About the Security System in Air Transportation

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Abstract In this paper the problems in aviation and principles security creating are considered. The problems of security in aviation and the principles of safe upper systems for civil aviation enterprises. R & D related to the protection of information and the development of models and cryptographic techniques to protect the information in the aviation industry.

Keywords: protection, security, aviation, system, information

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1. Introduction

Security of any state in the first ocherel linked to the security of transportation. This is primarily due to the safety of air transport - transport avatsionnym! In the second place, with land transport - road, rail ; In the third stage, water transport, and in fourth place, with an underground transport - Underground !

In any civilized country, there are all kinds of transport are perchislennye. R & D related to information security in aviation and the development of models and methods kritografii for information security in aviation. At the 3rd International scientific conference in Kiev, the National Aviation University May 21, 2013 we were the main challenges in the information security of aviation.

Lately, there are so many tragedies associated with the accident aircraft in international airspace. This is due to the weather conditions and metereologicheskimi, technical problems on the runway during landing of aircraft at airports, as well as amortization of air transport. Becomes dangerous avatransprotom flights. In this regard, we need to strengthen security for both passengers and for the staff ! Currently, it is necessary to update the fleet maintenance by air to radically change, introduce modern advances in aviation in Europe, the U.S. and other leading countries in aviation. A fundamental principle of establishing a system of airport security is a systematic approach involving the use of a number of specific solutions. One of them is the widespread use of video surveillance in the interests of aviation security services and law enforcement. Modern professional surveillance system - structure with a complex and flexible configuration. Informed choice of the individual components and their ability to properly interact with each other within the same surveillance system largely determine its effectiveness.
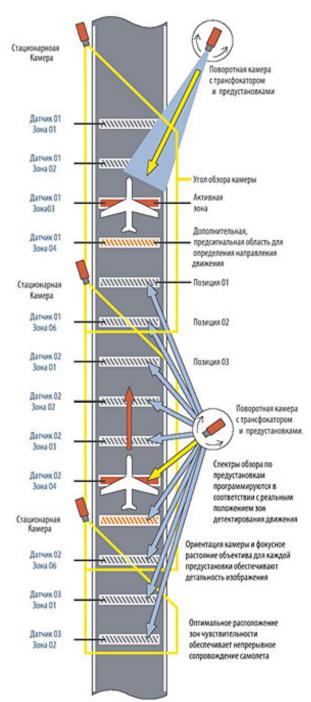
2. Observers Runways

Takeoff and landing are the most critical moments during the flight. Airports are often faced with the problem that not all protected areas, aircraft parking and runways available for viewing dispatchers, Picture 1. Control System cameras GEUTEBRUCK, located on the territory of the airfield airport, based on a unique VMD VS40, automates motion detection and tracking the movement of the object in the protected zone. For this purpose, video surveillance cameras through the matrix switch output to control monitors operators and video recorders. Process synchronization display video monitors and video recording using recorders MultiScope II plus / MultiScope III not only stores the event for later viewing, but also allows to transmit images over the network to any service airport: traffic control service, along police, fire along, service security etc.

Along with the usual video surveillance using fixed cameras equipped with wide-angle lenses, as well as PTZ cameras with manual control, video GEUTEBRUCK provides automatic tracking of objects on the airfield. For this additional scanning camera with presets and equipped lenses, zoom lenses, the signals of VS- 40 automatically zooms to the moving object, selecting the optimum zoom.

2.1. Video Surveillance of the Passenger Terminal

The airport is responsible for the safety of passengers and visitors who are in its territory. In connection with its social and economic significance of it is a potential target for all sorts of abuse. Passenger traffic is not small and the service makes airport security to be in constant readiness. Of particular danger are left items (bags, boxes, etc.), which can be disguised explosive devices. Upon detection of this object is impossible to determine whether, for

example, the bag was left unattended just because of someone's negligence, or he really connected with preparing a terrorist act. Because the mere suspicion of preparing a terrorist act Airport Authority is obliged to evacuate people. To clarify the situation involved specialized task forces, delayed departure time, reputation suffers airport. Often, after a significant amount of money it turns out that was a false alarm. Video system based on equipment from Geutebruck, Picture 2 automatically detects suspicious objects.

Picture 1.

Digitized record images MultiScope II plus / MultiScope III continuously records all images from cameras located in the airport terminal, and stores them in a shared database system.

Global change images (for example, changing brightness), as well as general movement in the video,
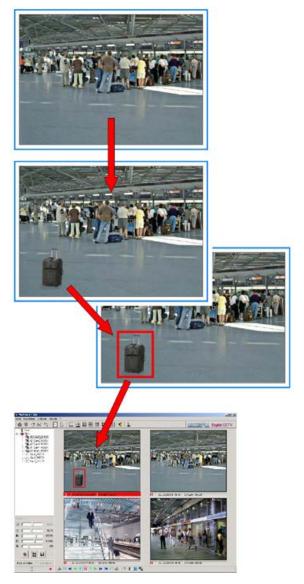
what is happening outside the specified time interval are ignored.

