ELECTRONIC-OPTICAL SYSTEM OF ELECTRONOGRAMS RECOGNITION

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Electronography is a method to study the structure of matter, based on dispersion of electrons accelerated by the explored sample. It used for study the atomic structure of crystals, amorphous solids and liquids, molecules in gases and steam.

More and more both scientific, and industrial complexes appear, requiring recognition of images with high accuracy, which in turn requires the creation and implementation of computer algorithms for image recognition. Solving this problem provides an opportunity to improve the accuracy and timeliness of decision making in the controling and managing complex technological processes.

Despite the intensive development of-methods of pattern recognition, machine classification of electronograms still remains an unsolved problem because unstationarity of image brightness of electronograms and relatively large dispersion of realizations for a class.

Most well known recognition algorithms are aimed at solving the model problems, which exclude classes crossing and require statistical stability and homogeneity of the study sample. But in practice it is usually not the case. One of the ways to solve this problem is to solve it using methods of information-extreme intellectual technology (IEIT), based on maximizing the recognition system information capacity.

Our goal is developing an information-extreme method of pattern recognition and software for self educated decision making support system used for electronograms recognition.

To achieve this aim, following tasks we were to solve:

- implementing algorithm of mechanical information compression;
- constructing a hierarchical recognition structure;
- developing and implementing a hierarchical learning algorithm of decision making system;
- optimizing control tolerances for processing images in polar coordinates;
- implementing a hierarchical exam algorithm.