High Level Design (HLD)

FACE MASK DETECTION

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Content

1 . Introduction

1.1 Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions before coding and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

- Present all of the design aspects and define them in detail
- Describe the user interface being implemented
- Describe the hardware and software interfaces
- Describe the performance requirements
- Include design features and the architecture of the project
- List and describe the non-functional attributes like:

-Security, Reliability, Maintainability, Portability, Reusability, Application compatibility, Resource utilization, Serviceability

1 . Introduction

1.2 Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly-technical terms which should be understandable to the administrators of the system.

2 . General Description

2.1 Problem Statement

COVID-19 pandemic has rapidly affected our day-to-day life disrupting the world trade and movements. Wearing a protective face mask has become a new normal. In the near future, many public service provider will ask the customers to wear masks correctly to avail of their services. Therefore, face mask detection has become a crucial task to help global society. COVID-19 mask detector could potentially be used to help ensure your safety and the safety of others.

2.2 Approach

A simplified approach to achieve this purpose using some basic Machine Learning packages like TensorFlow, Keras, OpenCV and Scikit-Learn. This method detects the face from the image correctly and then identifies if it has a mask on it or not. Results: You have to build a robust solution that should detect and identify the person is wearing mask or not. With a varying distance and color combination, it should work for any person.

2 . General Description

2.3 Tools and Technique Used

Face mask detection systems utilize a combination of tools and technologies from the fields of computer vision, deep learning, and image processing. Below are some of the key tools and technologies commonly used in face mask detection:

3. Design Detail

3.1 Model Training

As dataset contains Images with mask and without mask, hence converting dataset into array.

Preprocessing the converted dataset to normalize the value of pixels in some specific interval.

Finding the independent and dependent features to work on for model training.

Implement Base model using mobileNetV2

Implement Head model using Output of Base Model as Input.

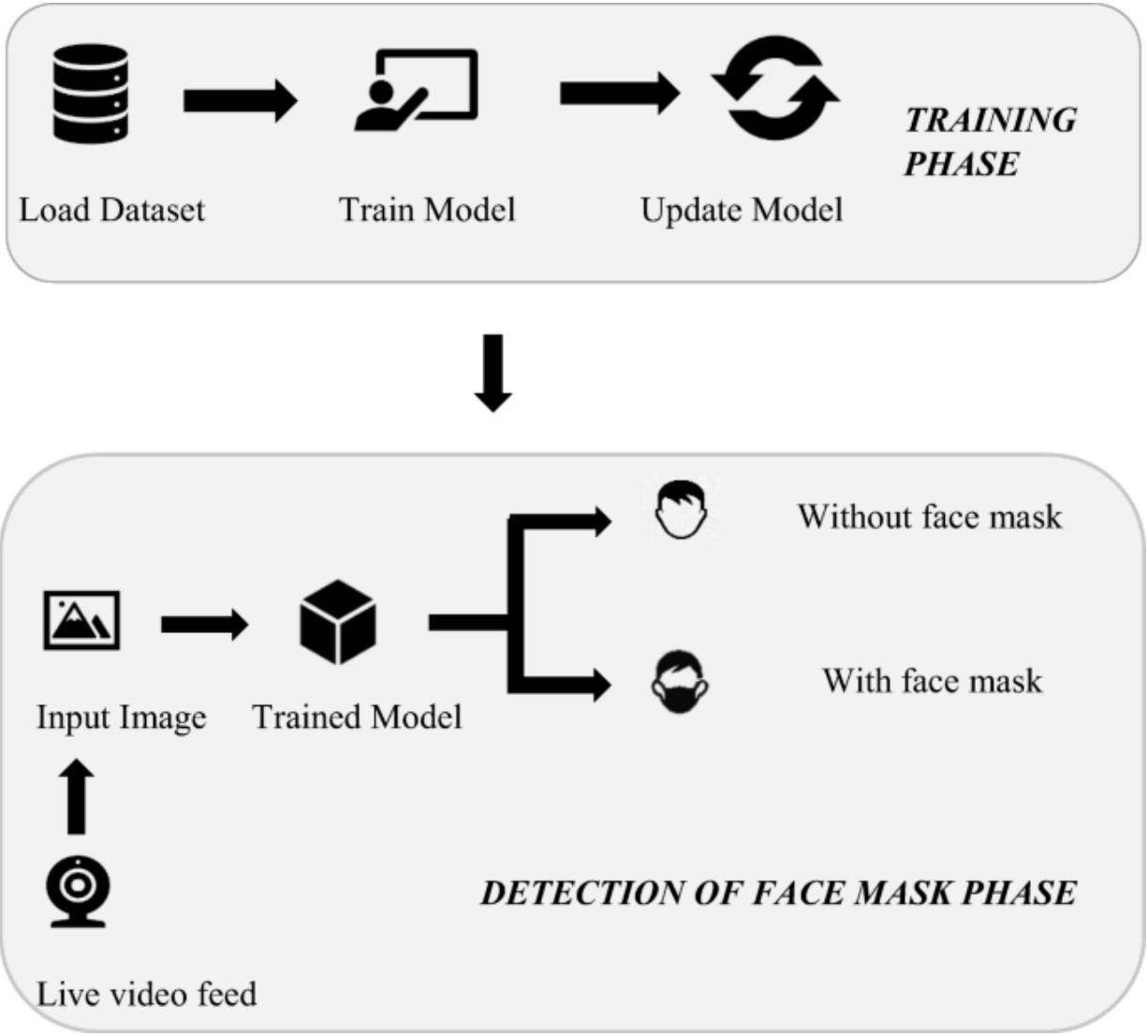
Compiling the combination of Base and Head model.

Fitting the final model and predicting the values.

Finding accuracy and other metrics.

3. Design Detail

3.2 Model Training View



3.3 Model Implementation View

DEPLOYMENT

AZURE DEPLOYMENT

Deployment on Azure refers to the process of hosting and running applications, services, or solutions on Microsoft's cloud platform, Azure. It involves taking the software or system that has been developed and making it available and accessible to end-users or other applications over the internet. Azure provides a wide range of services and features that enable developers to deploy applications in a scalable, secure, and reliable manner. The deployment process typically involves the following steps:

Create Azure Resources
Configure Application Environment
Package Application
Choose Deployment Method
Deploy Application
Monitor and Scale

Thank you

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