Helwan University

جامعة حلوان

كلية الحاسبات والذكاء الإصطناعي
Faculty of Computers & Artificial Intelligence

Faculty of Computers and Artificial Intelligence

Computer Science Department

2022/2023

Selected Topics in CS-4 Topics

Report Submitted for Fulfillment of the Requirements for Selected Topics in CS-4

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Paper details:

Author's name: Ucar, Murat

Paper name: Face Mask Detection Using YOLOv4

Publisher name: researchgate

Year of publication: 14/8/2021

Conference: IV International Conference on Data Science and Applications (ICONDATA'20)

Paper link: (PDF) Face Mask Detection Using YOLOv4 (researchgate.net)

Dataset used in paper: Face Mask Detection | Kaggle

The implemented algorithm in paper: YOLOV4

Results in paper:

Precision: 86%

Recall: 89%

F1_Score: 88%

Average IoU: 69.48%

mAP: 82.20%

General information on the selected dataset:

The name of dataset used: Labeled Mask Dataset (YOLO_darknet).

The link of the dataset: https://www.kaggle.com/datasets/techzizou/labeled-mask-dataset-yolo-darknet

The total number of samples in the dataset: 1510 images

The dimension of images: various dimensions

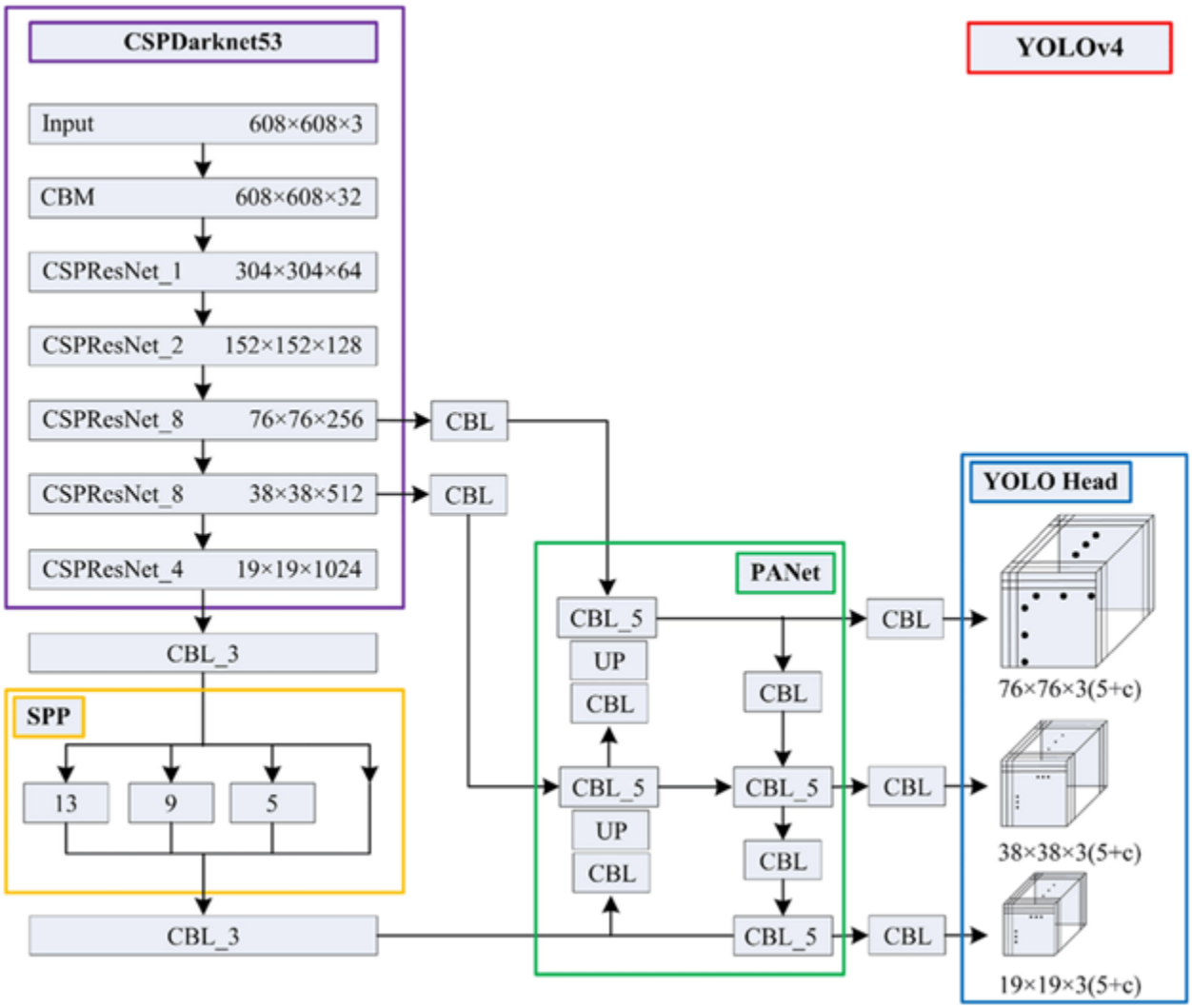
Number of classes: 2 classes

Their labels: with_mask / without_mask

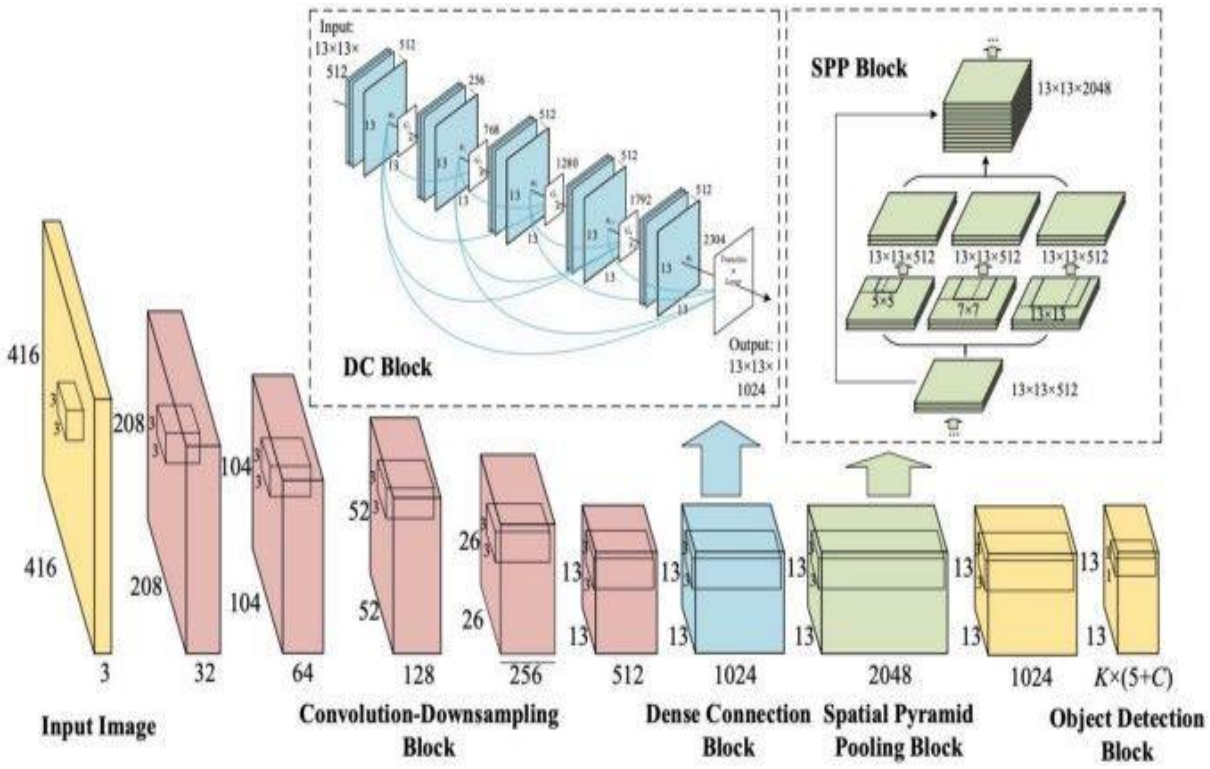
Implementation details:

Training ratio: 90% (1359)
Testing ratio: 6.6% (100)
Validation ratio: 3.4% (51)

Block diagram of YOLOV4:



This is more detailed diagram:



Hyperparameters used:

Testing batch=1
Training batch=64
subdivisions=16
width=640
height=640
channels=3
momentum=0.949
learning_rate=0.001
max_batches = 6000

Result details: (On testing data)

Precision	Recall	F1-Score	Average IoU	mAP
0.94	0.96	0.95	73.93%	98.70 %