

DETECTION OF SCENE CHANGING AND NOISE-TYPE FRAME OF VIDEO SEQUENCE

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In the report the problem of video sequence quality estimation is considered. Sequence is treated as high quality if further processing is possible for it. Algorithms of stabilization and objects' tracking are mostly considered as the further processing. If algorithm of stabilization estimates parameters of geometric transformation incorrectly the output video, “stabilized” with such wrong parameters, “jumps” more that input one. It cannot be allowed – so one need to sieve frames which processing cannot be done with high enough quality.

Along with the main task proposed algorithm able to solve the following particular subtasks:

1. Scene changing detection.
2. Noise-type frames detection.
3. Detection of frames with high noise and low signal.

As a classification algorithm neuron net based on three metrics is used. The following metrics is used:

1. Effective area of minimum of discrepancy function.
2. Value of discrepancy function in minimum.
3. χ^2 -criterion of histogram difference.

Proposed algorithms are tested on a large variety of natural and synthetic videos with various shot (modeling) conditions. Effectiveness curves of proposed algorithm are counted for different subtasks with an aim to choose the threshold according with Neumann-Pirson criterion.

Proposed algorithms shown high effectiveness – error percent is lower 0.01%. The speed of the algorithm if high too – more than 160 frames per second on contemporary PC.