Built- in module recognize abandoned objects MSC / NMD continuously scans the video data. Detection of abandoned objects frame by frame analysis of the results for items in a given size range, which for a certain period of time remain stationary in the frame.
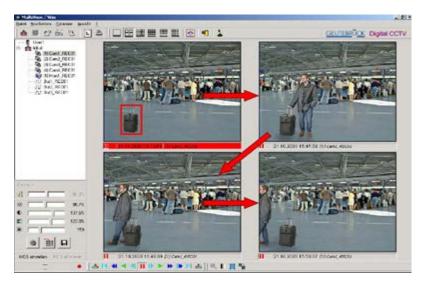
Abandoned object detection system MultiScope II plus / MultiScope III marks the recognized object in the frame - in this example, someone left travel bag. Upon detection of the object corresponding to the specified criteria, the system starts the automatic testing of alarms.

After that, depending on the configuration alarm response, the system sends an alarm image via LAN or WEB to the operator or security on mobile handheld computers. Image that caused the alert system, along with the video recorded before the alarm (alarm prehistory with the ability to set the time) supplied with marked anxiety and protected against overwriting. Object image which caused the alarm, is displayed in a predetermined viewing window, whereas other viewport continues to broadcast the video signal in real time.

The program runs under Windows, which offers simultaneous viewing video from those cameras in the scene, which was discovered a suspicious object.
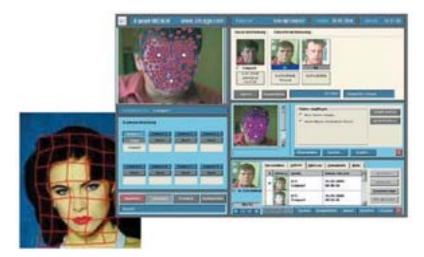

Picture 2.

Picture 3.

Different views of the object that caused the alarm, when shooting with multiple cameras, both in the form of still images and recording playback forward or backward allow security services quickly and efficiently assess the situation, picture 3.

3. Recognition of Human Face

Hardware and software system MSC / Face mounted in the passenger terminal (crowded places) can carry out the task of automatic pattern recognition criminals persons listed in a common database. When the field of view of any camera of the image of the human face, the module MSC / Face automatically selects the image of the face and in seconds compares with existing images in a database of thousands, see Picture 4.

Picture 4.

In the case of recognition of MSC / Face sends an alarm message to the specified device on a local network or security agents on a PDA.

MSC / Face can handle images from any camcorder in the system and can easily access the existing database of images of potentially dangerous persons (stranger).

Module MSC / Face can be used to prevent the penetration of " undesirable people " on the airport grounds by identifying eligible persons : it is effective for automatic control and maintaining a database of employees and passengers to safety which increased requirements.

4. Pros Hardware-Software Complex MSC / Face

• Quickly identify wanted man in the human stream.

• High speed identification for a second when looking at thousands of database

• Reliable detection of human faces in the image, even if the appearance

• Unlimited database of wanted persons

• Support for ODBC, direct access to various databases. Specifications:

• Video horizontal resolution of 480 TV lines

• Video input 1 x composite connector (RCA), 1 /75 Ohm, electrical isolation, protection from lane. current

• Video output 1 S-Video (4-pin Mini-DIN), Y = 1 /75 Ohm, C = 0,3 / 75 Ohm, protection lane. current

• Synchronization Internal quartz, personnel and line synchronization, external display synchronized

• Image Backup Speed 2 seconds

• Serial RS- 232 configurable : 1200; 2400 ; 4800 Bd Connector D- 9, contact : TxD = 2, RxD = 3, Gnd = 5

• Sensitivity backlight Visible image : fc = 0.03; Ix = 0.3 Frame : fc = 0.17; Ix = 1.7

• S / N ratio of 50 dB at 1.7 lux (0,17 fc) illumination CCD

• Automatic Gain Control 18 dB, 24 dB

• Performance Data Processor Intel Pentium 2 processor

• Hard disk drive > 40GB

• Memory 2 GB

• Interfaces SCSI, Ethernet, video input board, graphic display adapter AGP, sound card and motherboard analog modem

• 19 inches x 4U, aluminum

• Power supply voltage AC 110 -230 V, 50 /60 Hz, 300 W

• Thus, the article shows that the problems associated with information protection and security in aviation set. We develop mathematical methods and models of information protection for aviation trnasporta.

5. Conclusion

In this paper the problems in aviation and principles security creating considered.

This problem is important in the present day. The problems of security in aviation is actually in the all world.

References

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