**Attendance system based on face recognition**

**Pruduct plan**

Project name: Attendance system based on facerecognition

Group number: Group 1 Project Time: 2020.2.28 -2020.5.10 Version name: 1.0

## 1. Important features of the product

1. High accuracy of face detection, false detection, few missed detections, support for multiple faces (max = 32).Plane rotation up to 60 degrees, with nose, mouth positioning, and glasses judgment functions.
2. Support binocular(Dual camera) / Multi-purpose 3D dimensional recognition, which increases the feature set of the face, improves the recognition accuracy again, and effectively prevents the photo from passing.
3. The high accuracy of face recognition, the recognition threshold recommended to users can not only adapt to changes in light environment, but also have the recognition accuracy rate that meets practical applications. Wear glasses or hair to block your eyebrows. (However, the recognition rate of black thick-rimmed glasses is relatively low, that is, in a better recognition environment, black thick-rimmed glasses are still OK, as long as you can see clearly, it has no effect on the recognition rate).
4. In the backlight mode (a large piece of black and black), after turning on the backlight recognition switch, the recognition speed will be reduced. If the recognition threshold is lowered, accurate recognition will still be possible.
5. High-precision human eye positioning, for high-definition large images, after the secondary fine positioning switch is turned on, it can accurately locate the pupil in the human eye. Accurate human eye positioning enables users to develop many creative extension products on this basis.

## 2. Template

1. It is best to pick5 template photos (the total is 10), 1 on the front, 2 on the sides, and 1 on each side. The declination angle should not be large (2-3 degrees can be-> slight deviation: because you are actively cooperating to identify Will not deliberately bias the head to identify, but to identify directly, but may be unintentionally biased. The purpose of asking you to "slightly bias" here is to correspond to your possible "inadvertent bias" in the future. Seeing yourself in the picture, because the eyeball is an important basis for calibrated comparison, so whether it is to adopt a template or to recognize, you are watching yourself best in the picture.
2. In addition, the remaining 5 template photos can be used for future dynamic template updates to adapt to the long-term development of the face. Of course, if a more stable recognition effect is required, and there is sufficient time and coordination, you can also use two template photos with a small angle in each direction, so that a total of 9 templates are used, for better To adapt to the light, you can also use two sets of different light templates, so that 18 or 27 templates are used. The total amount of personal templates is configurable.
3. When the template is used, the light should not be brighter, nor darker, moderate, and fully reflect the outline of the face. Only such a standardized template can be more effectively compatible with those recognition periods where the face is brighter or darker. To make the recognition more accurate, the eye area must be as clear and sharp as possible, and it is best not to reflect white light on the eye area.
4. Since the focal length of each camera is different, the degree of stretching of the face contour may be different. Therefore, in order to achieve the best recognition rate, it is recommended to use the same camera for acquisition and recognition.
5. Draw the collected face template photos in timeIf it is found that the location of the human eye is inaccurate, it is recommended to delete the template and retake it, because such a template is invalid for recognition.

## 3. The product is suitable for people

1. For face recognition only: (ie not for face detection)
2. The most suitable crowd: dark eyeballs, a clear boundary between eyebrows and eyes, bright and dark at the tip of the nose.
3. Not suitable for crowds: Faces with very "light" eyes. (In addition to this, black, yellow, blue and green eyeballs are possible)
4. Age limit: It can be recognized by all ages, men and women, no hair, and hair can cover eyebrows.
5. Wear restrictions: You ca n’t wear sunglasses. You can wear a hat, but you ca n’t block your eyes. When wearing thick black-rimmed glasses, the recognition effect is slightly worse than without glasses, but it can still be recognized. Other glasses do not affect the recognition. Glasses recognition, and vice versa.
6. As long as the eyeballs can be seen clearly, if the lens reflects light and makes the eyeballs invisible, this situation cannot be recognized.