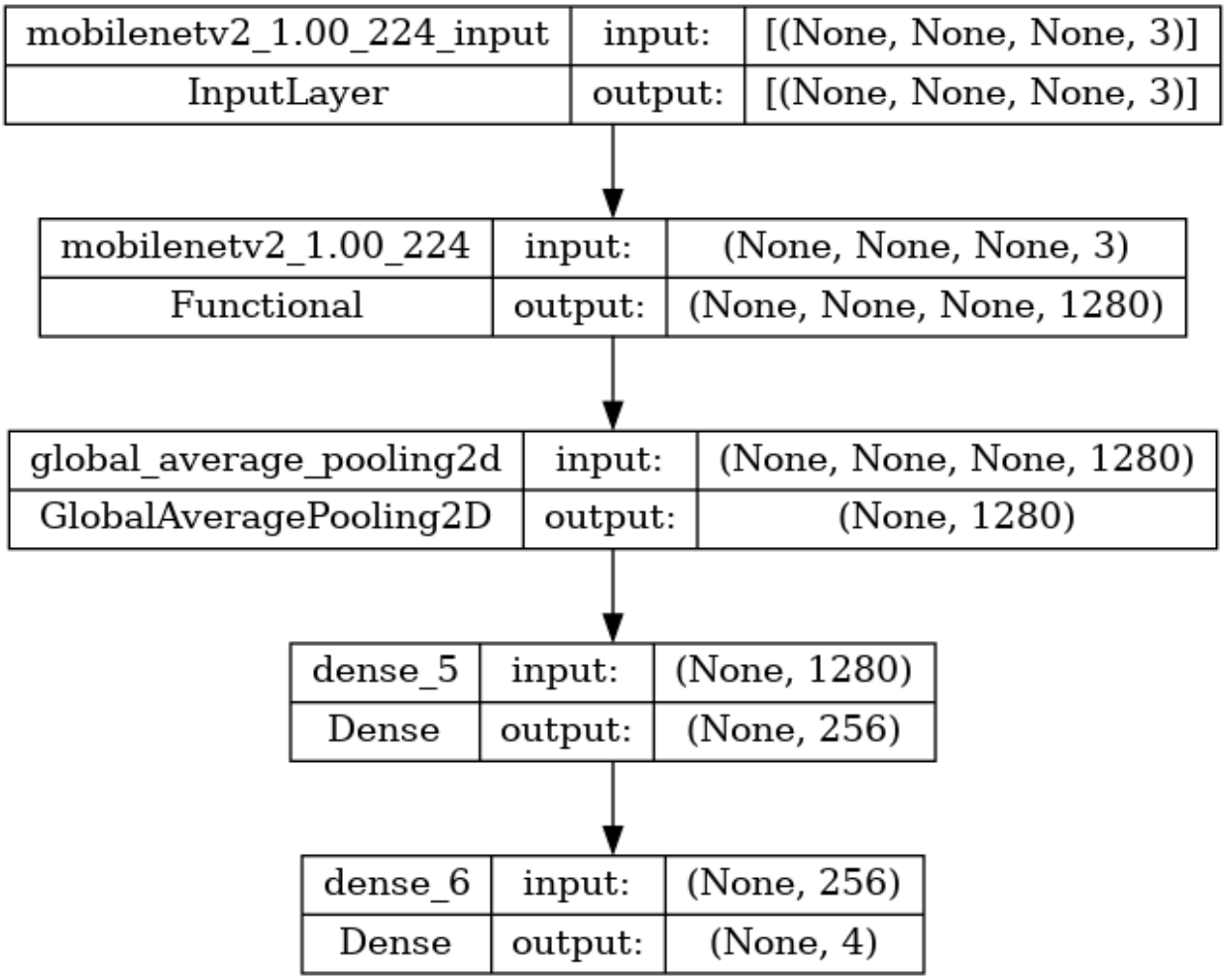




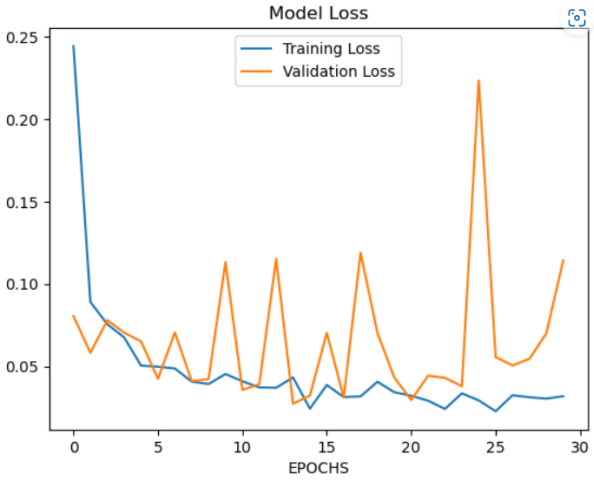

```
vgg_model.evaluate(vgg_test_generator)
```

