DIGITAL LCC (LEAF COLOR CHART)

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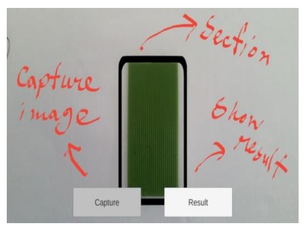
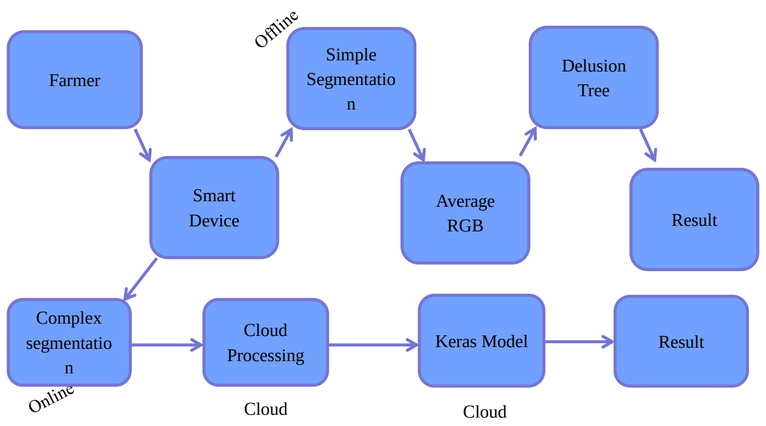
Motivation

For making digital Bangladesh, we need to make agriculture system digital. But farmer's uses manual system to give fertilizer. Automation the presses of LCC by capturing image from application.

System model





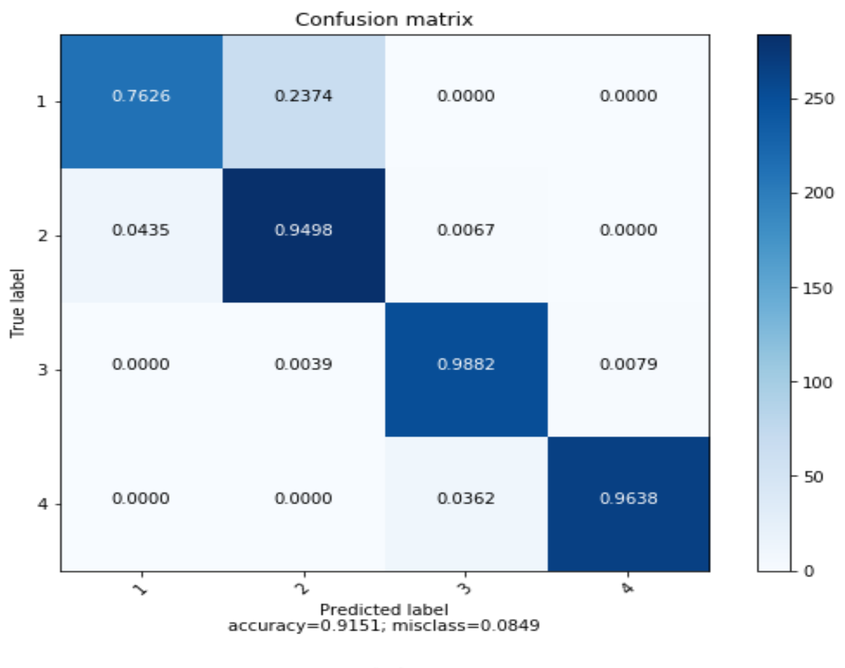
Experimental Outcome

Decision Tree:

```
[[212  66   0   0]
 [ 13 284   2   0]
 [  0   1 251   2]
 [  0   0  10 266]]
```

```
accuracy_score(predicted, y_test)
```

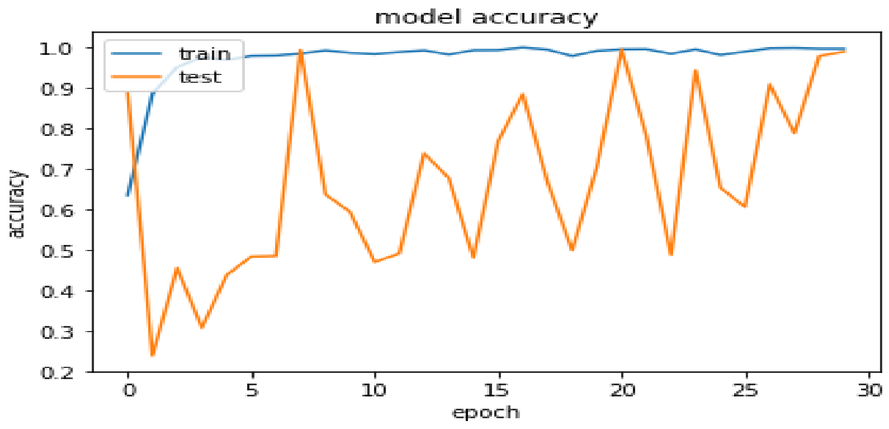
```
0.9150858175248419
```



Neural Network:

```
score = good_model.evaluate(X_test, y_test, verbose=Tr
print("%s: %.2f%%" % (good_model.metrics_names[1], sco
```

```
671/671 [==============================] - 3s 4ms/step
acc: 99.25%
```



