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SOFTWARE FOR IDENTIFYING FACIAL FEATURES USING NEURAL NETWORKS

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I. Formulation of the problem

The creation of devices that perform the function of recognition of different objects, in most cases, allows the replacement of a person with a specialized machine [1] At the moment there are already exist systems of face recognition, but, unfortunately, the core of the program and the source code is not open to the public, so it is impossible to determine exactly which algorithms this program uses. Thus, the development of mathematical software for the identification of facial features through neural networks is an extremely actual problem.

II. The purpose of the work

The purpose of this work is to implement an information system for identifying features of a person's face using neural networks running Android OS.

III. Software implementation of the method of recognition of graphic images by means of neural network

The implemented version of the information system is intended for recognition of features of people's faces, store this data into the base for subsequent identification by means of artificial neural networks. Usage scope - software for smart phones and tablets with moderate computing resources [2]. The modular architecture was used to develop this task as the most popular today in the field of Android software.

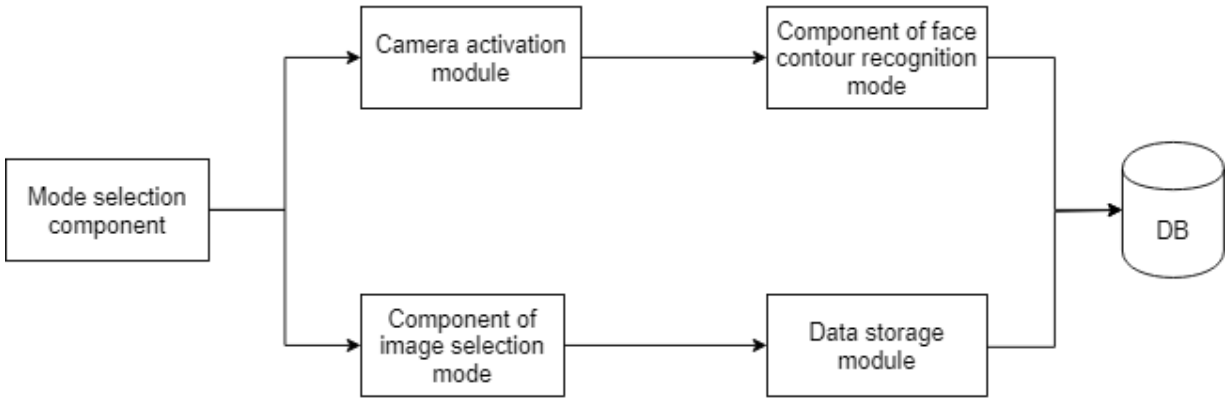

Figure 1 - Components of the developed system.

As can be seen from Figure 1, the software is designed on the basis of three components, which, in turn, use a database, two modules: the module camera device and work with the finished image to save it in the database. The system starts with the choice of one of the modes. The first mode allows you to work with the device camera in real time to recognize new faces and save them in the database. The features and contours of these faces need to be photographed in different types of lighting and at different angles for training the system. The second mode allows you to select an image from the database for later use with it [2].

The task is implemented with the help of Android Studio in Java. This environment is easy to use for fast and high-quality application creation on Android OS.

Conclusion

Thus, software was developed to identify human face using neural networks for Android based devices. The adequacy and effectiveness of using the multi-scale object recognition method is demonstrated.

Reference

1. TensorFlow. An open-source software library for Machine Intelligence. [Electronic resource]. – Access mode: https://www.tensorflow.org.
2. Methods of pattern recognition. [Electronic resource]. – Access mode: http://oxozle.com/2015/03/29/metody-raspoznavaniya-obrazov-chast-1.