

## Principle of Access Control with Mask Detection



Face masks have become a part of daily lives in the age of the coronavirus. To prevent people from acquiring the coronavirus, respiratory or infectious pathogen, and blocking larger particles from sneezes or coughs of asymptomatic people, face-covering with surgical or face masks is mandatory in many places such as office buildings, hospitals, public transportation facilities or even retail stores and restaurants.

ZKTeco's leading-edge facial recognition solution with mask detection can quickly identify and track everyone in a crowd as they move about and simultaneously help recognize guests and personnel who are not wearing masks and restrict access.



## What is ZKTeco Access Control with Mask Detection

Mask detection technology uses a Computer Vision algorithm to detect if a person is wearing a face mask while acquiring and analysing face data before access granted.

Besides identifying people wearing masks, ZKTeco's security system with this technology is more expeditious, convenient, and reliable in monitoring mask-wearers and passers-by trying access the restricted areas. The solution is flexible and easy for people to deploy.

In some situations, face masks are mandatory or even recommended. Access control with mask detection is a simple solution to help reduce the risk of getting infected, and also a good reminder to wear masks before entering the controlling areas.

- **Safer**

Touchless measurement to avoid physical contact

- **Faster**

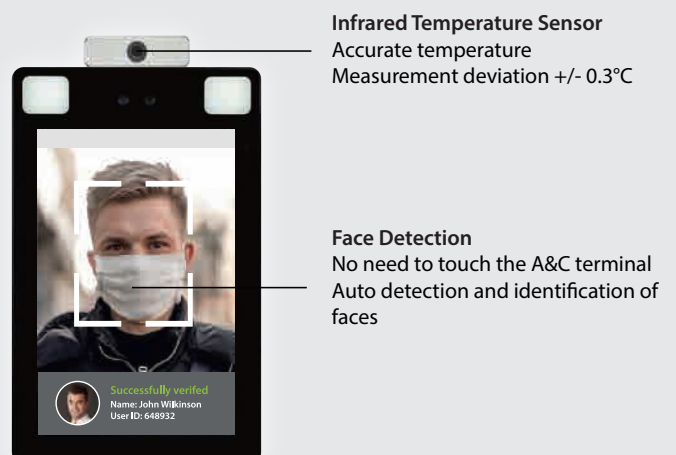
Mask detection in half a second per person

- **Smarter**

Detection with Computer Vision, significantly reducing the FAR

## Main Functions of Access Control with Mask Detection

Mask detection technology is dominant in recognizing and identifying a human face, whether he/she is wearing a face mask. Through the wide-angle of the lens, face data acquired by the access control terminal will be instantly compared with those face data stored in the database.

