

A Prominent Technique for Enhancing Animal Detection Utilizing Single Shot Multibox Detector over YOLO Algorithm for Better Accuracy

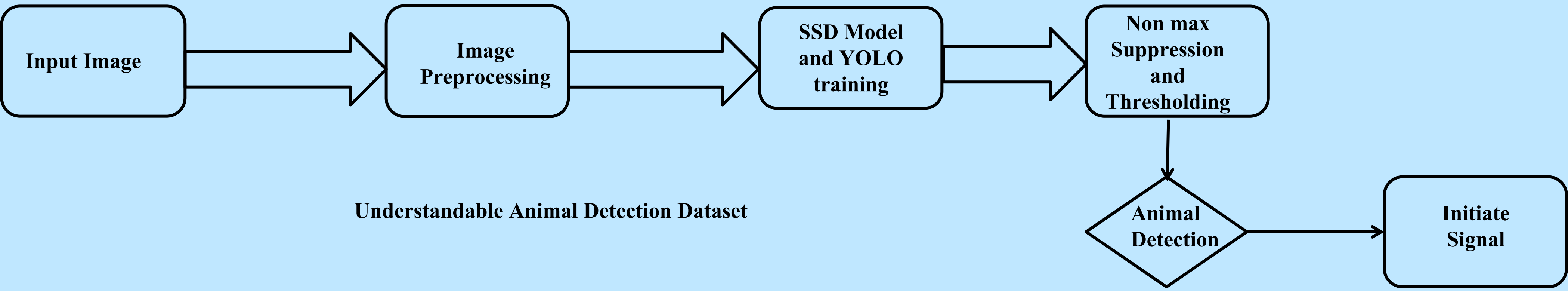
INTRODUCTION

- Investigate and compare the effectiveness of utilizing a Single Shot Multibox Detector(SSD) over the YOLO algorithm for enhancing accuracy in animal detection tasks
- Existing methods of animal detection often face challenges related to accuracy and efficiency, hindering their efficacy in real-world applications such as wildlife monitoring and conservation efforts
- By evaluating and comparing the performance of SSD and YOLO algorithms in animal detection tasks, this study seeks to identify a more accurate and efficient solution for detecting animals within images
- Improving the accuracy of animal detection techniques is crucial for advancing wildlife monitoring efforts, aiding conservation initiatives, and facilitating research in ecology and biodiversity
- A dataset comprising 10,000 annotated wildlife images with 20 iterations, employed to train and compare SSD and YOLO algorithms for enhanced animal detection accuracy



