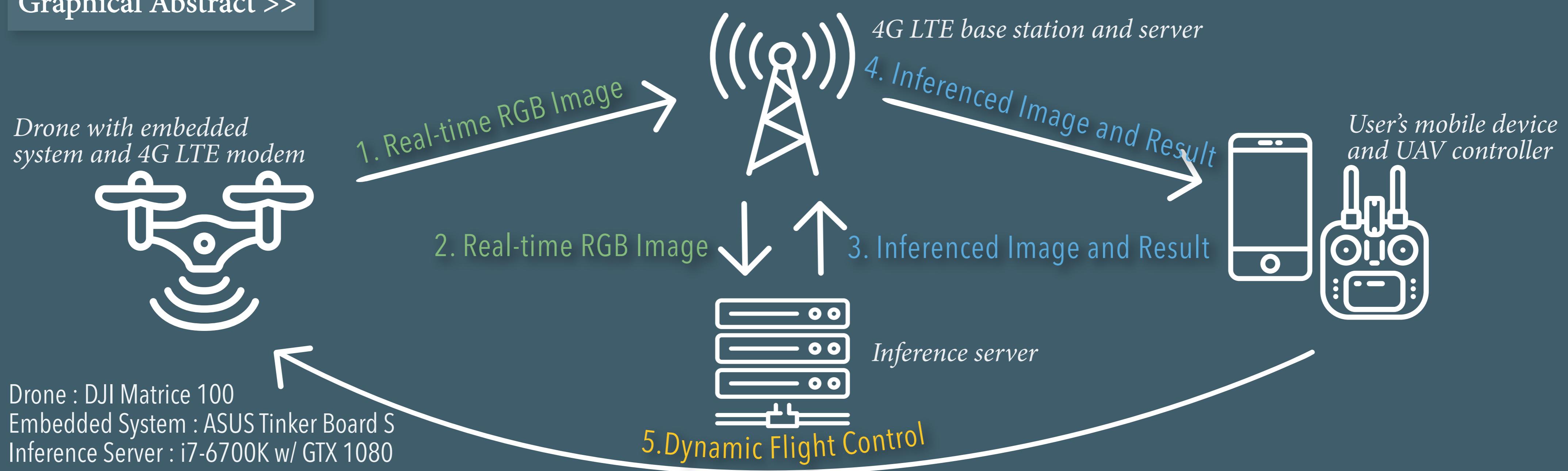


# Enabling Smart Agriculture Applications with Edge Computing and Deep learning