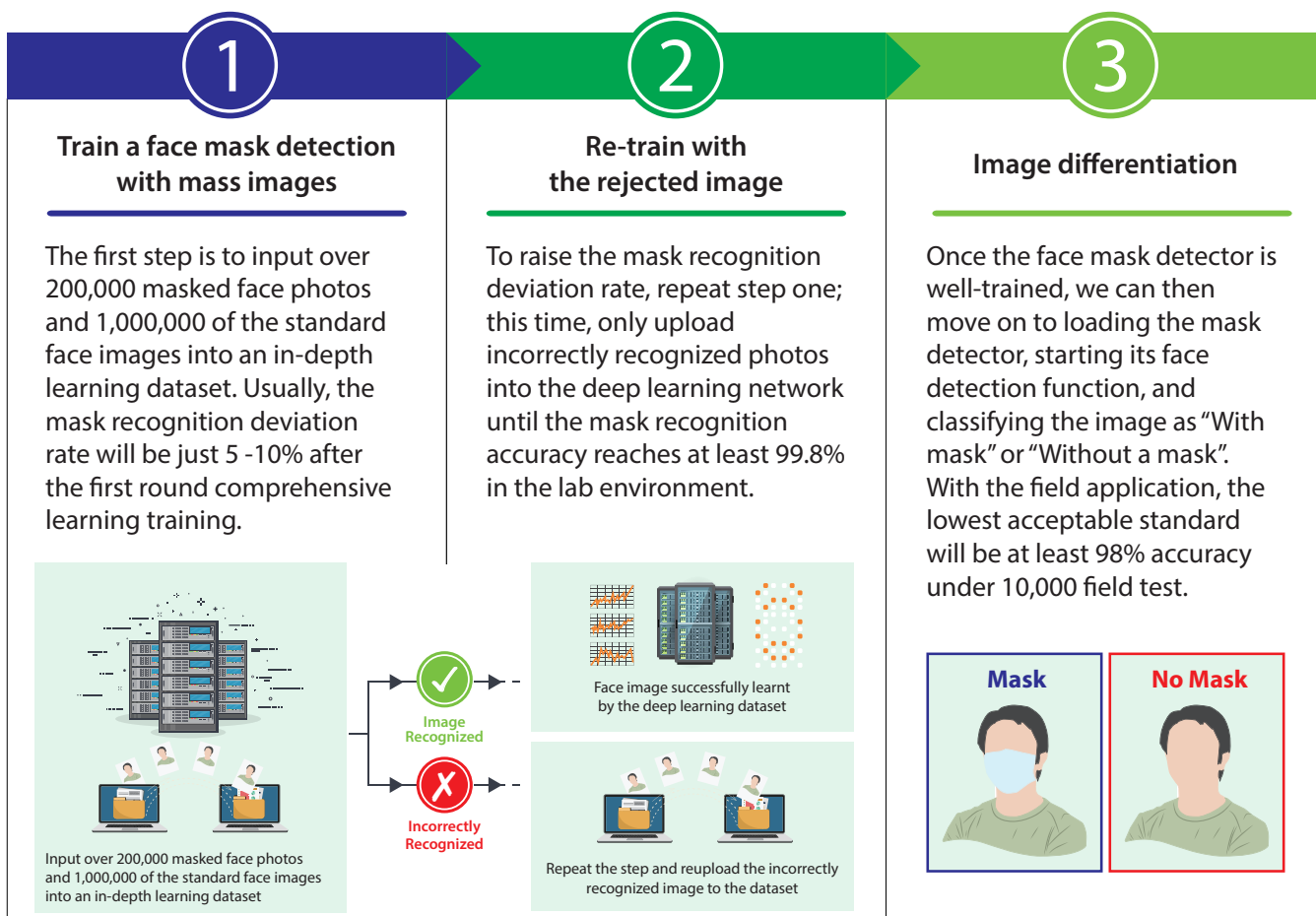


## How does ZKTeco's Mask Detection Work

The entire masked face image classification pipeline can be split into two parts as follows:

- Part 1: Educate the Face Mask Detector
  - Part 2: Deploy the Face Mask Detector
- 
- Applied Deep Learning Technology: Resnet101
  - Applied Deep Learning Tool: Pytorch

### • Part 1: Educate the Face Mask Detector







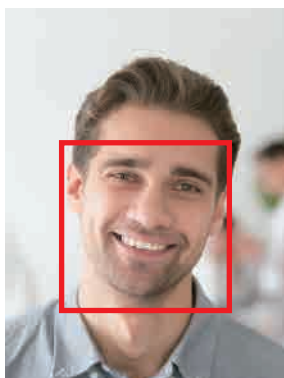
As the system learned, we can, therefore, apply the face mask detector in practice.

## • Part 2: Deploy the Face Mask Detector

1

### Face Detection

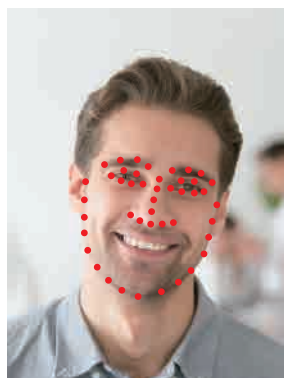
First, we need to apply face detection to compute the bounding box location of the face in the image.



2

### Facial Landmarks Detection

Apply the facial landmarks, allowing the system to localize the eyes, nose, mouth, etc.



3

### Mask Add-on

Get advantage of deep learning technology. The mask will be automatically applied to the faces that the mask is based on the facial landmarks to resize, rotate, and replace automatically.



4

### Mask Dataset Created

Repeat this process for all the input images, thereby creating our artificial face mask dataset.



