Three statistical quality indicators (*correlation coefficient-* R^2, *root mean square error-* RMSE *and mean absolute error-* MAE, *standard deviation* -SD) were used to predict B_{ob}. The comparative analysis of the gained results has been conducted with existing empiric correlations in Table.

The results of statistical analysis

	SVR	Vazuquez	Hanafy	Standing	Al-Shammasi	Glaso
MAE	0.12472	0.14680	0.20948	0.38154	0.30868	0.42734
RMSE	0.17031	0.19114	0.28010	0.51065	0.45487	0.52973
R^2	0.96612	0.95733	0.90837	0.70582	0.77375	0.69316
SD	0.50066	1.03607	1.23058	2.26179	2.36664	1.97890

SVR RBF kernel function showed high accuracy (highest correlation coefficient-96,61%, lowest mean absolute error-12,47%) to predict B_{ob} than other correlation models.

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ANALYSIS OF BIOMETRIC AUTHENTICATION IN CLOUDS

Nowadays cloud computing is widely used in various fields. Ensuring security of users in clouds is one of the main problems. In this study, one of the biometric authentication methods, that is human face recognition methods for providing security in clouds are analyzed. Problems in this field are studied.

Cloud computing is the newest technology. The user can access the files or data on clouds from anywhere over the Internet. The use of cloud computing has its own advantages, such as high availability, low costs, and so on. On the other

hand, there are some security shortcomings in this field. Authentication is the process of verifying the identification of the user-provided information [1].

The methods of biometric authentication of users are widely used in computing clouds. One of them is ensuring security through face recognition.

Most researchers have focused on ensuring safety through the human face recognition so far. It covers a large area of research. Law enforcement agencies are benefiting from the human face recognition and successfully applying in their work. Automatic detection of suspects' data from police database enables quickly identifying the potential suspects. Software for human face recognition requires real-time response and application on a mobile device, providing portability (compactness).

Mobile Cloud Computing (MCC) is also widely used in recent years. The increase in the MCC and the dynamic mobility of the network necessitate the resource accessibility of the mobile customers and their adaptation to the environment [2].

Security is one of the key issues in the human recognition process in the network environment. Modern studies contain considerably much information on human recognition in ensuring the networks security. The process of studying new devices and technologies is actively going on, as they are implemented and developed in different areas. The information on face recognition systems, iris scanners, fingerprint identifiers, smart cards, explosive detection systems, radio devices and other new technologies are provided in many studies.

Cloud computing is a new technology in the market, and its introduction in different areas has its own advantages. As noted, users can access the files or data in cloud from anywhere over the Internet. Advantages of cloud computing may include reduced costs, security, and so forth.

The advantages of computing clouds are as follows.

High usage opportunities. Fewer workers perform more work in a short time in the clouds;

Cost reduction. The users in the clouds often divide computer hardware, software and data into several parts, thus, there is no need to spend more on hardware or software;

Less training is required. Cloud computing requires less employees for performance.

The National Institute of Standard and Technology (NIST) defines cloud computing by four key characteristics [3]:

• self-service on request;
• expanded network access;
• flexibility and etc.

The International Data Corporation (IDC) analyzes and provides forecasts in the field of information technology (IT). According to the center's surveys conducted in 2006, the cost of building cloud computing is predicted to increase from 101 billion to 213 billion in 2020 or the table [4] (see fig.).
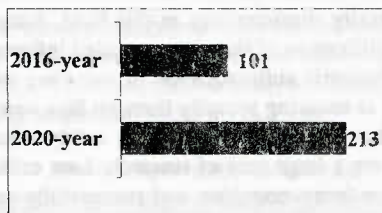
Fig. Estimated costs of building cloud computing (billion USD)

The paper highlighted an importance of the use of the biometric authentication techniques for the cloud users in ensuring security. Large volumes of data are stored in these clouds. As in other issues, one of the biggest issues here is the users' security. The use of biometric authentication technologies in clouds can play an important role in the provision of the security of the users, which can lead to increased efficiency of performance.

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О РАСПРЕДЕЛЕННОЙ СИСТЕМЕ АВТОМАТИЧЕСКОГО ВЫЯВЛЕНИЯ СОЦИАЛЬНЫХ ОТНОШЕНИЙ

Разработана концептуальная модель аналитической системы для выявления социальных отношений по персональным данным. В связи со сложностью и большим объемом данных в работе системы было предложено использовать технологии распределенных файлов.