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## Graphical Abstract >>

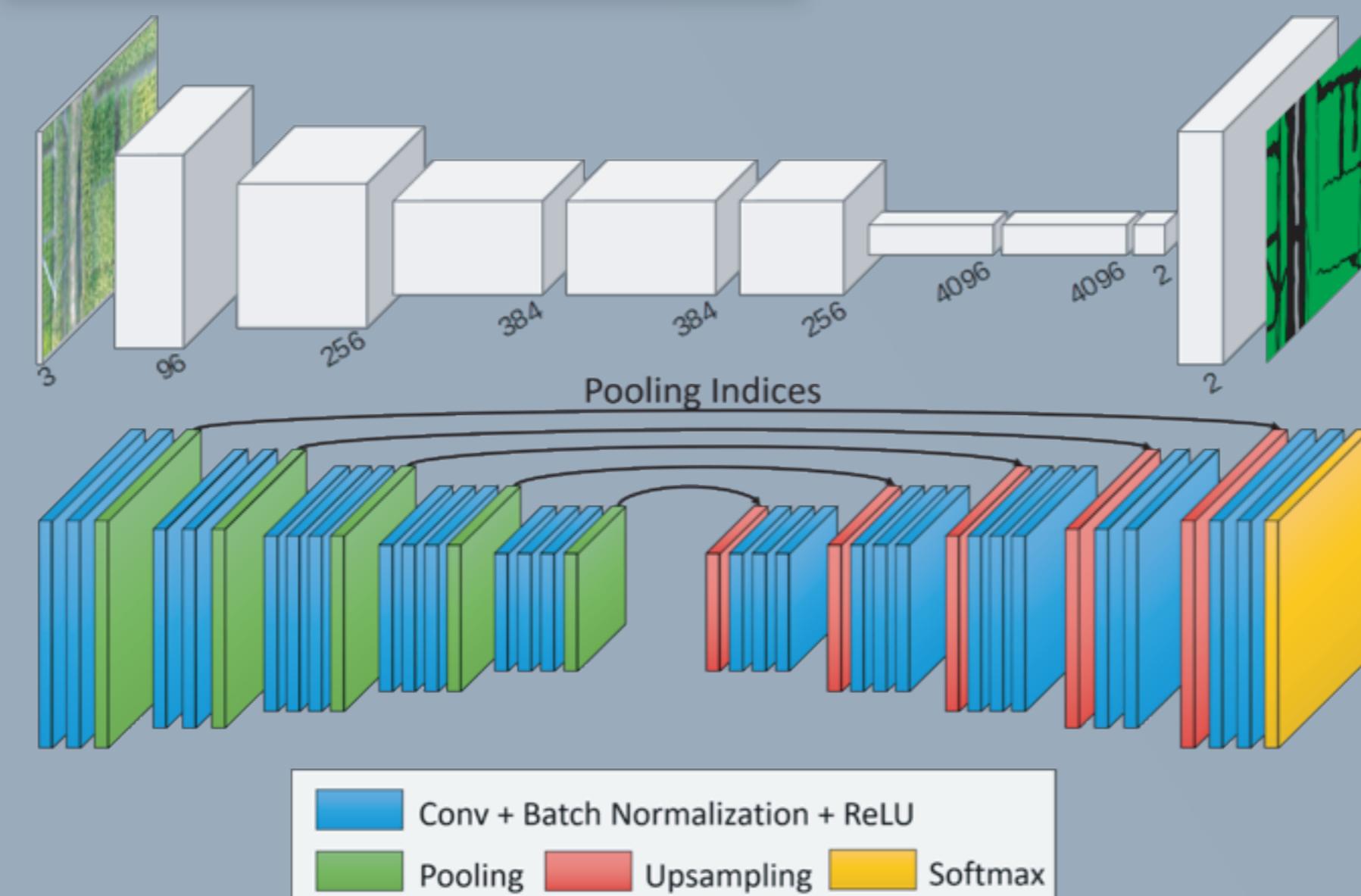


