Daffodil International University

Final Year Defense

WHAT A PREGNANT LEADY SHOULD EAT: A MACHINE LEARNING EMPOWERED WEB-BASED APPLICATION TO DETECT FOOD

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INTRODUCTION

The food detection project for pregnant women using YOLO aims to provide a reliable and efficient solution for identifying and classifying food items to support healthy eating during pregnancy.

MOTIVATION

- **Importance of Food Detection**
- **Accurate Nutrition Monitoring**
- **Avoiding Harmful Substances**

OBJECTIVE

- **To make a Yolo-based food detection model.**
- **To see happiness in the mother face.**
- **Ultimately promoting the health of both mother and fetus.**

Related Works

Some of the insight:

- Chinese Food
- Fruit……

Author	Year	Dataset Name	Method	Accuracy (%)
Li et al.	2022	Chinese food dataset ChineseFoodNet	YOLOv5	83%.
Yamparala et al.	2020	different types of fruits	CNN	85%
Proposed method		Bangladeshi food (vegetable)	YOLOv8	84%

METHODOLOGY - Part 1

(Data Collection)


Bitter_Gourd

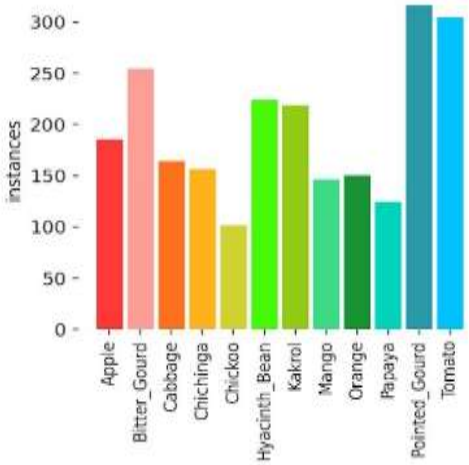

Cabbage

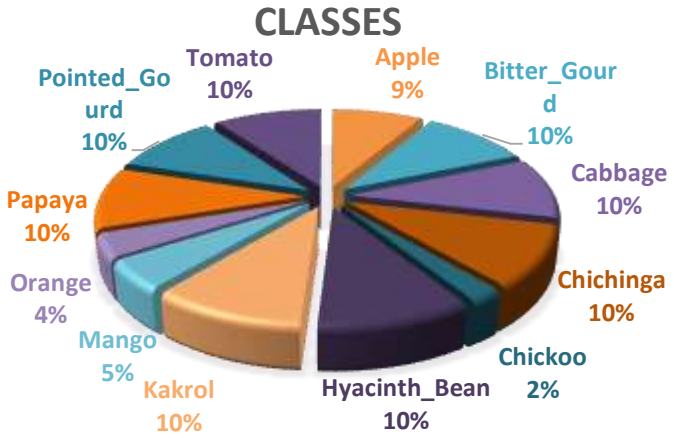

Chickoo


Papaya


Tomato

Sample Data

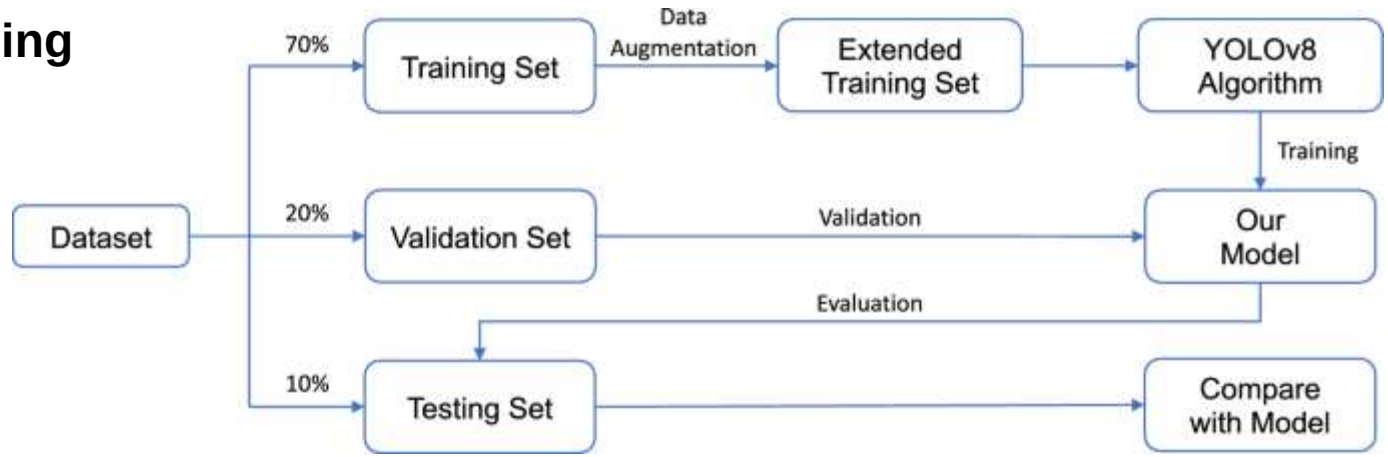




METHODOLOGY - Part 2

(YOLO for Feature Extraction)

