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Faculty of Computers and Artificial Intelligence

Computer Science Department

2021/2022

**CS 396 Selected Topics in CS-2 Research Project**

Report Submitted for Fulfillment of the Requirements and ILO’s for Selected Topics in CS-2 course for Fall 2021

Team ID No. 44

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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)](https://www.researchgate.net/publication/353903716_Face_Mask_Detection_Using_YOLOv4)

**Dataset used in paper:** [Face Mask Detection | Kaggle](https://www.kaggle.com/datasets/andrewmvd/face-mask-detection)

**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:**

Diagram

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**Hyperparameters used:**

Testing batch=1

subdivisions=1

Training batch=64

subdivisions=16

width=640

height=640

channels=3

momentum=0.949

learning\_rate=0.001

burn\_in=1000

max\_batches = 6000

policy=steps

steps=4800,5400

scales=.1,.1

**Result details: (On testing data)**

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