DEVELOPING FACIAL RECOGNITION SOFTWARE TO CONTROL ACCESS TO CAMPUS FACILITIES

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TOPICALITY

Information technology (IT) is successfully used in training to increase educational potential. At the same time, insufficient attention is paid to the application of modern computer technologies tools for the organization of the educational institution's activities, administration of the educational process. In modern educational campuses, as a rule, video surveillance and access control systems are widely used to implement security systems. Educational institutions belong to the category of objects with a throughput regime, so the issues of identification and authentication are relevant, and their solution significantly affects the security of not only the object, but also students and employees. Furthermore, the authentication procedure, which can be implemented using information technology, is often required when certifying students.
The purpose of the proposed development is the improvement of the system for ensuring the safe functioning of the campus, and to determine the possibility of using an intelligent system of biometric identification of the subject to identify the intruder in the protected area, as well as record attendance and control of working hours of employees.
BIOMETRIC FACIAL RECOGNITION

• the maximum accuracy of the subject's identification by the facial image;
• the biometrics procedure is familiar to the subject and is non-contact and quick;
• remote use;
• digital biometrics takes up little space in the storage;
• acceptable cost.
When recognizing a saved instance of a face image (data array), the new array extracted by the neural network is compared to an existing instance. No more than ten facial images are stored for each user. The identifier for the array is UUID4.
Title: ZORGO.
This development implements a convenient storage for data in HDF5 format and uses computer vision for image analysis.

For the development were used:

- DLIB
- HDF5
- OpenCv
- NumPY
- face_recognition
**Step 1:** Install Python 3.6 in directory C:\Python36

**Step 2:** Use the package manager "pip" to install the necessary libraries:

- dlib — C++ library that implements neural networks and face_recognition;
- numpy — linear algebra methods and arrays;
- hdf5py — library for working with HDF5 standard files;
- OpenCV — library of computer vision.
Step 1: Open the program "adduser" to add a new user: enter a name (Anatoliy) and look into the camera. The system takes a picture of the face with a webcam.
Step 2: Next, open the program "access" and get access to the system.
If data is not entered into the system, the program will deny access.
Step 3: Launch "webcam".

WORKING WITH THE PROGRAM
In case the system does not find in the database the subject's image, a red frame is automatically displayed to identify the intruder.
OBTAINED RESULTS

The program carries out successful authentication even in the presence of the subject's headdresses, glasses, beard, because the neural network, trained on a large array of data, allows on the basis of artificial intelligence technologies to identify the required biometrics and accurately identify the subject. This development significantly improves the system of ensuring the safe functioning of the campus, which significantly simplifies the task of detecting an intruder in the protected area, as well as helps to keep records of attendance and monitor the working hours of employees.
THANK YOU FOR YOUR ATTENTION!

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