

Title: Recertification mechanism and its technical scheme on pedestrian tracking for specific scenarios

Industrial Applications □Intelligent Manufacturing □Intelligent Driving ■Intelligent Life □Smart Medicine □Smart City

[Overall background]

Face recognition is the most mainstream, the most extensive and the most mature biometric identification method in the field of security, smart city and public safety. It has the characteristics of accurate identification, mature technology system and excellent economic performance. However, with the development of society and new challenges in the field of public security in China, face recognition technology is becoming more and more inadequate. For example, the technical system that relies on facial biological features is easy to avoid being collected by simple ways such as sunglasses and scarves. The biological features of face and face require high precision of measurement and control. A large number of images collected in the distance cannot meet the requirements of precision, large amount of computation and limited acquisition surface. According to these, we must find a better recognition system outside the facial features to complement the information collection situation such as the facial occlusion, the far target, the back to the acquisition camera and so on.

The recognition system of pedestrian recertification can be widely used in the fields of intelligent hotels, complex management places, such as KTV, traffic, public safety, and data analysis of commercial people. It is a very necessary supplement to the biometrics system at present. It has very high social value, rich application scenarios and market prospects.

[Business background]

In the selection and discussion of the recognition technology system, we found that the mainstream biometrics technology has very simple "anti testing and controlling" means. Further studies have found that there are such a large number of "blind spots" in smart city, traffic and public safety. It is necessary to develop a biometric system based on more external and not easy to avoid the system.

Through a large number of macro research, literature tracking and public coverage retrieval, we found that the pedestrian recognition system based on gait recognition is a very suitable biometric system. There have been some research abroad, and some technical teams in our country have begun to explore this aspect.

The proposal of this item is based on the specific demand scene, while taking into account the extensive application scene of this supporting technology. Therefore, it fully embodies the characteristics of the common technology in the design of technical indicators so as to facilitate the application of this technical system to a variety of extensive application scenarios.

Project description

[Problem description]

At present, the mainstream biometric methods have a very simple method of "anti testing and controlling", such as the face recognition system widely used in the public safety and intelligent cities, which can be avoided by wearing ink glasses and wearing headscarves, and become a huge

testing and controlling loophole in smart city. In order to strengthen social management, we need a set of pedestrian re-certification scheme in KTV, hotels, bars and urban public places, which can accurately record the time mechanism of a pedestrian in any measurement and control point, and the pedestrians may pass through different measurement and control points in the process of camouflage. Therefore, the specific details are as follows:

1. The whole recognition system should not use face recognition technology.
2. It can identify the photos taken from KTV, bars, hotels and other light interference or in the dark state.
3. The identified target may change clothes, head wrap, or other necessary external camouflage.

The participants need to design a set of pedestrian re-certification technical scheme with satisfying on the 3 points mentioned above. That is to say, in a limited access space, to mark the time that a target person appears at various points of departure. And the object may be disguised in costume and face during the process.

[User expectations]

It can complement the identification blind area of traditional identification technology, and further enrich the options of human identification technology system. Further it enriches the application scene of the identification technology.

[Expected economic effect]

Recognition is a supporting technology module in every aspect of smart city. There are at least hundreds of billions of markets. It has a broad market prospect.

Task requirements

[Technical path]

1. Adapting to the mainstream terminal operating system environment
2. Based on mainstream programming approaches
3. Supporting the commonly used cameras in current industry field.
4. Cameras capturing objects --- Multi-photo disassembly modeling --- algorithm model analysis --- forming judgment --- outputting results

[Technical indicators]

1. Accuracy of small test and control should exceed 95%, and the accuracy of long-term test and control is over 99.9%
2. In order to meet the needs of various scenes in the intelligent city, the technical system should have an accurate testing and controlling that meets the density of 1 people / sq meters and can identify the target within 30 meters
4. Accurately identifying moving objects ranging in 30 meter
4. Identifying moving objects below 2 m / sec
5. The whole process of tracking-recognition-computing-feedbacking results cannot exceed 3 seconds
6. Adapted to any angle of the photo taken

[Standard Submission]

1. Substantive delivery level: participants are invited to design a set of solutions to meet the needs of the upper development from the perspective of the underlying developers and the actual users of technology. The development of any product or device supported by identification technology can be directly referenced by technicians.
2. Exhibition level: participants show the test results of the above technical index system at the scene. The effective recognition process of human gait recognition will be showed in video form.
3. During the competition, the organizers will provide 5 mixed entry and exit for test. And 10 camouflages will appear at various entrances and exits. The participants need to accurately mark the time of the test target at each point. The organizer will make a comprehensive assessment of accuracy and timing to score and evaluate the best.

[Task list]

(List of material needed to solve the problem)

1. A complete biometric system
2. Algorithm model
3. User interface and second development specification for the end user of technology system.

Reference information

[Reference tool]

1. A biometric feature unlocking method patent open number CN107730686A

[Reference data]

The participants collect their own training places in shopping malls, apartments, schools, KTV and other places.

[Data interface]

None