The State Hermitage

Biometric technology in museum space

World Heritage

The State Hermitage (Saint Petersburg) is one of the largest and oldest museums of art and culture in the world. Museum collections comprise over three million items, including the world's largest collection of paintings. They say it takes 8 years and 20 km walk to observe its whole collection if devote just 1 minute to each exhibit.

Even today just a small part of museum collection is on permanent display. Historical buildings of the Hermitage are overloaded with exhibits and fail to maintain storage conditions that meet modern requirements. The new Storage Facility was built in 2003 in order to shift some funds and workrooms to a new space. This facility also became a platform for deployment of modern security solutions.

Heist of the Centuries

Just like any museum, which houses world-known valuable items, the Hermitage experienced thievery. The last sensational robbery happened in 2001. In five years a stolen picture of Jean Leon Gerome, *The Arabian Pool* was anonymously returned, though damaged.

It is rather difficult to steal from the Hermitage: the halls are equipped with alarm, invisible rays and other thieves' pitfalls. From the other hand, the back offices turned to be not prepared for crimes. On July 31st, 2006 the Hermitage announced the loss of 221 exhibits from the inventory. The main suspects turned to be museum employees.

PROJECT SUMMARY

Models: BM
Number of units: 11
Database: 2,500
Access Control Mode: identification and access card activation
Integration with: "Esselte" access control system
Year: 2009

3D FACIAL RECOGNITION AIMS

✓ Control the movement of staff

✓ Secure access to storage items

✓ Decrease load from Pass Office staff

✓ Eliminate "human" factor

According to the guidance document of the Russian Ministry of Internal Affairs (RD 78.36.003-2002 "Engineering and technical resistance. Technical means of security. Requirements and design standards for the protection of objects against crime") objects of any security category, including museums, should be equipped with a multiple alarm security system. The incident of 2006 once again illustrated that robust protection of a museum complex is not possible without the use of an internal security policy. In addition to external threats, one must take into account the possibility of undesirable actions by staff.

In order to minimize the influence of the "human" factor, the Hermitage has adopted a set of organizational and technical measures to restrict access and to control the movement of staff.

"Of course, this theft has led to a fundamental change in the concept of security. Now we have to pay more attention to internal security, whereas previously more priority was given to threats from visitors. Now, to our deep regret, we established a rather strict scrutiny of the museum staff, fundamentally changed the principle of access to storage items, much of the inner life of the museum is now recorded by CCTV systems". - Alexey V. Bogdanov, Deputy Operations Director of the State Hermitage

Eliminate the "Human" Factor

The State Hermitage started testing the Broadway 3D face recognition system in 2007 which lasts for two years The pilot stage of the project generated a profound material for further technological development, and enabled Museum Security Service acquire technological, organizational and physiological experience of managing the system.

The efficiency of three-dimensional facial recognition technology is multifaceted, and that became a reason of opting for the Broadway 3D system. The accuracy of identification is much higher than with conventional automatic photo recognition (two-dimensional), noticeably more accurate than fin-gerprint recognition, and is comparable to iris recognition. The system is not susceptible to problems such as the lack of suitable papillary patterns for identification of fingerprints (in 5-10% of the population), or dilation of the pupil due to fatigue, illness or use of medications. To deceive the system, one would have to produce an accurate solid face mask that copies the face in all the details of its geometry.

At present time, Broadway 3D biometric system is used as an additional line of defense at the State Hermitage Museum in the new buildings of the Restoration and Storage Centre ("The Old Village").

Scenario

In the depository of the State Hermitage Museum biometrics organizes the activation and deactivation of access cards. Each time before entering premises that are protected by Broadway 3D, an employee looks at the camera, and in less than 1 second the camera scans and compares it with templates previously recorded in the database. If the comparison is true, a signal is sent to the system and access to the premises is enabled.

