SYSTEMS FOR AUTOMATIC PATTERN RECOGNITION

N. V. Ihnatenko, *postgraduate student*

Pattern recognition aims to make the process of learning and detection of patterns explicit, such that it can partially or entirely be implemented on computers. Automatic (machine) recognition, description, classification (grouping of patterns into pattern classes) have become important problems in a variety of engineering and scientific disciplines such as biology, psychology, medicine, marketing, computer vision, artificial intelligence, and remote sensing. In almost any area of science in which observations are studied but the underlying mathematical or statistical models are not available, pattern recognition can be used to support human concept acquisition or decision making. Given a group of objects, there are two ways to build a classification or recognition system, supervised, i.e., with a teacher, or unsupervised, without the help of a teacher.

Interest in pattern recognition has been renewed recently due to emerging applications which are not only challenging but also computationally more demanding, such as data mining, document classification, organization and retrieval of multimedia data bases, and biometric authentication (i.e., face recognition and fingerprint matching).

Rapid advances in computing technology not only enable us to process huge amounts of data, but also facilitate the use of elaborate and diverse methods for data analysis and classification. At the same time, demands on automatic pattern recognition systems are rising enormously due to the availability of large databases and stringent performance requirements (faster recognition speed and higher accuracy at a lower cost).

In many emerging applications, it is clear that no single approach for classification is "optimal" and multiple methods and approaches have to be used. Consequently, combining several sensing modalities and classifiers is now a common practice in pattern recognition.

A. M. Diadechko, *ELA*