

URGENT PROBLEMS OF THE DEVELOPMENT OF SOFTWARE FOR FACE RECOGNITION

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Abstract. The results of the analysis of the shortcomings of modern software tools for face recognition are presented. Taking into account these results, approaches to the development of the method for creating improved software for face recognition, which are not characterized by the established shortcomings, are determined. The procedure for one of these approaches implementing is presented.

Keywords. Face recognition, software, regularities.

The analysis of modern algorithms underlying the operation of software tools used for face recognition has been carried out. Based on the results of such an analysis, the classification of the methods underlying these algorithms was made, and their shortcomings were identified. The main of these shortcomings are the following [1–3]:

- 1) the high duration of the process of the system “learning”, the purpose of which is to add to the database the file with the reference image of the new system user face;
- 2) linear dependence of the algorithm execution duration on the number of files with reference images of the system users faces;
- 3) high computational complexity.

Taking into account the results of the analysis, it was found that the development of the method of the development of the improved software for face recognition should be aimed at eliminating the shortcomings of modern algorithms underlying the operation of software tools used for face recognition. To achieve this aim, it is necessary to establish the following regularities:

- 1) the regularity of change in the duration of the process of the system “learning”, depending on the number of images of new system user face, on the basis of which a file with a standard image of this face is formed;
- 2) the regularity of the change in the duration of the algorithm execution depending on the performance of the system hardware;
- 3) the regularity of the change in the computational complexity of the algorithm depending on the type of method underlying it.

A method to establish the regularities of changing the duration of the process of the face recognition system “learning”, depending on the number of system user face images, which are utilized during this process, has been developed. The developed method includes the following stages.

Stage 1. Formation of three images of the same user face.

Stage 2. Entering the formed images into the system database and registering the time moment at which this action began to be implemented.

Stage 3. Registration of the time moment at which the processing of the generated images was completed and entered into the database.

Stage 4. Formation of five images of the same user face.

Stage 5. Repeat the stages 2, 3.

Stage 6. Formation of seven images of the same user face.

Stage 7. Repeat steps 2, 3.

Stage 8. Formation of nine images of the of the same user face.

Stage 9. Repeat stages 2, 3.

Stage 10. Based on the quantitative indicators of the results of the stages 1–9 implementation, plotting a graphical dependence of the duration of the system “learning” process on the number of images of the user’s face of this system that are utilized during this process.

References

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