MACHINE LEARNING

(FACE MASK CLASSIFIER)

Summer Internship Report Submitted in partial fulfillment of the requirement for undergraduate degree of

Bachelor of Technology

In

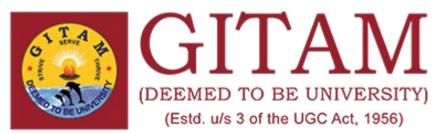
COMPUTER SCIENCE AND ENGINEERING

By

P SAI SANTOSHI RAMYA

221710309041

Under the Guidance of



VISAKHAPATNAM * HYDERABAD * BENGALURU

Accredited by NAAC with A+ Grade

Department Of COMPUTER SCIENCE AND ENGINEERING
GITAM School of Technology
GITAM (Deemed to be University)
Hyderabad-502329
July 2020

DECLARATION

I submit this industrial training work entitled "FACE MASK CLASSIFIER" to GITAM

(Deemed To Be University), Hyderabad in partial fulfillment of the requirements for the award

of the degree of "Bachelor of Technology" in "Computer Science and Engineering". I

declare that it was carried out independently by me under the guidance of

GITAM (Deemed To Be University), Hyderabad, India.

The results embodied in this report have not been submitted to any other University or

Institute for the award of any degree or diploma.

PLACE: Hyderabad

DATE:

P.SAI SANTOSHI RAMYA

221710309041



GITAM (DEEMED TO BE UNIVERSITY)

Hyderabad-502329, India

Dated:

CERTIFICATE

This is to certify that the Industrial Training Report entitled "FACE MASK CLASSIFIER" is being submitted by P.SAI SANTOSHI RAMYA(221710309041) in partial fulfillment of the requirement for the award of **Bachelor of Technology** in **Computer Science** & Engineering at GITAM(Deemed To Be University), Hyderabad during the academic year 2019-20.

It is faithful record work carried out by her at the **Computer Science & Engineering Department**, GITAM University Hyderabad Campus under my guidance and supervision.

Assistant Professor

Department of CSE

Professor and HOD

Department of CSE

ACKNOWLEDGEMENT

Apart from my effort, the success of this internship largely depends on the encouragement and guidance of many others. I take this opportunity to express my gratitude to the people who have helped me in the successful completion of this internship.

I would like to thank **Dr. N. Siva Prasad**,Pro Vice Chancellor,GITAM Hyderabad and Principal **Dr.Seetharamaiah**, GITAM Hyderabad.

I would like to thank respected **Prof.S Phani Kumar**, Head of the Department of Computer Science and Engineering for giving me such a wonderful opportunity to expand my knowledge for my own branch and giving me guidelines to present an internship report. It helped me a lot to realize what we study for.

I would like to thank the respected faculties Mr. who helped me to make this internship a successful accomplishment.

I would also like to thank my friends who helped me to make my work more organized and well-stacked till the end.

P SAI SANTOSHI RAMYA 221710309041

ABSTRACT

Machine learning algorithms are used to predict the values from the data set by splitting the data set into train and test and building machine learning algorithm models. Face Detection has evolved as a very popular problem in Image processing and Computer Vision. Many new algorithms are being devised using convolutional architectures to make the algorithm as accurate as possible. These convolutional architectures have made it possible to extract even the pixel details. We aim to design a binary face classifier which can detect any face present in the frame irrespective of its alignment. We present a method to generate accurate face segmentation masks from any arbitrary size input image. In order to effectively prevent the spread of COVID19 virus, almost everyone wears a mask during the coronavirus epidemic. This almost makes conventional facial recognition technology ineffective in many cases, such as community access control, face access control, facial attendance, facial security checks at train stations, etc. Therefore, it is very urgent to improve the recognition performance of the existing face recognition technology on the masked faces. Most current advanced face recognition approaches are designed based on deep learning, which depend on a large number of face samples.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER I:MACHINE LEARNING	2
1.1 INTRODUCTION	2
1.2 IMPORTANCE OF MACHINE LEARNING	2
1.3 USES OF MACHINE LEARNING	3
1.4 TYPES OF LEARNING ALGORITHMS	4
1.4.1 Supervised Learning	4
1.4.2 Unsupervised Learning	5
1.4.3 Semi Supervised Learning	6
1.5 RELATION BETWEEN DATA MINING, MACHINE	
LEARNING AND DEEP LEARNING	6
CHAPTER 2:PYTHON	8
2.1 INTRODUCTION TO PYTHON	8
2.2 HISTORY OF PYTHON	8
2.3 FEATURES OF PYTHON	8
2.4 HOW TO SETUP PYTHON	9
2.4.1 Installation(using python IDLE)	11
2.4.2 Installation(using Anaconda)	12
2.5 PYTHON VARIABLE TYPES	14
2.5.1 Python Numbers	15
2.5.2 Python Strings	16
2.5.3 Python Lists	16
2.5.4 Python Tuples	17
2.5.5 Python Dictionary	17
2.6 PYTHON FUNCTION	18
2.6.1 Defining a Function	18
2.6.2 Calling a Function	19
2.7 PYTHON USING OOPs CONCEPTS	19

2.7.1Class		19
2.7.2initmethod in class		20
CHAPTED 2.CACE CTUDY		20
CHAPTER 3:CASE STUDY		20
3.1 PROBLEM STATEMENT		20
3.2 DATA SET		20
3.3 OBJECTIVE OF THE CASE STUDY		21
CHAPTER 4:MODEL BUILDING	21	
4.1.1 IMPORTING THE LIBRARIES	21	
4.1.2 READING DIRECTORIES	22	
4.1.3 GIVING FILE NAMES	22	
4.1.4. CREATING TRAIN AND VALIDATION	23	
4.1.5 DISPLAY THE IMAGES	24	
4.2 HISTOGRAM OF DATA	27	
4.3 BUILDING THE MODEL	27	
4.3.1IMPORTING REQUIRED LIBRARIES	27	
4.3.2. MODEL	28	
4.3.3 COMPILING THE MODEL	29	
4.4 PREDICTING THE IMAGE	31	
CONCLUSION	35	
REFERENCES	35	

LIST OF FIGURES

Figure 1.2: The Process Flow	3
Figure 1.4.2 : Unsupervised Learning	5
Figure 1.4.3 : Semi Supervised Learning	6
Figure 2.4.1: Python download	11
Figure 2.4.2 : Anaconda download	13
Figure 2.4.2 : Jupyter notebook	13
Figure 2.7.1 : Defining a Class	20
Figure 4.1.1: Importing the libraries	22
Figure 4.1.2 : Directories	22
Figure 4.1.3 : Giving the filenames	23
Figure 4.1.4 : Splitting of train sets	24
Figure 4.1.5 : Display image using train generator	25
Figure 4.1.5.1 : Random images	26
Figure 4.2 : Code of histogram	26
Figure 4.3.1: Importing required methods	28

Figure 4.3.2 : Output for model	29
Figure 4.3.3 : Compiling the model	29
Figure 4.3.3.1: Training the model	30
Figure 4.3.3.2 : Graph of training the model	31
Figure 4.4: Code for the prediction of image	32
Figure 4.4.1: Output of an image with a mask	33
Figure 4.4.2: Code for the prediction of an image without a mask	34
Figure 4.3: Output of an image without the mask	35