AI Programming Project 1 Report

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1. Introduction

Artificial Intelligence(a.k.a AI) is currently one of the most interested topic a wide range of fields because of AI's universality. One of the most interesting topic of interesting AI is Computer Vision, analyzing and processing the visual information.

In this report, I introduce diverse AI model for detecting whether tire texture is cracked or not, and also analyze the output of AI model.

2. Result

	CNN	VGG-19	InceptionNet	ResNet	MobileNet
Accuracy(Train)	0.68	0.58	0.8	0.95	0.95
Accuracy(Test)	0.35	0.35	0.66	0.73	0.63
F1-score	0	0	0.71	0.75	0.65
Recall	0	0	0.64	0.62	0.51
Precision	0	0	0.80	0.94	0.872
Test Loss	**0.93**	**0.93**	**2.05**	**19.73**	**7.45**

Hyper Parameter	Value
epochs	10
Validation size	0.2
Data's Size	(256, 256, 3)

3. Analyzing

1. CNN & VGG-19's test accuracy is worse than just random.

If flipping the coin, the probability of Head is 0.5, probability of Tail is also 0.5. Like this, If code just emit a output 0 or 1 randomly(Identically Distributed), this code's accuracy is better than CNN model & VGG-19 model.

2. All models are overfitting

I think the reason of overall overfitting is the lack of datasets. The number of images is less than 400, so this number can happen overfitting.

3. Lower loss does not guarantee higher accuracy

CNN & VGG-19's loss value is much better than others. On the other way, CNN & VGG-19's Accuracy is the worst of the models. F1-score of two models is worse than others.

4. Conclusion

In this datasets, as Accuracy, ResNet is best, and MobileNet and InceptionNet is next, and CNN & VGG-19 is worst of the model set. But, because of lack of datasets, We can't be sure that general CNN, VGG-19's is not Good model set.