Fig. 1 Rabbit Detection in Farm

MATERIALS AND METHODS



RESULTS

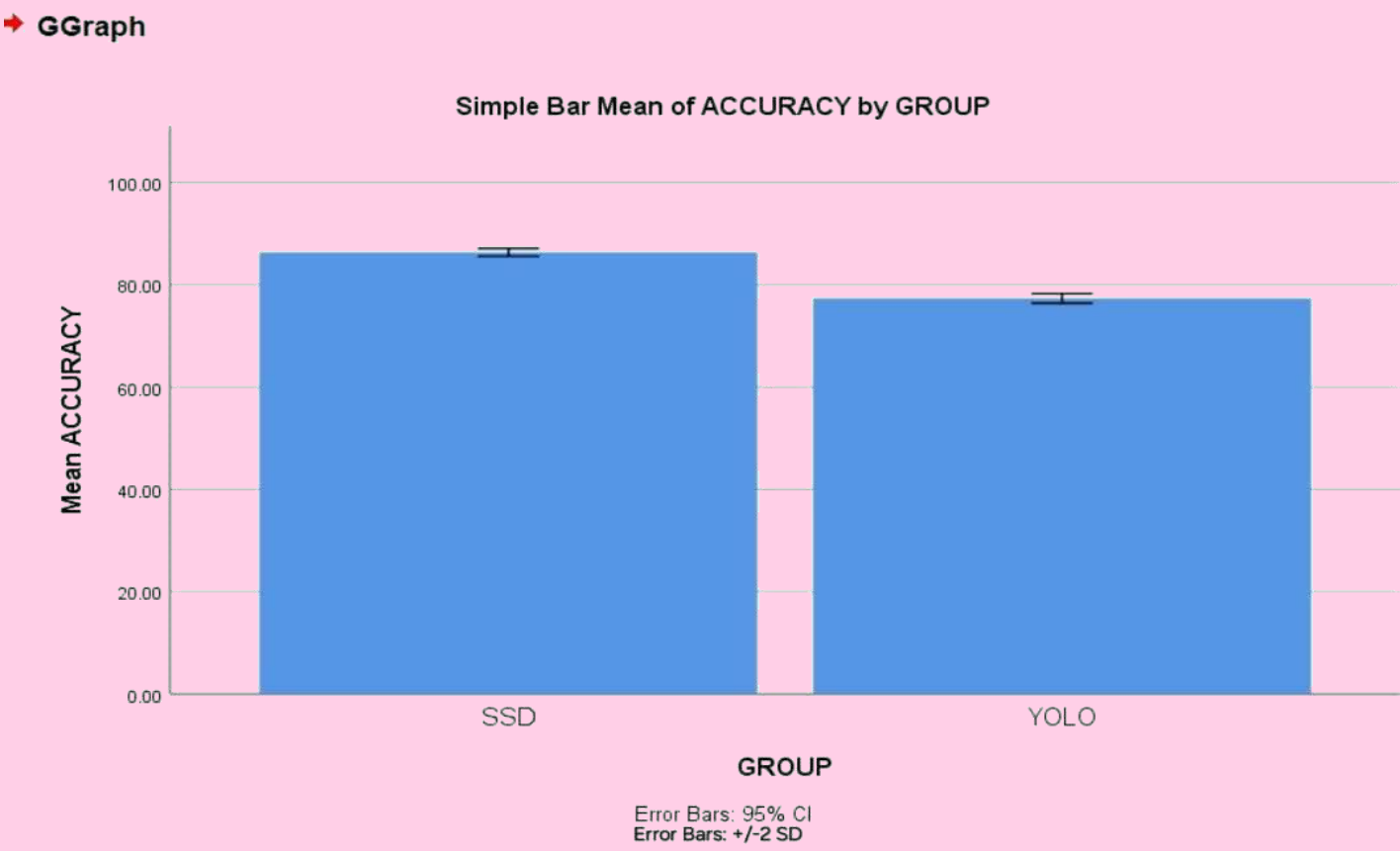


Fig. 2 Bar Graph showing the comparison of the mean accuracy of Animal Detection with SSD and YOLO

Table 1: The independent sample t-test has a significant value $p=0.001$ ($p<0.05$) indicating the study between the SSD and the YOLO is statistically significant

Accuracy	Independent Sample t-test								
	Levene’s Test for Equality of Variances					t-test for Equality of Means			
	F	Sig	t	df	Sig(2-tailed)	MeanDifference	Std. Error Difference	95% Confidence Interval of the Difference	
Equal variances assumed	3.609	0.065	15.686	38	0.000	9.00000	0.57377	7.83655	10.16153
Equal variances not assumed			15.686	36.187	0.000	9.00000	0.57377	7.83655	10.16153

DISCUSSION AND CONCLUSION

- Based on t-test Statistical analysis, the significance value of $p = 0.001$ (independent sample t- test $p<0.05$) is obtained and shows that there is a statistical significant difference between the SSD and YOLO
- Overall , the accuracy of the SSD is 86 % and it is better than YOLO which has up to 77%
- The group statics reveal that SSD with a standard deviation of 1.59852, whereas YOLO with a standard deviation of 2.0072
- Animal Detection using SSD and YOLO algorithms shows promise for improving accuracy and efficiency, SSD provides speed and simplicity, while YOLO excels at managing complexity, These developments might lead to earlier Animal Detection
- In colusion, the development of models adept at learning future dependencies could offer significant benefits across diverse domains, including artificial intelligence, These models could excel in tasks such as detecting and quantifying desolation dependencies

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