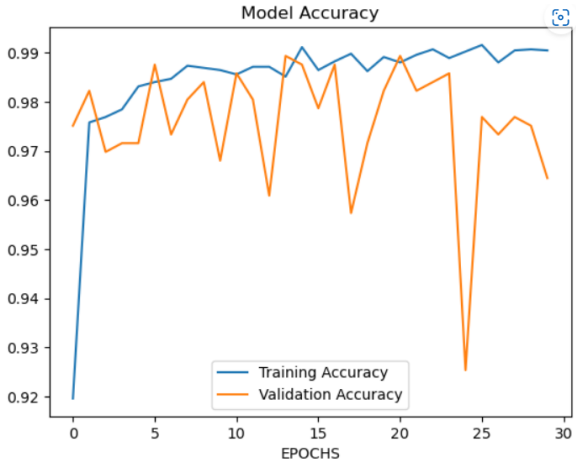
```
18/18 [==============================] - 10s 555ms/step - loss: 0.2277 - accuracy: 0.9397
```

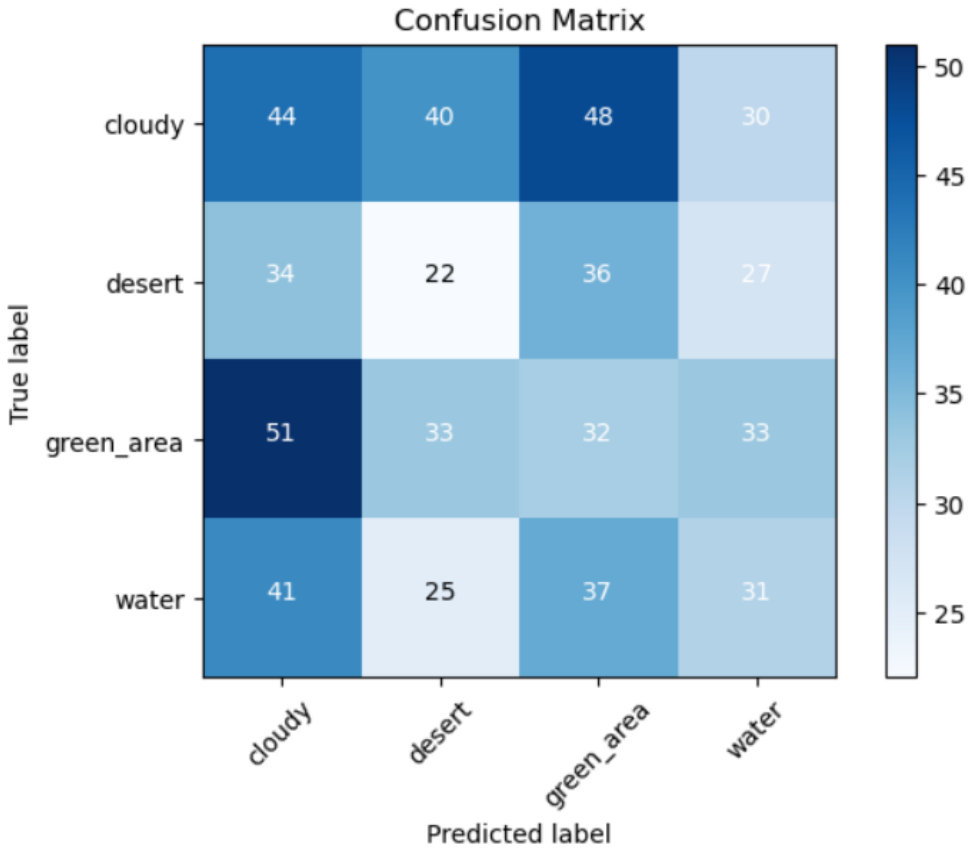
MobileNet V2 Block Diagram



MobileNet V2 accuracy and loss








```
mnv2_model.evaluate(vgg_test_generator)
```

```
18/18 [==============================] - 2s 115ms/step - loss: 0.0956 - accuracy: 0.9752
```