At the end of the day employees again go through the process of biometric recognition and their cards are blocked. If an employee does not block his card, it will automatically be blocked one hour after the employee has left the territory of the museum.
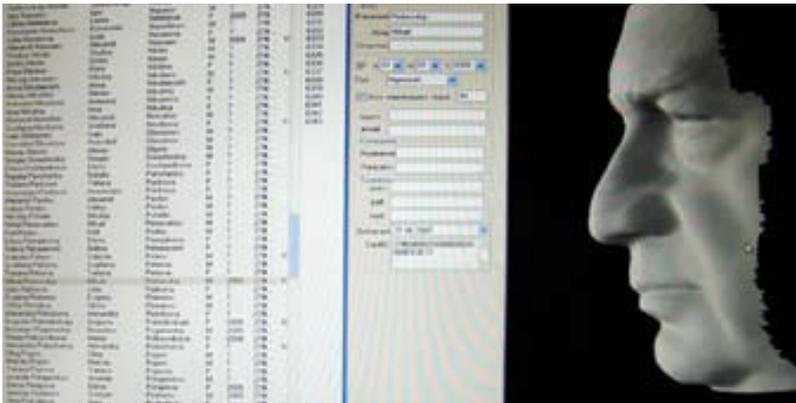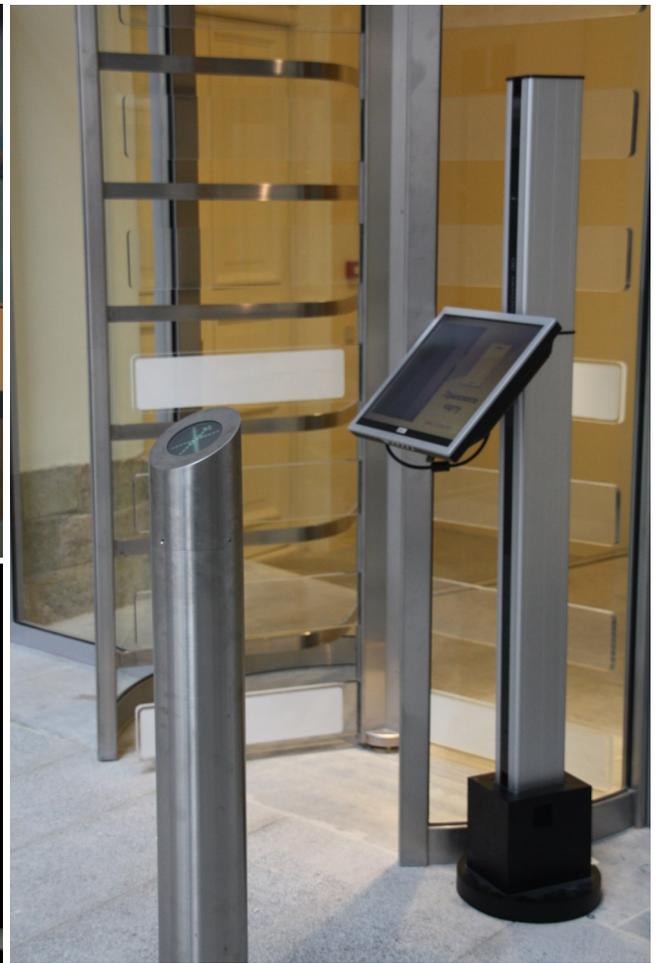
"Equipment and technology demonstrate effective performance: high-speed recognition rates, reliability and usability. Broadway 3D reached the expected effect: we managed to decrease significantly a load on the staff from Pass Office, who were responsible for identification of each employee, and we raised the degree of physical security of the Museum". - Alexey V. Bogdanov, Deputy Operations Director of the State Hermitage

After a few years of operation in the museum, the Broadway 3D system has established itself as a reliable and convenient biometric tool. Employees have become accustomed to its use, and, as a rule, take all the necessary steps to identify themselves automatically. There have been no cases of intruders gaining access. Implementation of the system has made it impossible to make use of other people's access documents through their loss or intentional transmission.

Artec ID
3D Face Recognition Technology

Artec Group

Artec Group works on research and development of innovative 3D scanning and 3D facial recognition technologies, and manufactures 3D facial recognition solutions. The team has 14 years experience in the field of biometric identification and was the first to implement 3D recognition of the human face as a new biometric modality for security purposes. Artec Group holds several international patents in the field of research and development of innovative 3D facial recognition products.

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