- **Annotation**
- **Model Training**
- **Evaluation**

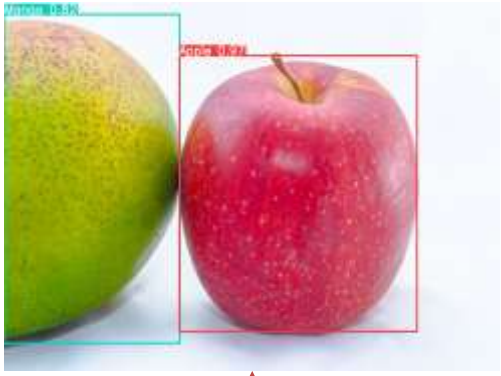


- **Feature Extraction**

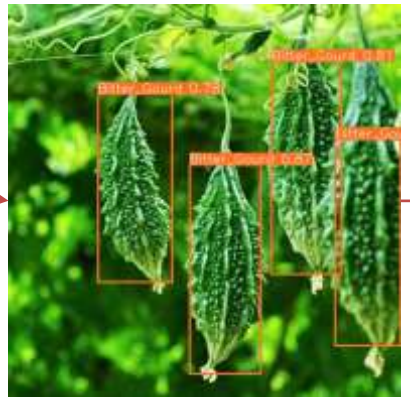
RESULT AND ANALYSIS

- **YOLO Models**

Best Models	
YOLOv8	84%
YOLOv7	76%



- ✓ **OUTPUT**



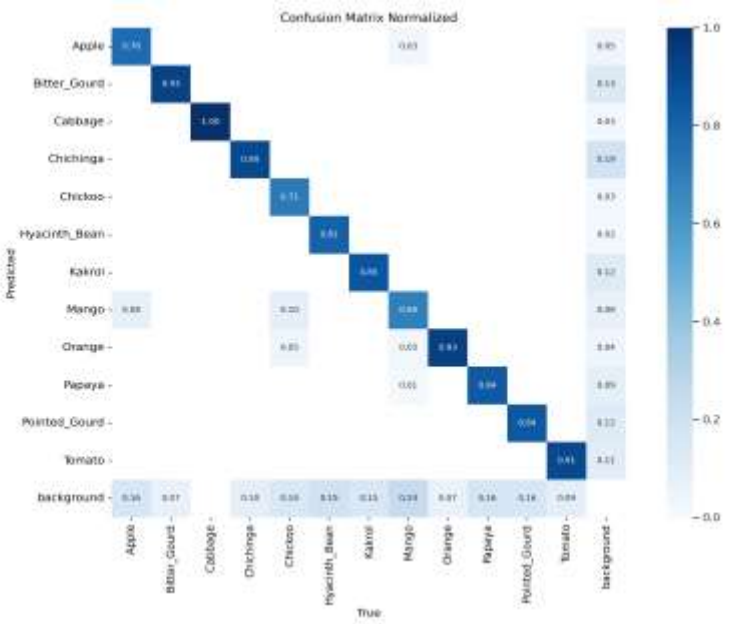
RESULT AND ANALYSIS (cont..)

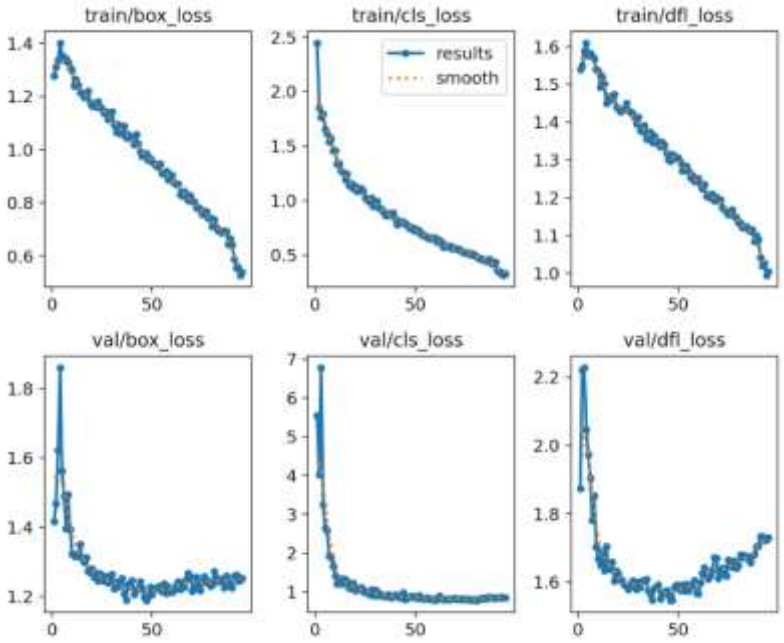
Predection Report of YOLOv8 Model

YOLOv8			
Category	Precision	Recall	mAP50-95
Apple	0.81	0.73	0.67
Bitter_Gourd	0.77	0.89	0.59
Cabbage	0.81	0.94	0.65
Chichinga	0.51	0.73	0.40
Chickoo	0.86	0.71	0.60
Hyacinth_Bean	0.92	0.65	0.48
Kakrol	0.80	0.77	0.48
Mango	0.75	0.60	0.47
Orange	0.65	0.8	0.60
Papaya	0.72	0.81	0.74
Pointed_Gourd	0.77	0.74	0.61
Tomato	0.82	0.83	0.76
Avg	0.77	0.77	0.59

RESULT AND ANALYSIS (cont..)

Confusion Matrix and Loss Curve of YOLOv8 Model





FUTURE WORK AND CONCLUSION

Benefits for Pregnant Women

•By using the food detection system, pregnant women can easily track their calorie intake and ensure they are consuming a balanced diet.

Future Development

•Further improvements can be made to the food detection algorithm to enhance its accuracy and expand its food item recognition capabilities.

- **Smart Technologies**
- **YOLO Models on Android**
- **Improved Accuracy**
- **Real-Time Feedback**

Thank you