## Study Area >>

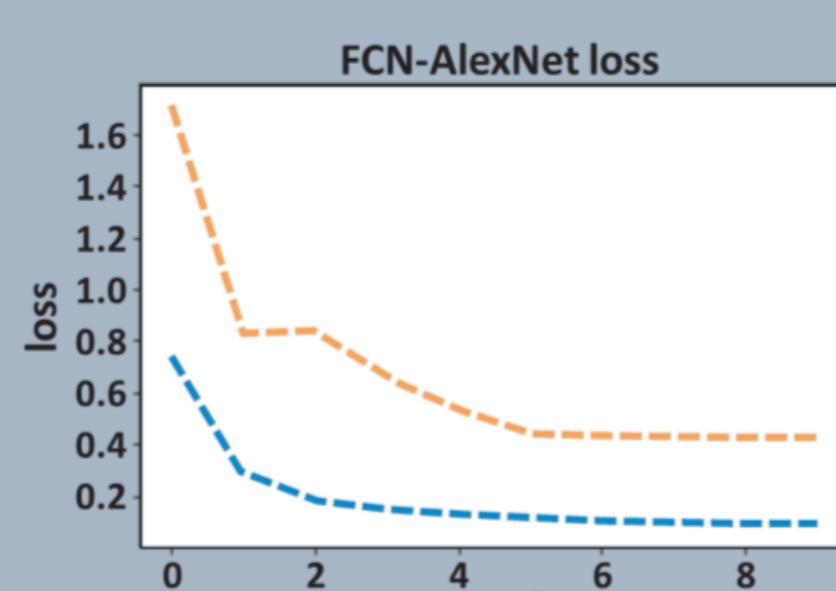
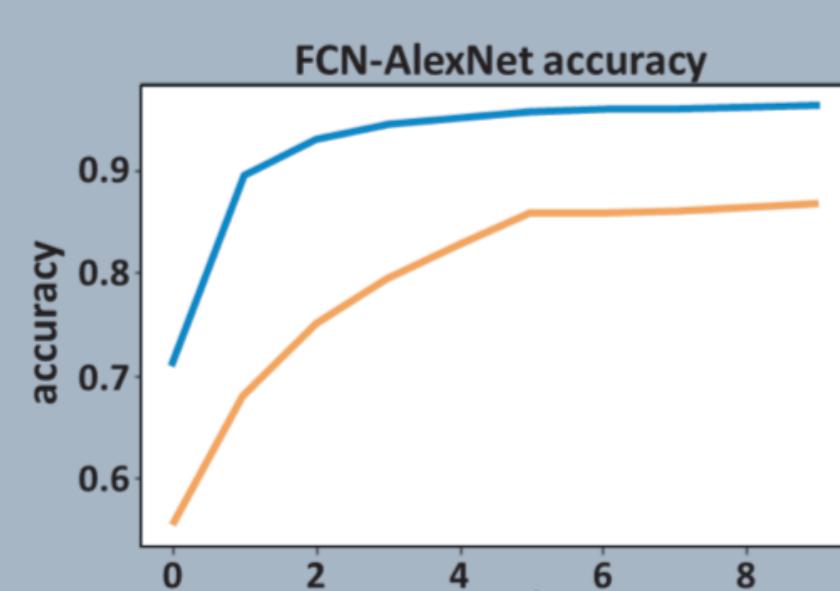
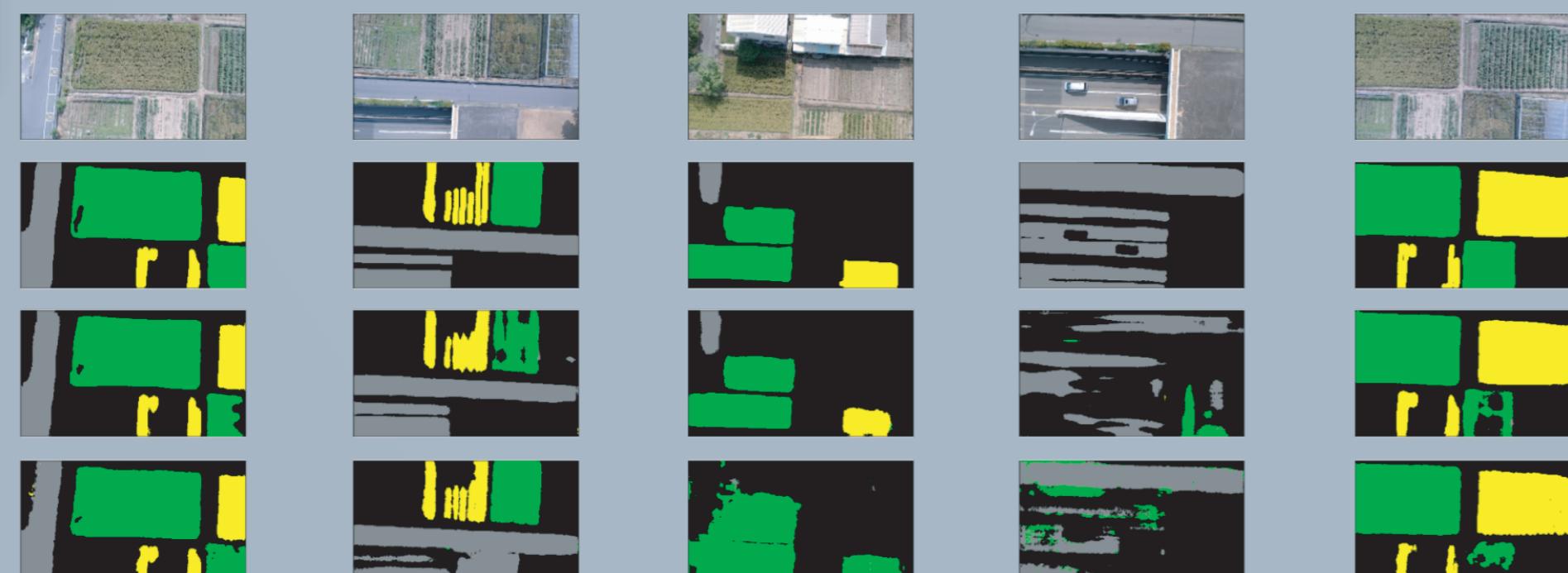


