

INFORMATION AND TELECOMMUNICATION TECHNOLOGIES OF SIGNALS RECOGNITION IN TELEMEDICINE

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One of the problems of telemedicine, from a practical point of view, is more efficient use of skilled medical professionals at remote diagnosis of patients' diseases. Some routine tasks of processing medical information with sufficient accuracy and reliability can be solved by an automated decision-making support system based on appropriate mathematical apparatus. In this case specialists can save their time and attention to focus on making more difficult and important decisions, appropriate to their experience and skills. Furthermore, while non-strictly formal methods of decision making are often used in diagnosis, the use of appropriate precise mathematical methods can provide more objective conclusions about the diagnosis. An example of the optimization of medical professionals work process in telemedicine is the use of automated systems for remote diagnostics, based on the methods of recognition of the electrophysiological signals, transmitted by the appropriate communication channels.

This work reviews the features of solving of one of the tasks of medical information processing - electroencephalograms recognition, which takes place in an automated decision making support system at remote diagnosis of the patients' diseases.

Also work proposes the algorithm for automated recognition of sleep stages by EEG samples, transmitted in digital form by appropriate communication channels. The signals recognition algorithm is based on the description of the sequence of EEG samples by an adequate mathematical model in the form of autoregressive processes. Recognition algorithm can be implemented in software on a computer and a decision making support system used in the remote diagnosis of diseases of the brain, nervous and cardiovascular systems of the patients.

We consider some details of choice of bandwidth and according communication technologies for the information transfer in telemedicine. Capacity requirements for telecommunication technologies for medical information transfer in telemedicine are also reviewed.

Keywords – telemedicine, sleep stages recognition, electroencephalogram, capacity.