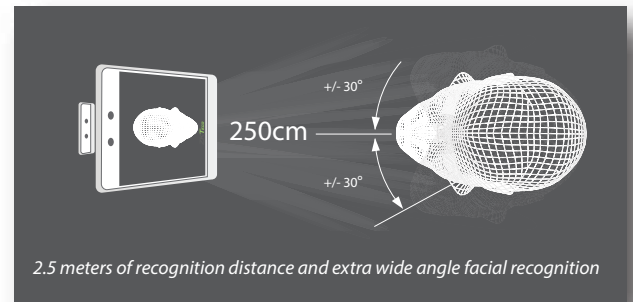
## ZKTeco Access Control with Mask Detection Advantages

### Proactive long-distance mask detection

Because of the combination with the visible light facial recognition technology, the recognition distance of ZKTeco's mask detection greatly extends to up to 2.5 meters, significantly boosting the maximum traffic rate for mask detection plus authentication checks.

# 2.5 meters

## Mask Detection



### Touchless Sensor

The facial recognition and non-contact features facilitate mask detection without touching. It is not only crucial for the safety of workers but also minimization of potential product contamination.



### Extra-wide angle recognition (+/- 30 degrees)

While most of the algorithms only support a 15-degree facial recognition tolerance, ZKTeco's mask detection supports a much wider tolerance angle of 30-degree for facial recognition.



### Fast, accurate and convenient

ZKTeco's mask detection is fast, accurate, and convenient to use. The response time (from screening to display) of a mask detection is typically about one-half seconds that might assist people in having fast track access to the monitored area.

### Body temperature measurement



ZKTeco combines the technology with infrared temperature detection to provide accurate and fast temperature screening during identity verification.

## Product Comparison

ZKTeco's Access Control with Mask Detection	Other Brands' Access Control with Mask Detection
✓ Detection Distance: Up to 2.5m	✗ Detection Distance: 0.5 to 1.5m
✓ Detection Time: 0.5s	✗ Detection Time: 1s
✓ Mask Detection Accuracy: >98%	✗ Mask Detection Accuracy: 95%
☐ Angle Tolerance: +/-30 degrees	☐ Angle Tolerance: +/-30 degrees
✓ Support Temperature Detection	✗ Do Not Support Temperature Detection



### Wide Range of Mask Detection Product

ZKTeco offers a wide range of high-quality products that meet the needs of global customers, from facial recognition terminals that all integrate with mask detection. With an emphasis on quality, technology, and cost-effectiveness, ZKTeco seeks to offer the best solution in a wide range of dimensions.



**Proface X[TD]**

Facial Recognition Terminal with Temperature Detection



**SpeedFace V5L[TD]**

Facial Recognition Terminal with Temperature Detection



**SBTL8033**

Touchless Entrance Control with Temperature Detection



Temperature Detection



Masked Face Detection



Palm Recognition



Wide Pose Angle Acceptance



Wide Palm Pose Angle Acceptance



Proactive Facial Recognition



Speedy Recognition



Touchless for Better Hygiene



Temperature Detection



Masked Face



Proactive Palm Recognition

## ZKTeco Products Applications

ZKTeco's touchless biometric solution is a good fit for this situation that is preventing people or patients from touching the door handle. The solution has been widely used in many practical scenarios, including hospitals, educational institutes, factories, construction sites, shopping malls, IT parks, public transportation, banks, business organizations, small to medium enterprises, government organizations and so on.



**Hospitals**



**Educational Institutes**



**Factories**



**Construction Sites**



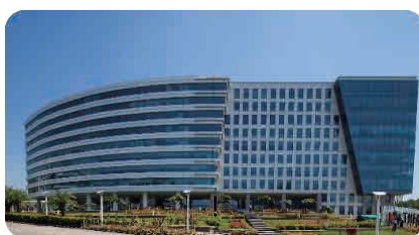
**Shopping Malls**



**IT Parks**



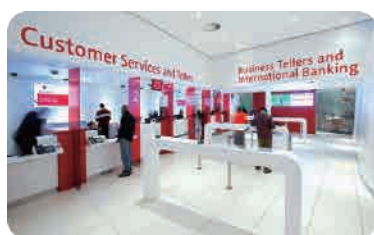
**Public Transportation**



**Business Organizations**



**Small to Medium Enterprises**



**Banks**



**Government Organizations**



# The Leader Of Security And Time Management Solution

