

Face recognition & Mask wear detection

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**Software Requirements Specification (SRS)  
Document**

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# **1 Introduction**

## **1.1 Purpose**

The value this product is to identify a mask on a face.

The face recognition basis on computer camera.

The users will be recognized by the camera will be classified if they wear a mask or not.

In addition, this software can be useful to a government and security organizations, supermarkets, malls etc.

Every person that used this software could check themselves over this mask classification anytime and anywhere.

Allows to track people with camera and see who is not wearing a mask, and by that will be able to enforce laws and make the environment safer.

Also, will be able to recognize who is this person and what is the user's name/id.

## **1.2 Scope**

- Understanding how the machine learns the image.
- Building a neural network.
- Synchronize with your computer camera in real time.

## **1.3 Intended Audience**

This product is in high demand and has a wide audience such as Government facilities, private businesses, security companies, police departments, schools, shopping compounds and private users.

## **1.4 Overview:**

Using live camera feed, the software will recognize all features.

we defined (mask, no mask, glasses, race etc.) and by using deep learning the program will be able to classify the new data into features.

By classifying new data, the user could distinguish between people and analyze different displays.

## **2 Overall Description**

We would like at the beginning of the project to create a system that will communicate with the user by camera. In addition, we will use a square that will focus on the user's face and help to adjust more correctly the face on the screen.

### **2.1 Product Features**

Tracking and recognize faces is a complex process and it takes the outcome of machine learning to achieve this task.

That means that the user can at any point ask the machine to track a face with specific demands.

At first the machine will track face and classify if they are with/without a mask, and after that the machine will be able to recognize how is this person and the specific name/id.

- High detection percentages
- Accessible - easy to use and operate
- Reliability - environmental sensing
- Currently on high demand.

## **2.2 Operating Environment**

- Programing language: Python
- Jupyter notebook
- Anaconda
- Distributed Data Set (of images)
- Operating system: Windows

## **3 User needs and Characteristics**

End users are people who want to obey or enforce rules at times like these.

It can be cops, business owners, or ordinary people but with personal responsibility towards the rest.

It can be used by students who want to learn what machine learning is in real time in the face of existing reality and find interest in it. (For us it is very interesting to see things work).

Our hope in this product is that more and more people will know how to wear a mask properly, abide by the rules and we will reach a better future.

- A web camera connected to a computer
- Face mask (optional)

## **4 Assumptions and Dependencies**

Face recognition with a webcam and classification whether they are with a mask or without.

Performing (behind the scenes) calculations of neural networks and machine learning with the new data based on the prior data.

Assuming the camera is ordinary and without sudden glitches.

## **5 Requirements**

### **5.1 Functional Requirements**

- Data requirement - For each person identified on the camera, the system will provide their name.
- Operational requirement- Identify wearing the mask properly even during displacement and background disturbances.

### **5.2 Non-functional Requirements**

- Performance/response time – The camera will recognize the users face in real time and classify them properly in seconds.
- Reliability – Provide high success rates.
- Security – User information is not distributed.
- Quality – Depends on user's camera.
- Usability – easy to use and operate.

## **6 System Features**

### **6.1 Stimulus / Response sequences**

- Turn on camera and start looking for faces.
- Recognize face with square frame.
- Green frame equals to mask wear and Red frame equals to non-mask wear.

## **7 References**

Kaggle: <https://www.kaggle.com/andrewmvd/face-mask-detection>

Github: <https://github.com/cabani/MaskedFace-Net>

Haarcascades:

<https://github.com/opencv/opencv/tree/master/data/haarcascades>