Constrains

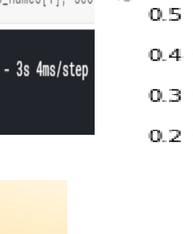
- High computing PC
- Different lighting condition
- Adding Time dimension to RGB -> RGBT
- No SPAD meter.

Data Collection:

Ideal:

Image taken from 9:00 am to 1:30 pm

Normal:

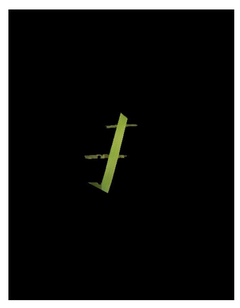


Segmentation

First detect skin color, find contours. Draw a convex hull mask it. Than detect green shade from HSV range mask it.

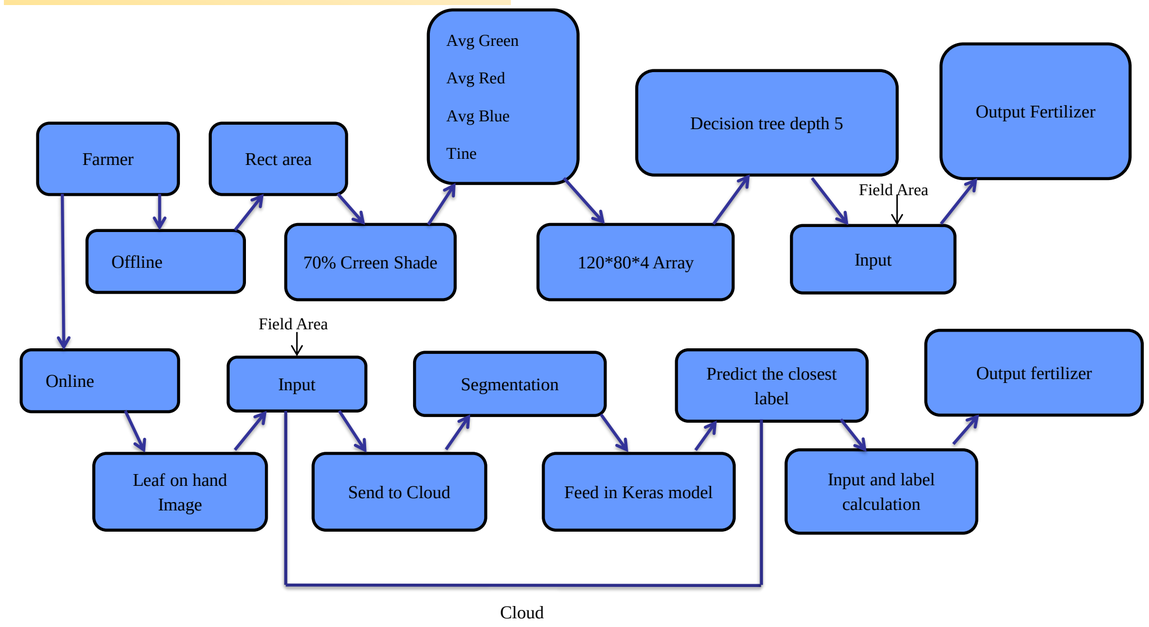
Step 1

Step 2

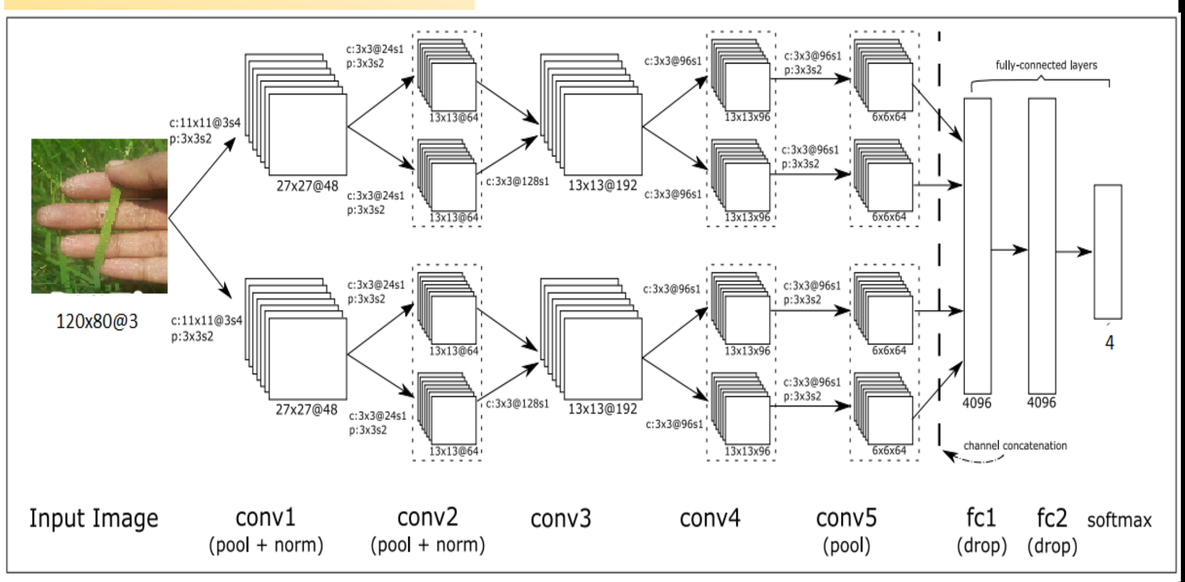


Step 3

Data flow

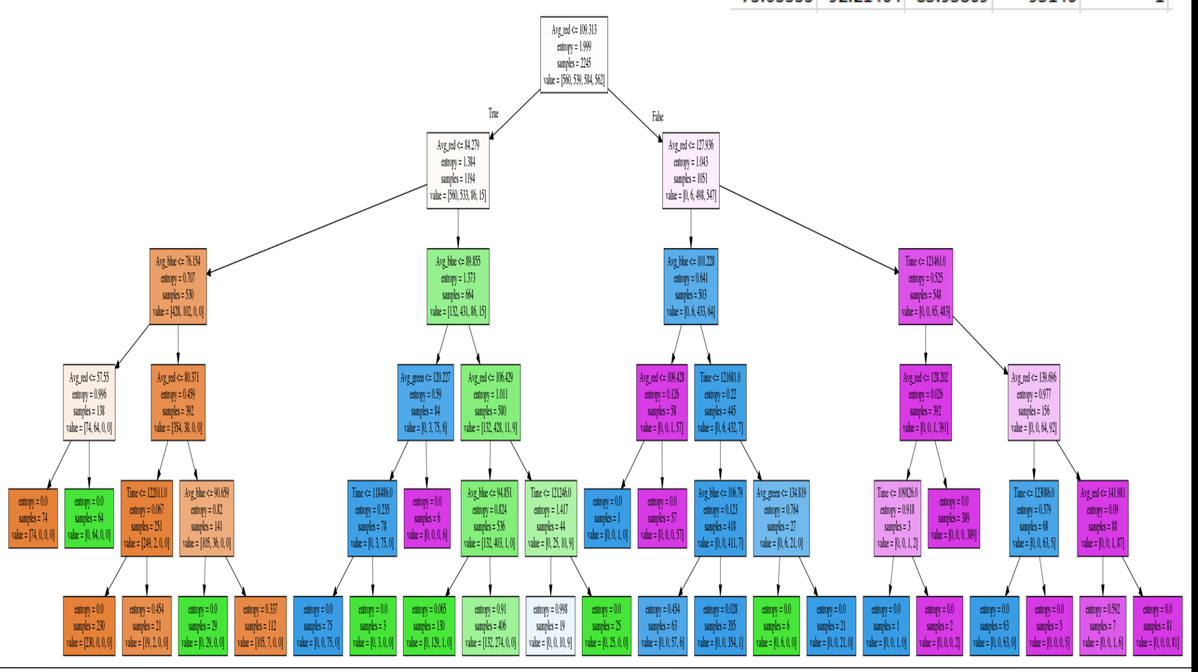


Online



Offline

B	C	D	E	F
Avg_red	Avg_gree	Avg_blue	Time	Label
77.70357	97.47226	87.59464	95126	1
78.78607	99.03583	92.67012	95136	1
73.03333	92.21464	85.95869	95146	1



Conclusion:

What has been done:

- Standard LCC benchmark
- The captured image of LCC's photo printing in an ideal lighting condition and normal condition
- Offline implementation and online backend developed.

- Auto segmentation without white paper
- Ideal data collection with different lighting condition and time.
- Normal data collection with respect to LCC and time
- Comparing result with other methods.

Application:

1. Waste free fertilization.
2. Automatic fertilization.
3. Error free fertilization.
4. Fertilization for other plants also.

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