NCHU Experimental Farm  
Area : 0.4 ha  
Crop type : Rice, Corn, other

## Deep Learning Networks >>



## Result >>



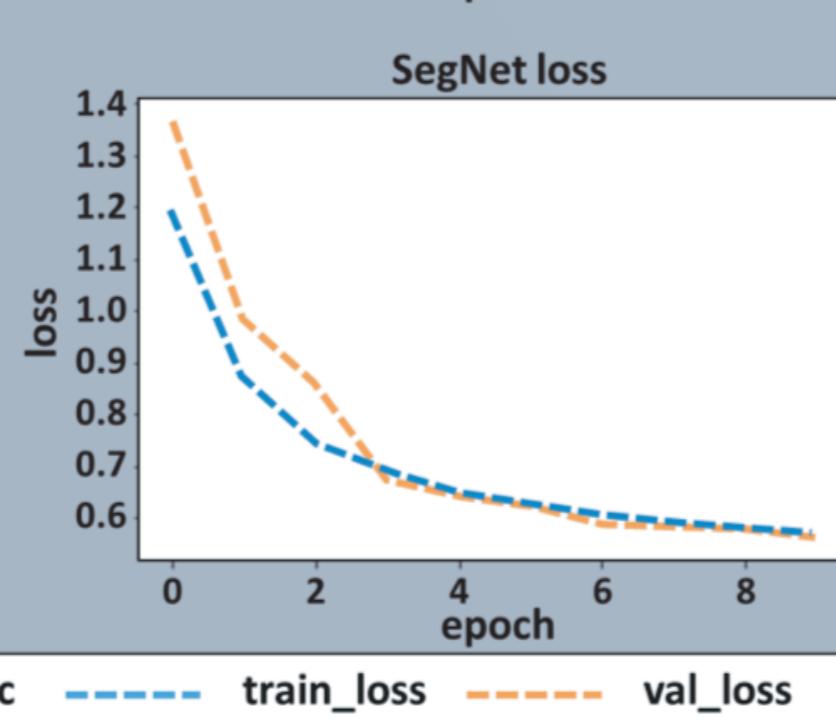
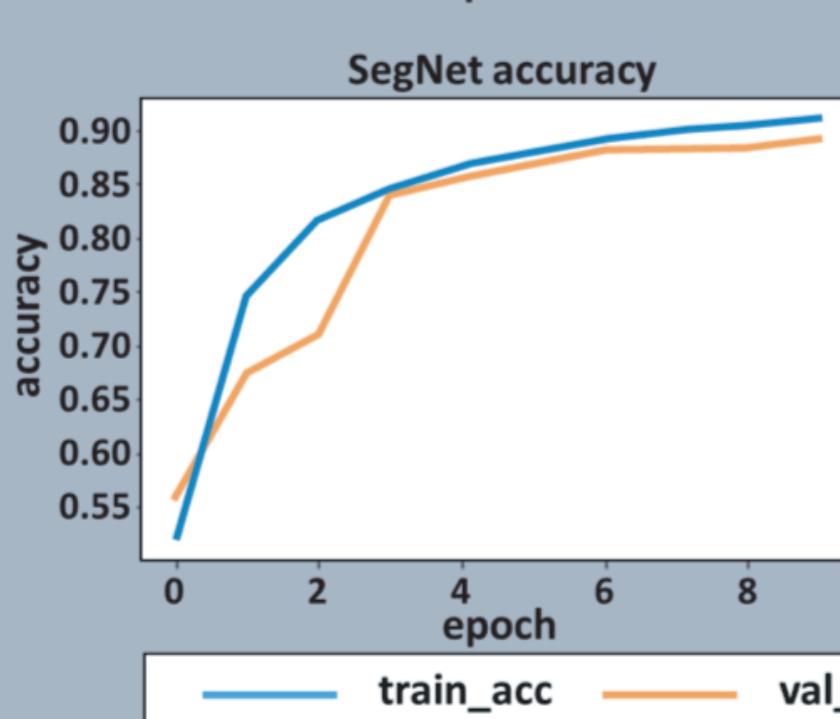
Model	Train		Validation	
	PA	MPA	MIoU	
FCN-AlexNet	<b>0.905</b>	<b>0.793</b>	<b>0.689</b>	
SegNet	0.882	0.736	0.664	

UAV Imagery

Ground Truth

FCN-AlexNet

SegNet



Model	Train		Validation	
	Acc	Loss	Acc	Loss
FCN-AlexNet	<b>0.96</b>	<b>0.09</b>	0.87	<b>0.43</b>
SegNet	0.91	0.57	<b>0.89</b>	0.56

- Inference time : 0.7s
- FCN-AlexNet performs better

## Future Plans >>

- More FCN for comparison
- FCN-SqueezeNet, U-Net, FCN-DenseNet
- Local LTE base station
- 5G mobile networks
- High-tier onboard system
- Collaboration with agricultural groups/countries

